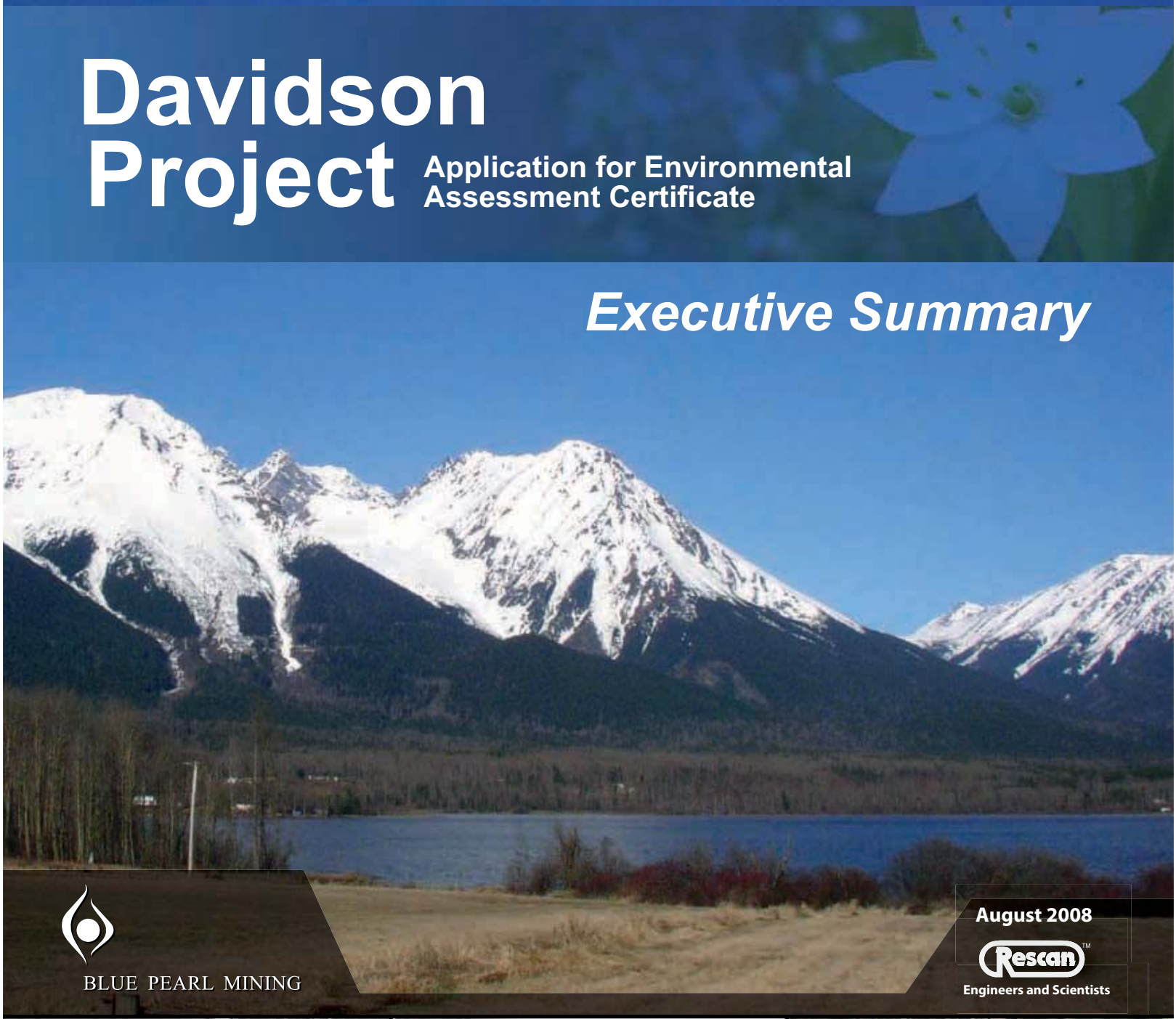
Davidson Project

Application for Environmental Assessment Certificate

Executive Summary



BLUE PEARL MINING

August 2008

Rescan™
Engineers and Scientists

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Executive Summary

Introduction

Nine kilometres north of the town of Smithers, British Columbia, the Davidson Project (the Project) lies on the east flank of Hudson Bay Mountain. Blue Pearl Mining Inc. (Blue Pearl) proposes to develop the Davidson mineral deposit as an underground molybdenum mine producing an average of 2,000 metric tonnes of ore per day.

The Project will require approval under the *British Columbia Environmental Assessment Act* and the *Canadian Environmental Assessment Act*. To obtain approval under these Acts, Blue Pearl is required to submit an Application for an Environmental Assessment Certificate. The completed Application will be the culmination of an environmental assessment process that includes analysis of environmental, socio-economic and cultural baseline conditions, identification of the potential effects of the Project, development of mitigation and enhancement measures, and evaluation of the significance of residual effects.

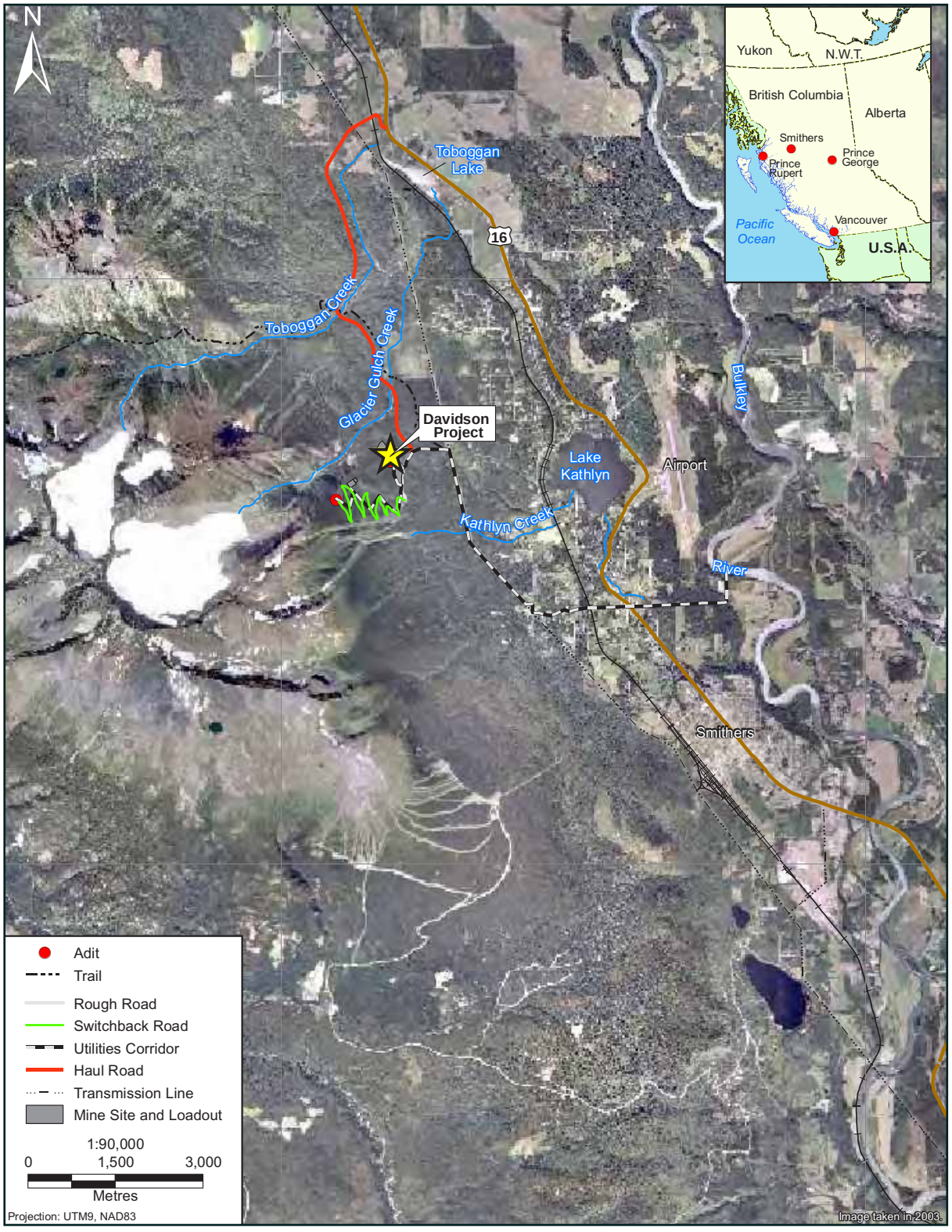
Project Setting

The Project footprint is in the Bulkley-Nechako Regional District, Electoral Area A and the traditional territory of the Wet'suwet'en people.

Its location relative to the town of Smithers and to the source of drinking water used by local residents makes the Project distinctive. Seventeen residences and the Smithers Rod and Gun Club are on Glacier Gulch and Davidson roads, immediately adjacent to the Project area. Many of these residents obtain their drinking water from surface and/or shallow surficial sources within the Kathlyn Creek and Glacier Gulch watersheds. Blue Pearl has made it a priority to design a project that ensures the protection of water quality. In addition to drinking water quality issues, noise, visual quality, and quality of life concerns have also been paramount while designing the Project.

Project History

Blue Pearl began conceptualizing the Project in April of 2005. Shortly thereafter, Blue Pearl presented their initial ideas for the Project to the Office of the Wet'suwet'en, the community of Smithers, and government agencies. Multiple meetings with the Office of the Wet'suwet'en, community presentations, open houses, and stakeholder meetings helped Blue Pearl understand the concerns of local residents and develop a Project that will minimize impacts to residents and to the environment, while providing important benefits to the community.



Davidson Project Location

Project Description

Underground Mine

The underground mine has been designed to produce approximately 730,000 tonnes of ore per year. The underground mine will operate 6 days per week, or 313 days per year. The average production rate for the underground mine will be approximately 2,330 tonnes per underground operating day, or 2,000 tonnes per day over the calendar year.

Blue Pearl will use conventional underground mining methods to extract the ore and transport it to surface. Once the underground mine is developed, the ore zones will be mined using blasthole stoping with cemented rock fill.

Blasthole Stoping: Individual mining areas, or 'stopes', are defined based on metal content and geotechnical criteria. The size of each stope will vary, with stopes being as large as 25 metres wide, 200 metres long, and 80 metres high. Pillars are left between stopes to maintain underground stability. Primary stopes are mined first, with virgin rock on either side of the stope, and then backfilled with cemented rock fill. Following backfilling, pillars may be mined as secondary stopes, with cemented rock fill on one or both sides. Secondary stopes are generally left unfilled.

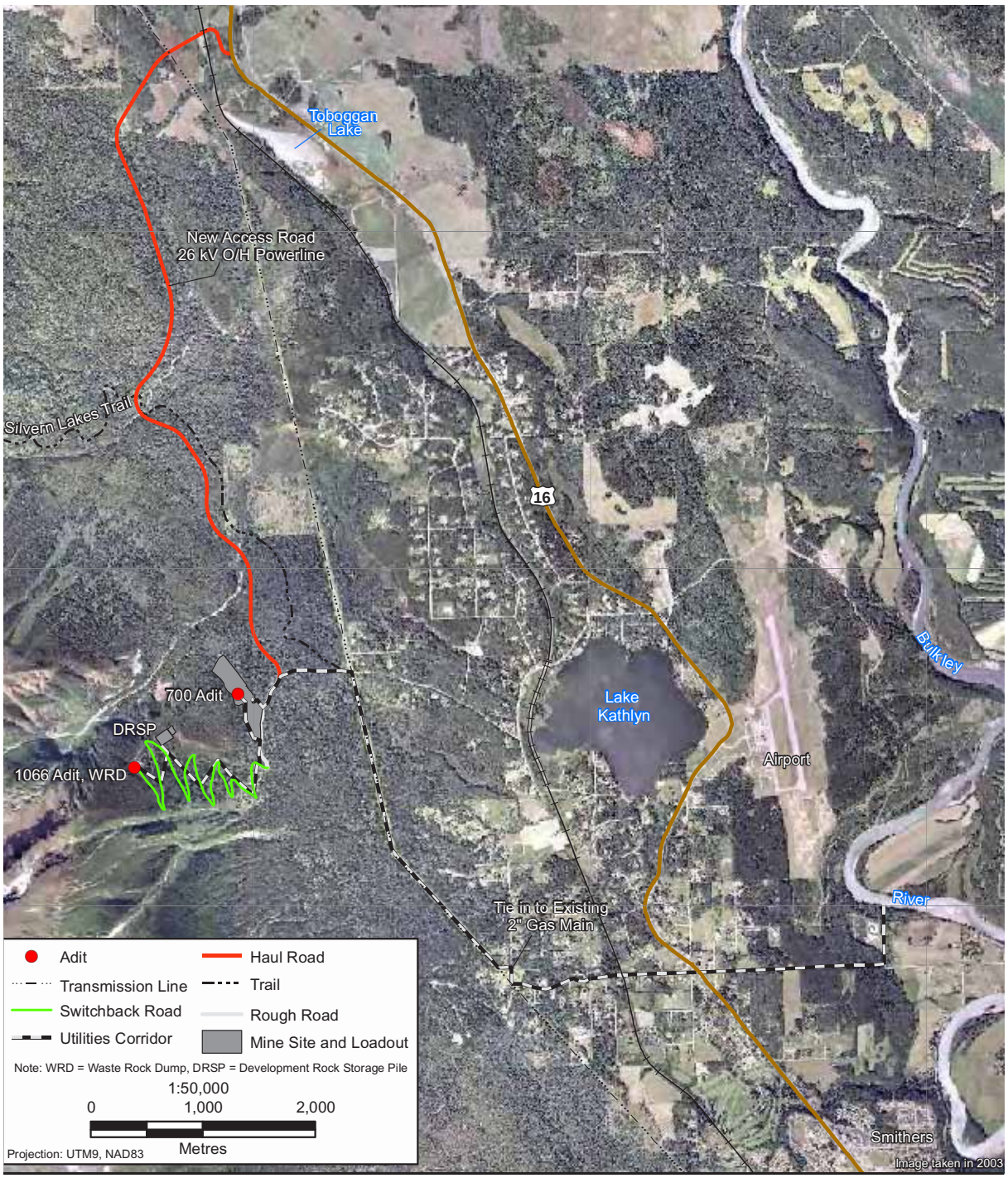
The underground mine will make use of an existing adit at 1,066 metres elevation (called the 1066 Adit). This 1,850 metre-long adit will be enlarged to provide ventilation to the underground mine, and will also be used as an emergency exit.

Ore will be removed via a new adit to be built at approximately 700 metres elevation (called the 700 Adit). The 700 Adit will provide access for hauling ore out of the mine and for transporting underground workers and materials. Blue Pearl will build this 2,900 metre-long adit to avoid the visual impact of heavy truck traffic up and down the existing switchback road to the 1066 Adit, and to reduce potential noise effect.

Ventilation will be drawn from the 1066 Adit and will exhaust from the 700 Adit. During the winter, natural gas will be used to warm the air at the main ventilation fan.

Ore removed during the construction of the 700 Adit and the expansion of the 1066 Adit will be stored temporarily at two development rock storage piles near the adit entrances. These piles will be built on lined pads, and any liquid runoff from either pile will be sent to a water treatment facility at the 700 metre elevation. After mining begins, all the rock from the storage piles will be hauled back into the mine to be used as backfill; no waste rock will remain on the surface after Project closure.

Most mobile underground mining equipment will be mounted on diesel-powered, rubber-tired carriers, while some will be electric-powered. All drilling equipment will have hydraulic-powered drills. The drills use compressed air to clean out holes before loading explosives. Various other pieces of smaller diesel-powered mobile equipment will be used underground to support mining and maintenance operations. Maintenance bays will be built in the underground workings for



Davidson Project Surface Infrastructure

day-to-day maintenance of underground equipment. For larger repairs or maintenance jobs, the equipment will be brought to the maintenance building at surface.

Underground trucks will exit the 700 Adit and deliver ore to the loadout facility.

Fuel and Fuelling

The main diesel fuel storage tank supplying the underground mine will be on the surface, near the portal of the 700 Adit. Underground equipment that returns to surface on a regular basis will fuel directly from the surface tank, while other underground equipment will be refuelled by a fuel transport and dispensing truck in the underground working areas. The fuel truck will fill from the storage tank on the surface.

Loadout Facility and Hauling

Ore will not be milled on-site. Instead, ore from the Davidson Mine will be stored temporarily in a loadout facility, and then hauled away in 40-tonne capacity highway haul trucks to be milled at the existing Endako Mine, approximately 200 kilometres southeast of Smithers.

The loadout facility will be specifically designed to minimize noise effects associated with transferring ore. Ore will be stockpiled in a 3,000 tonne storage area, which will not rise above 720 metres elevation, and will thus remain below the treeline to minimize potential visual impacts. Each day, 50 truckloads of ore will be transported to the Endako Mine.

A number of haul road alternatives were also evaluated during the consultation process. After consultation with the Working Group and the Wet'suwet'en, Blue Pearl altered the haul route from its original alignment, moving it farther west, up the hillside, to avoid going through sensitive areas on Toboggan Fan or areas that may be culturally sensitive for the Wet'suwet'en.

From the loadout facility, the proposed haul route heads north, along 7.2 kilometres of new road, to meet Highway 16 just north of Toboggan Lake. Trucks will then travel along the highway through Smithers, Telkwa, Houston, and Burns Lake to the Endako Mine. The new section of haul road will be a private, single-lane, gravel road.

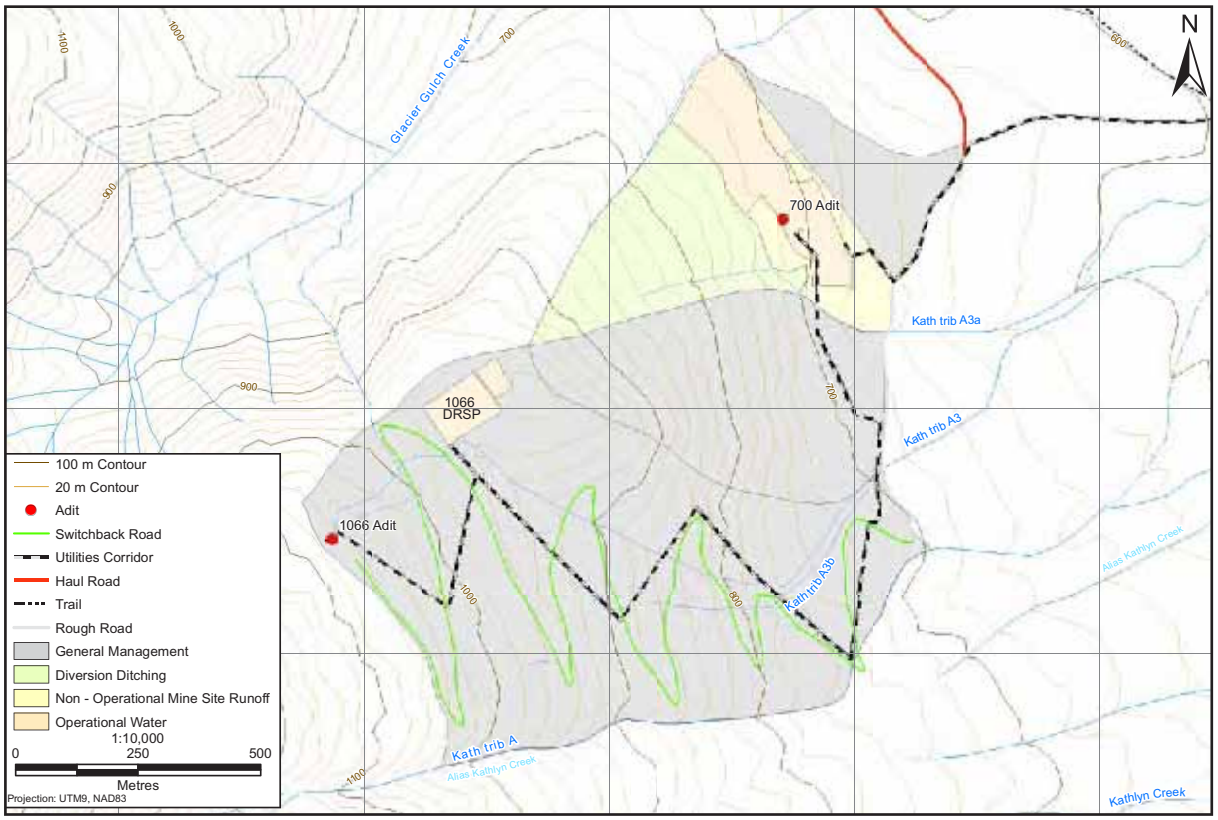
Support Facilities

Ancillary facilities include a parking lot, refuse materials handling, first aid facility, maintenance shop, equipment storage, offices, mine dry/changeroom, fuel storage/dispensing system, potable water system, sewage treatment system, compressed air system, and outdoor lighting. A backfill mixing plant will be constructed later in the mine life.

Water Management

Protecting water quality at the Project is Blue Pearl's highest priority. The mine site and loadout are the Kathlyn Creek Watershed, used by local residents as a source of drinking water. The Bulkley River is a world-class salmon river, supporting five different salmon species.

Erosion and sediment control measures will be implemented within the Project's natural drainage areas to minimize the introduction of suspended sediments to local streams. Surface runoff from the parking lot area will be directed to a sedimentation pond, which will allow any suspended sediments to settle, and residual hydrocarbons to be removed prior to discharge into the natural environment. Runoff from other areas, including the 1066 and 700



Davidson Project Water Management

Adits and associated development rock storage piles, will be collected in a retention pond and then processed at the water treatment facility before discharg to the Bulkley River. The water treatment facility will treat for total suspended solids (TSS), dissolved molybdenum and arsenic, and ammonia. The treatment process is based on the same technology that has been successfully used at the Brenda Mine in Peachland, B.C. since 1998.

Utilities

Project utilities include a mine water discharge pipeline, natural gas pipeline, and electrical power transmission line. The water and natural gas lines will be buried along a ten-metre wide corridor. The natural gas tie-in to the existing service is along Slack Road. The water line will continue to the Bulkley River. Treated water will be discharged into the Bulkley River via a diffuser a short distance upstream of the discharge from the Smithers waste water treatment facility.

Electrical power to the Project will be supplied by the existing BC Hydro 26-kilovolt transmission system in Smithers. The new power transmission line will tie into the existing grid at Highway 16 and be routed overhead along the route selected for the new haul road.

Workforce

The underground mine at the Project will operate with 2 shifts a day, 6 days a week, employing 44 underground workers. Maintenance services will be provided 7 days a week, employing 21 workers.

Approximately 26 people will be employed at the mine site and loadout facility (not including workers in the underground mine). These employees will include mine managers, geologists, engineers, water treatment operators, surface maintenance staff, and administrative support.

Development Schedule

An estimated timetable and schedule for development, construction, operation and maintenance, and closure of the Project is presented below. While scheduling details will change as development of the Project proceeds, the schedule highlights important milestones throughout the mine life, and reflects Blue Pearl's best estimate of Project development at this time.

Construction

Water Management Facilities and Utilities

Initially, construction activities will focus on establishing the mine water treatment plant and associated water management facilities. Development of the underground mine will not begin until these facilities are operational. Construction activities associated with establishing the water treatment plant include:

Davidson Project Development Schedule

Task	2005 A M J J A S O N D	2006 J F M A M J J A S O N D	2007 J F M A M J J A S O N D
PROJECT DEVELOPMENT			
EA Process	■	■	■
Permitting Process			
Preliminary Engineering (Feasibility)		■	■
Detailed Engineering			
CONSTRUCTION			
Construction Management			
Procurement			
Equipment Delivery			
Mine-site and Loadout			
Site Clearing and Leveling, Water Management			
Water Treatment Facility			
700 DRSP Pad			
1066 DRSP Pad			
Ancillary Facilities			
Utilities (Water and Gas Pipelines, Power Supply)			
Water and Gas Pipeline			
Bulkley River Diffuser			
Haul Road and Powerline Construction			
Adit Development (700 and 1066)			
OPERATION AND MAINTENANCE			
Full Production			
Cement Batch Plant			
Back-filling Stopes			
Back-haul Development Rock (700 and 1066)			
CLOSURE			
Removal of Facilities at Mine-Site and Loadout[1]			
Bulkheads (700 and 1066)			
Deactivate Haul Road			

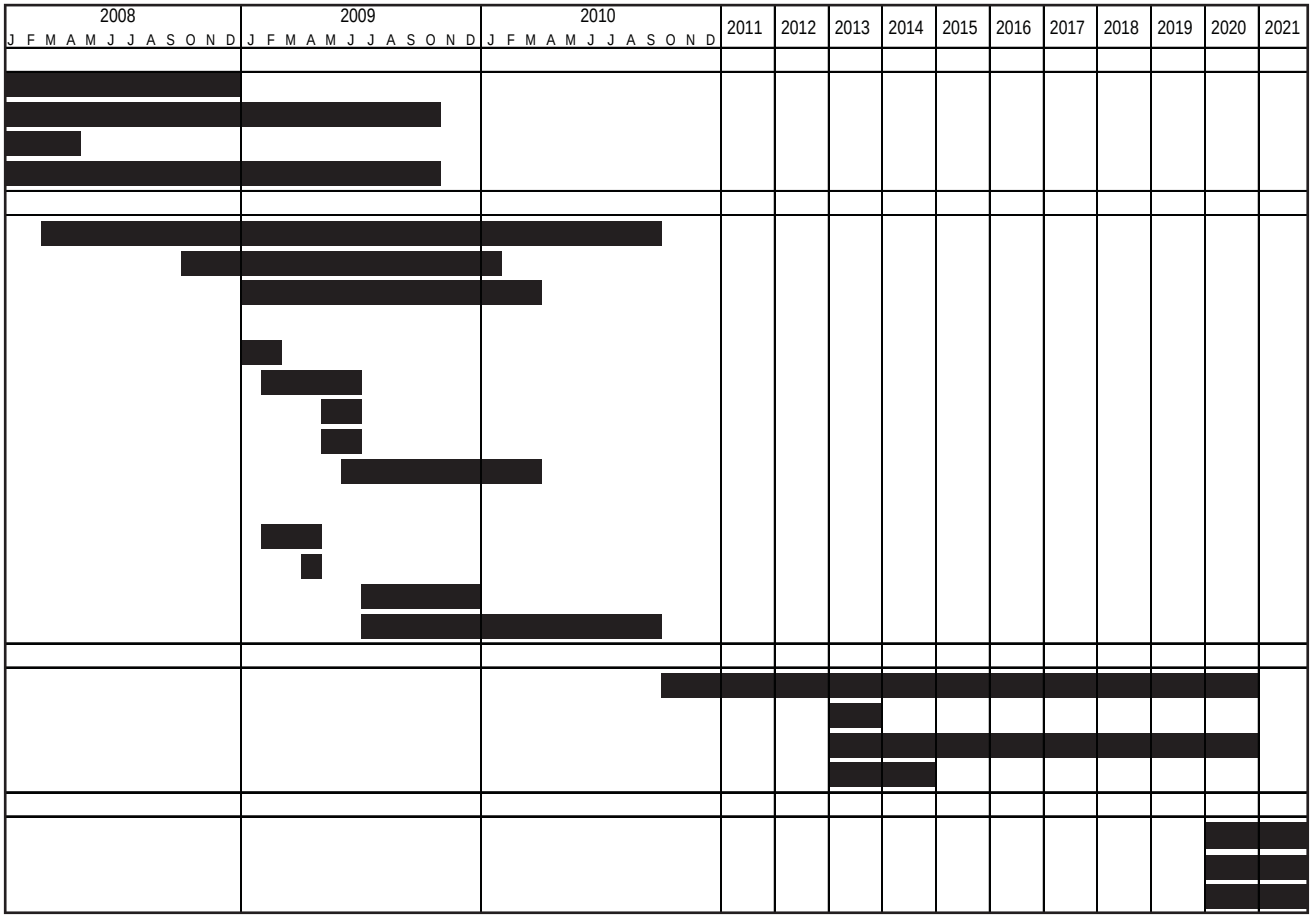
1: The water treatment facility will remain in place until it is determined (through consultation with government and the Wet'suwet'en) that the portal plugs were successful and the facility is no longer required.

- clearing and grading at the 700-metre elevation;
- clearing and grading for the 1,066-metre development rock storage pile;
- clearing of the utilities corridor and installation of the mine water discharge and natural gas pipelines;
- installation of diffuser in the Bulkley River;
- construction of building and associated infrastructure for the water treatment plant; and
- procurement and construction of the water treatment plant.

The natural gas and mine water discharge pipelines will be installed at the same time. The natural gas pipeline will be installed by a company certified by Pacific Northern Gas. The pipelines will take three months to install. The diffuser will be installed during the low flow period in the Bulkley River (December to April) and is expected to take an additional three weeks.

Ancillary Facilities

Once infrastructure related to the treatment facility is complete, the remainder of ancillary facilities—including the maintenance shop, main office, loadout facility, and sewage treatment facility—will be completed.



Underground Mine Construction

Following completion of the water treatment plant, development of the underground mine will begin. Preproduction development and construction includes all activities required to initiate sustainable production and to construct critical mine facilities. The primary preproduction development items that must be completed prior to the start of production include:

- 700 Adit;
- enlargement of 1066 Adit;
- lower access ramp;
- ventilation circuit;
- dewatering system; and
- development of initial production levels.

Secondary development and construction requirements (*i.e.*, activities that may not be required to initiate production, but will be required to sustain production) include:

- main underground substation;
- material handling system, including ore bin, main grizzly station, truck loadout, and orepasses;
- 1,075-metre level development and construction, including ventilation and escape raises;
- upper access ramp to 1,100 metre level;
- underground lube shop; and
- explosives storage magazines.

Work at the 2 adits will proceed simultaneously and full production is anticipated to begin in 14 months.

New Haul Road and Powerline

Ore production will begin once development work within the 700 and 1066 adits has progressed into the granodiorite. Therefore, completion of the new haul road is scheduled to occur approximately six months into underground development.

Site power will be provided by connecting into the 26-kilovolt BC Hydro line near the intersection of the new haul road with Highway 16. The conventional single pole transmission line will be installed by a sub contract company certified by BC Hydro.

Operation

Once the mine reaches full production, it will operate 6 days a week, and produce an average of 2,340 tonnes per day. The first five years of mining will focus on development of primary stopes. The backfill mixing plant will be installed during year three, and backfilling of mined-out stopes will begin. Backfilling and mining of primary and secondary stopes will continue through the remainder of operation.

Closure, Decommissioning, and Reclamation

Before Project closure, all underground equipment and materials will be removed. The underground mine will be blocked off with bulkheads at appropriate locations within the 1066 and 700 adits. This will stop groundwater from freely discharging to the surface, and allow the underground workings to flood with groundwater. Sealing the underground workings is the best method of ensuringprotecting water quality is protected.

All infrastructure at the 1,066 metre elevation will be removed. The switchback road and the haul road will be deactivated and reclaimed. At the 700-metre elevation, only the mine water treatment facility and a short access road will remain after mine closure. The treatment plant will remain operational, or under care and maintenance, until it is determined through consultation with government and the Wet'suwet'en that it is no longer required.

Closure and decommissioning work, including removal of site infrastructure, reclamation of roads, and construction of the bulkheads is expected to take approximately 12 months. Afterwards, activity at the site will be limited to regular monitoring, including evaluation of the success of reclamation and re-vegetation efforts and inspection of the integrity of the bulkheads.

Consultation

Objective

The key objective of Blue Pearl's consultation program has been to ensure that every potentially affected party is offered the opportunity to learn about, question, and comment on the development plans of the proposed Project.

Consultation Process

The consultation program is structured around the requirements of the provincial environmental assessment process. Blue Pearl has exceeded these requirements and has provided additional forums for members of the public, special interest groups, and First Nations to participate in the consultation process.

The consultation process is based on the following components:

- presentation and distribution of information regarding the Project;
- facilitation of a productive dialogue between participants and representatives of Blue Pearl, the BC Environmental Assessment Office, and researchers from Rescan Environmental Services Ltd. (Rescan); and
- provision of opportunities for participants to submit their comments, questions and/or concerns to the BC Environmental Assessment Office, and to receive responses from Blue Pearl and researchers.

The consultation process presented information relating to all phases and features of the Project, including:

- construction, operations, decommissioning, and post-closure environments; and

- the entire Project area, including the mine site, haul and access roads, pipelines, and other associated infrastructure.

Consultation with the public, First Nations, and government agencies began in the spring of 2005 and has continued throughout the environmental assessment process. Blue Pearl has endeavoured to provide information on the Project to all potentially affected and/or interested parties, and to engage in meaningful and participatory dialogue with these parties. Consultation on the Project has included open houses, focus groups, one-on-one meetings, telephone conversations, emails, and letters.

Participation

Participation in the ongoing consultation process has been encouraged among all concerned parties. These include any identified individuals or groups potentially affected by the proposed Project. In general, participants may be categorized as belonging to one or more of the following three groups: the public (including special interest groups), First Nations, and government. The key participants in the Project consultation program are listed in the table below.

Participants in the Davidson Consultation Program

Participant	Description
Public	
Residents of Smithers and surrounding communities	All interested individuals, whether or not they will be directly affected by the proposed development
Special Interest Groups	
Bulkley Valley Community Resources Board	Advisory board concerned with natural resource management in the Bulkley Valley
Glacier Gulch Water Group	Residents who rely on the Glacier Gulch water system for provision of water to their homes
Hudson Bay Mountain Neighbourhoods	A network of residents near Hudson Bay Mountain
Lake Kathlyn Protection Society	Community-based group concerned with the protection and care of Lake Kathlyn
Northeast Slope Trails Group	Community-based group concerned with the use and maintenance of trails on the slopes of Hudson Bay Mountain
First Nations	
Office of the Wet'suwet'en	Project site is on the traditional territory of the Wet'suwet'en peoples. The OW represents all bands, houses, and clans of the Wet'suwet'en peoples
Government	
Local	Regional District of Bulkley-Nechako Town of Smithers Village of Telkwa Village of Fraser Lake
Provincial	British Columbia Ministry of Environment British Columbia Ministry of Energy, Mines and Petroleum Resources British Columbia Ministry of Community Services British Columbia Ministry of Economic Development British Columbia Ministry of Tourism, Sport and the Arts British Columbia Ministry of Agriculture and Lands British Columbia Ministry of Forests North West Health Services
Federal	Health Canada Canadian Environmental Assessment Agency Natural Resources Canada Fisheries and Oceans Canada Transport Canada

Key Issues

Throughout the consultation process, public and First Nations groups have raised a number of significant issues and areas of concern. Blue Pearl has examined each of these issues with respect and detail, and has endeavoured to provide timely and comprehensive responses. The main concerns expressed and Blue Pearl's responses are listed in the table below.

Summary of Key Issues Identified during Community Consultation

Issue of Concern	Blue Pearl Response
Water quality of streams in the Glacier Gulch area	Blue Pearl has committed to treating all water from the Project and building the water treatment plant early in the construction phase
Protection of the Bulkley River	Blue Pearl is developing a water treatment plant using the latest technology and including an additional diffuser to ensure the protection of the Bulkley River. The treatment technology is currently in use at the Brenda molybdenum mine in Peachland, B.C.
Concern that migratory fish species would not be adequately represented in the environmental assessment process	Potential effects to migratory fish (including salmon) were included in the finalized Davidson Project Terms of Reference, and were therefore included in baseline studies and the assessment
Haul traffic affecting quality of life and road safety	Blue Pearl undertook a major study of seven haul road options that were identified and considered. This led to the decision to build 7.2 kilometres of new road away from residences The new haul road will mean that haul trucks will not travel on local roads Blue Pearl will encourage car-pooling to reduce the effects of employee traffic during shift changes
Visibility of mine infrastructure	The lower adit was extended down to the 700-metre elevation to ensure that the facility loadout area was below the tree-line and out of the view-shed Lighting at the mine site will be designed to minimize visual impacts
Quality of recreation experiences	Development of the haul road will mean that haul traffic will largely avoid residential areas and roads, as well as the transmission corridor. This will significantly decrease the potential impact that the Project will have on recreation in the area. Access to the Twin Falls site and the Silvern Lakes Trail will be crossed, but access will not be significantly altered
Local employment, training services and sustainability	Blue Pearl has adopted a local hire and local supplier policy. Blue Pearl is working with the community college to ensure that specialized courses are available to allow local residents the opportunity to train for mining jobs Local training, employment, and purchasing ensure that the strengths of the community are supported for this and other resource-based projects, now and in the future
Input of First Nations into the environmental assessment process	The Office of the Wet'suwet'en is a permanent member of the government Working Group for the Project and will be provided with the opportunity to comment on the Application under the provincial environmental assessment process Support for the review process has been negotiated between Blue Pearl and the Office of the Wet'suwet'en. In addition, the Office of the Wet'suwet'en has been provided the opportunity to review relevant sections of the draft Application in advance of submission to the BC Environmental Assessment Office.

Future Consultation Program

Consultation activities relating to the Project will continue on an ongoing basis for the life of the Project. First Nations, public, and special interest groups will be able to communicate questions

and concerns through the Blue Pearl office in Smithers, which will act as a base for mine operations and management.

The submission of the Application will be followed by an additional round of public meetings and consultation. These sessions will present the findings of the environmental assessment for the Project, as well as mitigation and management plans.

Following submission, the Application will be available for public review for a 55-day public comment period. During this time, Blue Pearl will engage in a round of meetings with the residents of Smithers and environs, the Office of the Wet'suwet'en and the Wet'suwet'en membership, and local, regional, provincial and federal government agencies. The objectives of this consultation period will be to present the Application and to describe its findings. This will also be an opportunity for interested parties to provide comments and questions to Blue Pearl and researchers.

All interested parties will have an opportunity to provide comments on the Application in its entirety. These comments will be considered by the BC Environmental Assessment Office in their determination of Project approval.

Environmental Assessment

Air Quality and Climate

Baseline Conditions

The Project is approximately 200 kilometres inland from the Pacific Ocean on the lee side of the British Columbia's Coast Mountains. Average annual precipitation at the Smithers Airport is 513 millimetres, compared with 1,322 millimetres at Terrace and 2,594 millimetres at Prince Rupert. Maximum precipitation generally occurs in the fall and early winter due to frequent storms. Approximately 40% of precipitation at the Smithers Airport falls as snow; this percentage increases with elevation. The air is dry, with cold winters and mild summers. Extreme temperatures range between -40° and 35°C; however, average monthly temperatures range from -9° to 15°C.

Clear skies and stable air are common for the area. The stability may be enhanced by subsidence from high pressure systems, which produce temperature inversions. Stable conditions trap the air in the bottom of the Bulkley Valley; low winds prevent the air from mixing, trapping air pollutants in the valley bottom as well. Stable conditions that persist for a period of days may give rise to episodes of poor air quality, which are an existing concern in the area.

The air pollutant currently of greatest concern is particulate matter, especially fine particulates, which are small enough to be inhaled and are associated with potential health effects. The major sources of particulate matter in the region are smoke (from sources such as forest harvest debris burning, beehive burners, and residential heating) and fugitive dust (especially in early spring due to sand on roads from winter traction control).

Potential Effects and Mitigation

Potential effects of the Project on air quality and climate are related to the consumption of fuels by mining equipment and infrastructure. Emissions from fuel consumption could affect air quality through release of particulate matter and other pollutants, and climate through release of greenhouse gases. Additionally, mine-related traffic along paved and unpaved roads may produce fugitive dust, which also increases particulate matter concentrations, affecting air quality.

An air quality management plan will be established by Blue Pearl to minimize the generation of fugitive dust from the mine site and loadout facility and along the unpaved haul road. Measures will include regular maintenance of mobile equipment to ensure optimal performance and grading and watering of the haul road. Standard fugitive dust management practices, such as road watering, are known to be effective at reducing particulate matter mobilization. The probability that the Project will directly cause air quality problems is low; however, emissions and fugitive dust generated by the Project will contribute to an airshed with existing air quality concerns.

Design and management and measures to minimize greenhouse gas emissions include:

- all stationary underground equipment will use electrical power, with the exception of the air heaters;
- electricity will be supplied primarily by hydroelectric sources rather than higher emission sources such as diesel generators;
- a thorough maintenance program will help maximize energy efficiency for all mining equipment;
- fuel and electrical consumption will be rigorously monitored; and
- energy efficiency will be an important feature considered when purchasing new and replacement equipment.

These measures will aid in controlling and minimizing energy consumption and greenhouse gas emissions; however, energy will still be consumed throughout the life of the Project. Therefore, residual climate effects in the form of greenhouse gas emissions will occur.

Terrain, Soils and Surficial Geology

Baseline Conditions

The study area for the Project is within the Bulkley Ranges on the boundary between the Skeena and Hazelton Mountains. It has an elevation relief of 700 metres, with a maximum height of 1,200 metres above sea level on the mountain slopes, and a minimum height of 480 metres above sea level adjacent to the Bulkley River. The mountainous terrain is steep and snow avalanche activity is prominent in alpine terrain and gullies, with avalanche scars extending below the treeline. The surficial geology is of glacial origin, with deep till deposits, as well as localized glaciofluvial and glaciolacustrine sediments. Exposed sediment, gravels, and cobbles indicate active deposition of fluvial and colluvial sediments, and alluvial fans are associated with both Glacier Gulch and Toboggan creeks.

The soils are variable, reflecting the differences in slope, aspect, drainage, parent material, and elevation that occur over short distances within the study area. Soils were evaluated as part of Terrestrial Ecosystem Mapping that was carried out between 2005 and 2007. Soils were divided into 21 mapping units based on four types of parent materials: colluvial, glacial till, fluvial, and organic.

Potential Effects and Mitigation

Potential effects related to the Project include slope instability, loss or disturbance of soil, and contamination of soil. Additionally, portions of the haul road and utilities corridors cross into the Agricultural Land Reserve. Due to the small surface footprint of the Project, effects on soils will be highly localized.

Mitigation measures will include infrastructure designed to avoid or minimize stability issues, progressive reclamation of the utilities corridor following installation of the natural gas and mine effluent pipelines, and salvaging and stockpiling topsoil for reclamation upon closure. The soil stockpiles will be contoured and seeded to rapidly establish a vegetation cover, thus preventing surface erosion and further loss and degradation of soil during storage.

Surface Water Quality and Quantity

Baseline Conditions

The Project is within the Kathlyn Creek, Glacier Gulch Creek, and Toboggan Creek watersheds. These watersheds drain down the side of Hudson Bay Mountain into the Bulkley River. The Bulkley River has a watershed area of approximately 9,000 square kilometres at Smithers. It flows north into the Skeena River, which drains to the Pacific Ocean at Prince Rupert.

Within the small watersheds, surface water quality and quantity are important environmental components because streams in the Project area provide drinking water to a number of local water users, and the streams also provide habitat for important fish populations. The Bulkley River provides spawning grounds for a number of different Pacific Salmon species, which is an key natural resource, and has cultural importance to the Wet'suwet'en as well as economic importance to the sport fishing and tourism industry of the area.

Baseline studies indicate that water originating from underground may have elevated molybdenum and arsenic concentrations. Development of the underground workings will expose rock to oxidation, which can cause metal leaching or acid rock drainage. Geochemical testwork indicates that some of the rock that would be stored temporarily on the surface is potentially acid generating.

Acid Rock Drainage: Acid rock drainage occurs when sulphide minerals are exposed to the weathering effects of oxygen and water. This is a natural process, but it can be accelerated when rock is disturbed by large developments like mines.

Potential Effects and Mitigation

Water exiting the underground mine workings and water from the development rock storage piles may have elevated metal concentrations, and surface water that flows over disturbed ground may contain high levels of suspended solids.

Mitigation measures to ensure the protection of local water supply and aquatic life will include erosion and sediment control measures during construction, and isolating the mine site footprint area from the local watershed. This isolation will include special handling of water from within the operational area of the mine site. Water treatment facilities will be installed before mining operations begin and water quality monitoring will be in place throughout mine life.

Rainwater runoff originating from the non-operational areas of the mine site (*i.e.*, mine office, employee parking area and the southern end of the new haul road) will be diverted to a settling pond to remove suspended solids prior to release into a tributary of Kathlyn Creek.

All water from operational areas of the mine site (95% of which will come from the underground workings) will report to the water treatment facility and then be discharged via pipeline and diffuser to the Bulkley River. Water from the storage piles will also be directed to the treatment facility. The treatment facility will treat influent for suspended solids, dissolved molybdenum and arsenic, and ammonia. The treatment technology for molybdenum and arsenic is currently in use at the Brenda molybdenum mine in Peachland, BC.

The water treatment facility will be designed to treat up to 60 litres of water per second. Water quality modeling of the effluent within the Bulkley River indicates that there is ample dilution, even under extreme low flows, to ensure that water quality in the receiving environment will meet government regulations. The quality of effluent discharged from the mine site will be monitored and reported in accordance with permits issued by the BC Ministry of Environment, and Environment Canada's Metal Mining Effluent Regulations.

At Project closure, the underground workings will be sealed with bulkheads, completely flooding the underground workings. This is best long-term strategy to prevent the future release of mine water and to maintain good water quality. The water treatment plant will remain in place until the adits are fully sealed, and it is determined through monitoring and consultation with government and the Wet'suwet'en that the facility is no longer required.

Groundwater Quality and Quantity

Baseline Conditions

Groundwater monitoring has been monitoredoccurred at a number of wells throughout the Project area, including wells drilled specifically for the Project, and residential wells at the base of the mountain. In many areas, a thick layer of glacial till/clay was encountered. This material is extremely dense and impermeable. The till layer separates deep groundwater sources from shallow, near-surface groundwater sources. In general, the groundwater flow on the side of Hudson Bay Mountain follows topography, with groundwater flow from high elevations toward lower elevations and the Bulkley River.

Water samples collected from within the existing 1066 Adit indicate that water originating from underground has elevated molybdenum and arsenic concentrations. Elevated levels of arsenic and molybdenum were not detected at any of the monitoring wells at the base of Hudson Bay Mountain.

Potential Effects and Mitigation

Development of the underground mine will produce a conduit to the surface, which will cause the water table in the mountain to be drawn down (above the 700 meter elevation). This is not expected to affect the water supply of down-gradient users. Upon closure, the underground workings will be sealed with cement bulkheads. With time the workings will flood and groundwater levels will return to baseline conditions. Sealing the underground workings is the best long-term strategy to maintain good water quality. Water quality following closure is expected to be similar to baseline conditions observed within the underground workings. The significance of potential effects to water quality are considered low.

Aquatic Environment

Baseline Conditions

The aquatic environment encompasses physical limnology, sediment quality, primary producers (periphyton and phytoplankton), secondary producers (zooplankton and benthic invertebrates), fish community, and fish habitat.

Nine species of fish were observed in the study area during baseline studies: Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), rainbow trout (*Oncorhynchus mykiss)*, cutthroat trout (*Oncorhynchus clarki),* Dolly Varden (*Salvelinus malma*), prickly sculpin (*Cottus asper*), northern pikeminnow (*Ptychocheilus oregonensis*), redside shiner (*Richardsonius balteatus*), and lamprey (*Lampetra* spp.). Dolly Varden are a blue-listed species in British Columbia.

Many of the lower-altitude streams and lakes in the area provide critical rearing habitat for fish, consisting of lowflow, cold water, and cobble substrate. Coho and steelhead are present in

Toboggan Creek during winter. The fish communities of the Kathyln Creek and Toboggan Creek watersheds were found to be the most diverse of the study area.

Fish communities and fish habitat are protected under several forms of federal and provincial legislation, including the federal *Fisheries Act*. The *Fisheries Act* prohibits the harmful alteration, disruption, or destruction of fish habitat through physical, chemical, or biological means.

Potential Effects and Mitigation

The Project has potential to affect the aquatic environment through the installation of stream crossings along the haul road and utility corridors, installation of the treated mine water diffuser in the Bulkley River, and the discharge of treated mine water and sewage effluents. Blue Pearl will follow federal and provincial guidelines to avoid harmful effects on the aquatic environment. Mitigation strategies to avoid and minimize potential effects will focus on:

- provision and protection of riparian buffers adjacent to watercourses;
- control of soil erosion and sediment runoff water;
- control of rates of water runoff to minimize impacts on watercourses;
- control of instream work, construction and diversion of watercourses;
- maintenance of fish passage in watercourses for all salmonid life stages;
- prevention of the discharge of deleterious substances to watercourses; and
- fish habitat compensation.

Blue-listed species: Blue-listed are species that are considered to be vulnerable by the British Columbia Ministry of Environment. Vulnerable species are considered to possess characteristics that cause them to be particularly sensitive to human activities or natural events.

The federal Metal Mining Effluent Regulations, enabled by the *Fisheries Act*, require that metal mines implement environmental effects monitoring studies on the potential effects of effluent on the fish population, on fish tissue, and on the benthic invertebrate community. The requirements of the environmental effects monitoring program include effluent characterization and sub-lethal toxicity testing, water quality monitoring, and biological studies on fish and benthic invertebrate communities. Blue

Rainbow trout (left) and cutthroat trout (right).

Pearl will develop a monitoring program and reporting schedule that complies with all aspects of the Metal Mining Effluent Regulations.

With the implementation of proper mitigation procedures, few residual adverse effects on the aquatic environment are predicted for the Project. Potential residual effects to aquatic life and their habitats during the construction, operation, and decommissioning of the Project may be generated from metals toxicity, eutrophication, and increased turbidity and sedimentation. All residual adverse effects were classified as low to negligible because of the low magnitude and limited spatial extent of the potential effects.

Vegetation and Plant Communities

Baseline Conditions

Three biogeoclimatic subzones/variants are present within the Project study area: the Engelmann Spruce Subalpine Fir Wet Very Cold subzone, Interior Cedar Hemlock Moist Cold Nass variant, and Sub-Boreal Spruce Dry Cool subzone. Mesic and wetter forests are the most common of the natural ecosystems present in the study area. Vegetated and non-vegetated anthropogenic features such as agricultural/cultivated fields, rural areas, and roads also form a large proportion of the area.

Source: P. Bartemucci (2006).

Blue-listed moonwort (left) and moss (right).

Young and mature forests are most abundant in the Project area. Younger forests are largely represented by a mix of conifer and broadleaf tree species, or stands that are mainly broadleaf-dominated. Mature forests are primarily conifer-dominated, with some mixed conifer-broadleaf stands present as well.

Sensitive ecosystems within the Project area include wetlands, very wet forests, and ecosystems that form the Toboggan Fan, which is a proposed sensitive area. Two rare or regionally significant plant species were found in the Project area, both tracked by the BC Conservation Data Centre:

one blue-listed moonwort (*Botrychium crenulatum*) and one blue-listed moss (*Oedipodium griffithianum*).

Potential Effects and Mitigation

Development of the mine site and haul road will result in localized but long-term changes to vegetation and ecosystems, including disturbance of the blue-listed *Botrychium crenulatum*. The haul road alignment has been designed to pass along the western edge of Toboggan Fan, minimizing direct effects to this sensitive ecosystem. The preferred mitigation option for disturbance to *Botrychium crenulatum* will be to collect the affected specimens and submit them to a herbarium. Blue Pearl will implement mitigation strategies to minimize fugitive dust generation, thus reducing the effects of dustfall on vegetation and soil, and will also implement an invasive species management plan.

The effects of replacing ecosystems by infrastructure for the life of the mine are reversible over the longterm following implementation of the reclamation plan, which includes soil salvage and stockpiling prior to construction and progressive re-vegetation of sites throughout the life of the mine and upon closure.

Wildlife and Wildlife Habitat

Baseline Conditions

Baseline studies to characterize the terrestrial wildlife community and to identify wildlife habitats within each of the biogeoclimatic zones associated with the Project footprint were undertaken from June 2005 to June 2006. Wildlife habitat suitability mapping was carried out to assess wildlife habitat for five focal species: mountain goat (*Oreamnos americanus*), moose (*Alces alces*), grizzly bear (*Ursus arctos horribilus*), black bear (*Ursus americanus*), and American marten (*Martes Americana*).

Mountain goats (left) and moose antler rub tree (right).

Five species of conservation concern were identified as occurring or potentially occurring within the Project footprint, including:

- Western toad *(Bufo boreas)*;
- Barn swallow *(Hirundo rustica)*;
- Northern long-eared myotis *(Myotis septentrionalis)*;
- Fisher *(Martes pennanti)*; and
- Grizzly bear *(Ursus arctos horribilus)*.

Potential Effects and Mitigation

The effects assessment considered the potential for effects on mountain goat, moose, black bear, American marten, snowshoe hare, bats, migratory birds, raptors, and Western toad. The Project could affect these species through the direct loss of habitat by the replacement of ecosystems with mine infrastructure, disturbance from mine activities, mortality from vehicle/wildlife collisions, and features such as wastes attracting wildlife and putting them into conflict with Project activities. Mitigation measures to avoid or minimize adverse effects will include:

- wherever possible, avoiding Project activities that may disturb wildlife during sensitive periods;
- retaining vegetation around the mine site, loadout facility and along the haul road to assist in attenuating noise pollution and to provide screening cover for wildlife using habitats adjacent to the Project footprint;
- restricting access to mine property including the haul road, mine site, and loadout facility to vehicles required for mine operations;
- posting and enforcing speed limits along the haul road;
- maintaining a cleared buffer zone of three metres along the access road to provide a line-of-sight for traffic;
- using sand or stone chippings as the preferred methods to provide winter traction, with minimal use of road salts to avoid attracting ungulates to the road;
- avoiding snow windrows longer than 100 metres wherever possible to allow wildlife escape routes from the road;
- giving right-of-way to wildlife on the haul road (all traffic on the haul road will be directed via radio);
- monitoring and reporting wildlife observations and incidents along the haul road - these records may reveal areas along the haul road where adaptive management, such as widening the line-of-sight, is needed;
- strictly enforcing a no-hunting policy on mine property, and no personal firearms will be permitted within project areas;
- implementing an employee education program; and
- scheduling deactivation of the haul road and all non-essential facilities at the mine site upon mine closure, followed by habitat reclamation.

It is predicted that residual effects will be restricted to moose and black bear, as a result of direct mortality from collisions with mine traffic along the haul road and along Highway 16. Indirect mortality may also occur as a result of illegal hunting along the new haul road. The significance of the residual effects at the population level was assessed as low.

Historical trappers shelter (left) and trap tree (right).

Heritage and Cultural Resources

Baseline Conditions

There are two previously recorded archaeological sites near Hudson Bay Mountain, both containing pre-contact artifacts. Fifteen further sites were recorded during the 2005/2006 archaeological baseline study carried out for the Project: two culturally modified tree sites, ten segments of cultural trails, two trapping sites, and one historical structure.

Potential Effects and Mitigation

The Project as currently assessed will not affect any known heritage or cultural resources. However, the area where the utilities corridor approaches the Bulkley River has been identified as having moderate to high archaeological potential for deeply buried archaeological deposits. Developments in these areas that involve subsurface excavation have the potential to disturb or destroy unrecorded archaeological sites, if present.

A Registered Professional Archaeologist will assess the potential for unrecorded archaeological sites along sections of the new alignment that fall outside of currently assessed areas. To address the possibility that archaeological sites may be disturbed during the construction of the utilities corridor near the Bulkley River, archaeological monitoring will be conducted by a Registered Professional Archaeologist during ground-altering activities. An Archaeological Chance Find Recovery Procedure will also be implemented during the construction phase to address the possibility of archaeological deposits becoming exposed. With implementation of the mitigation measures, the Project is not expected to have any residual adverse effects on archaeological or heritage sites.

Land and Resource Use

Baseline Conditions

The Project lies within the boundaries of the Bulkley Land and Resource Management Plan, and is also governed by more localized Landscape Unit Plans. Land tenures in the study area include mineral claims and licences (including those held by Blue Pearl), guide outfitting and trapping licenses, and a grazing license. The Ski & Ride Smithers alpine ski hill development is located south of the Project area. Well-established hiking, mountain biking, and cross-country skiing trails and routes comprise non-tenured recreational uses. There are four Forest Recreation Sites near the Project. The Twin Falls/Glacier Gulch site is the only one that overlaps with the existing Davidson mineral lease, and this site is popular with residents of Smithers as well as being a popular tourist site in the Bulkley Valley.

Potential Effects and Mitigation

The effects assessment considered potential effects on recreational land use;, Crown Land tenures (including guide outfitting and trapping);, residential activities (including private property and residential traffic);, and agriculture (including cattle and the Agricultural Land Reserve). With respect to land use effects, tThe most significant components of the Davidson Project are the construction and use of the new haul road, the closure (and eventual decommissioning) of the existing switchback road to the 1066 Adit,; and the discharge of treated mine water to the Bulkley River. The use of residential streets, including Glacier Gulch and Lake Kathlyn roads, by employee traffic was also determined to be significant. Mitigation measures to minimize potential effects include:

- management plans to facilitate continued access to affected areas, for both recreational and tenured land users;
- safety protocols and mechanisms for use of residential streets/junctions by industrial (*e.g.* haul) traffic, to maintain safe residential road use for traffic and on-road recreation;
- use of noise and dust control measures, to maintain quality of recreational and tenured activities;
- facilitationpromotion of employee ride-sharing, to minimize the amount of traffic on Glacier Gulch and Lake Kathlyn roads during shift-change periods;
- water quality monitoring, to ensure accuracy of predicted water quality for agricultural use; and
- negotiations and compensation, with property owners and tenure holders, as needed.

The Project is expected to have residual effects associated with the closure of the existing switchback road, noise and dust generated during construction, and additional traffic in residential areas. All residual effects were determined to have low or negligible significance, with the following exceptions:

- closure of the existing switchback road will affect public access to recreational areas (medium significance during construction and operations, high significance following closure);

- closure of the existing switchback road will affect access to a tenured trapline (medium significance following closure);
- increased employee traffic during operations will increase road hazards for on-road recreation and alter residential traffic patterns (medium significance); and

All residual effects are restricted to the Project area, including the mine site and loadout, haul road, utilities corridor, existing switchback road, and Glacier Gulch Road. However, restricting access to backcountry recreation and tenured areas via the existing switchback road may have an indirect effect of decreasing recreational and trapping activities over a larger area.

Visual Quality and Aesthetics

Sources of Visible Effects

Potential effects on visual quality are related to the physical presence of Project infrastructure and any activity occurring on or within that infrastructure. Areas of the Project that are visible may detract from the visual quality of the area. Three potential sources were identified that may produce visible effects from the Project:

- the physical presence of Project infrastructure;
- lighting from Project infrastructure; and
- emissions from the underground mine and other Project infrastructure.

Potential Effects and Mitigation

Physical Presence of Infrastructure

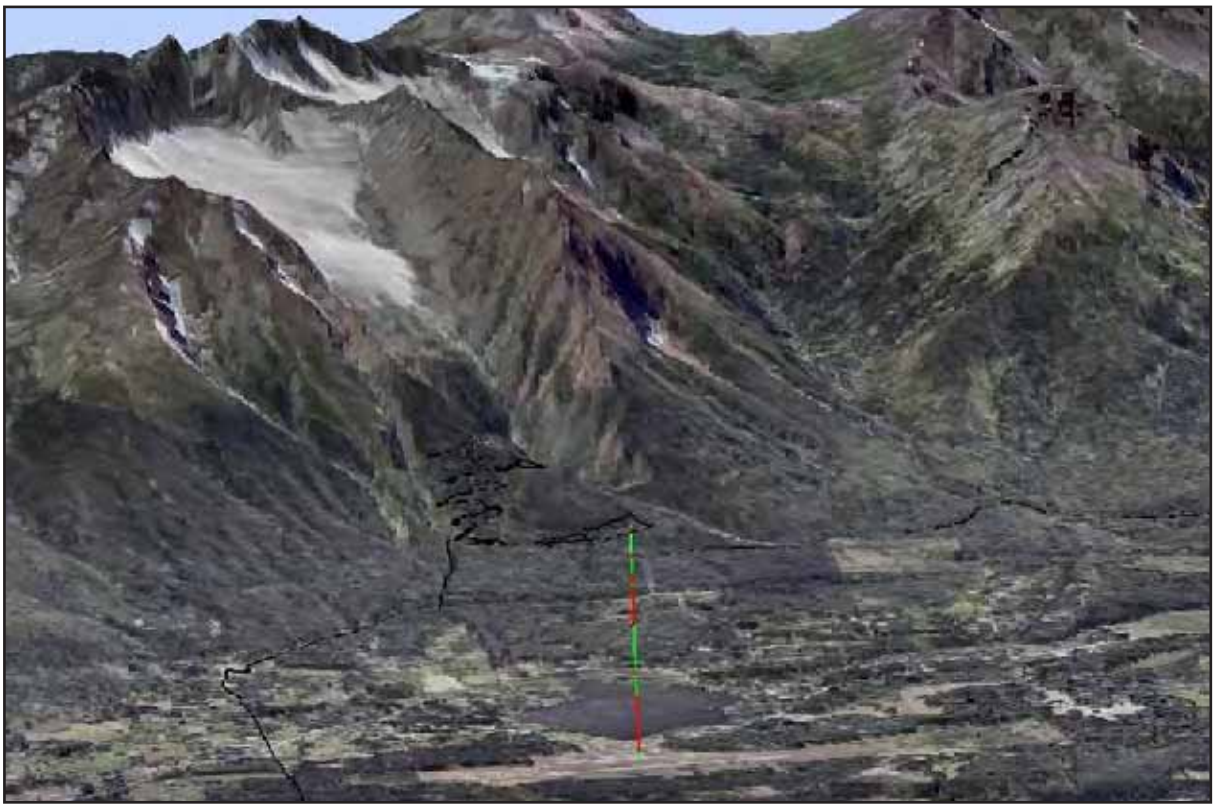
A visibility assessment of the proposed mine site and loadout facility and the proposed haul road was carried out using computer modelling software. Infrastructure at the mine site and loadout will be somewhat visible from some locations, including the Smithers Airport, Smithers goat statue, Adams Igloo viewpoint, and Smithers golf course. The mine site and loadout are not projected to be visible from Lake Kathlyn or Evelyn Hall. To minimize visual effects the loadout will be designed (material type and colour) to blend into the mountainside as much as possible, and soil stockpiles and cut slopes will be re-vegetated.

The northern end of the haul road may be visible from certain locations along Highway 16, but will not be visible from any of the viewpoints assessed or from the Bulkley River.

Infrastructure along the utilities corridor will be buried, and the area will be progressively reclaimed and re-vegetated; therefore, visual effects are not expected. In addition, the utilities corridor follows existing transmission line and road rights-of-way, thus minimizing new disturbance.

Lighting from Project Infrastructure

Lighting may be visible from certain locations and could affect visual quality at night. Lighting is not expected to affect visual quality from the perspective of the viability of the tourism and



Computer-generated line-of-sight analysis from Smithers Goat Statue looking northwest (top) and Smithers Airport looking northwest (bottom).

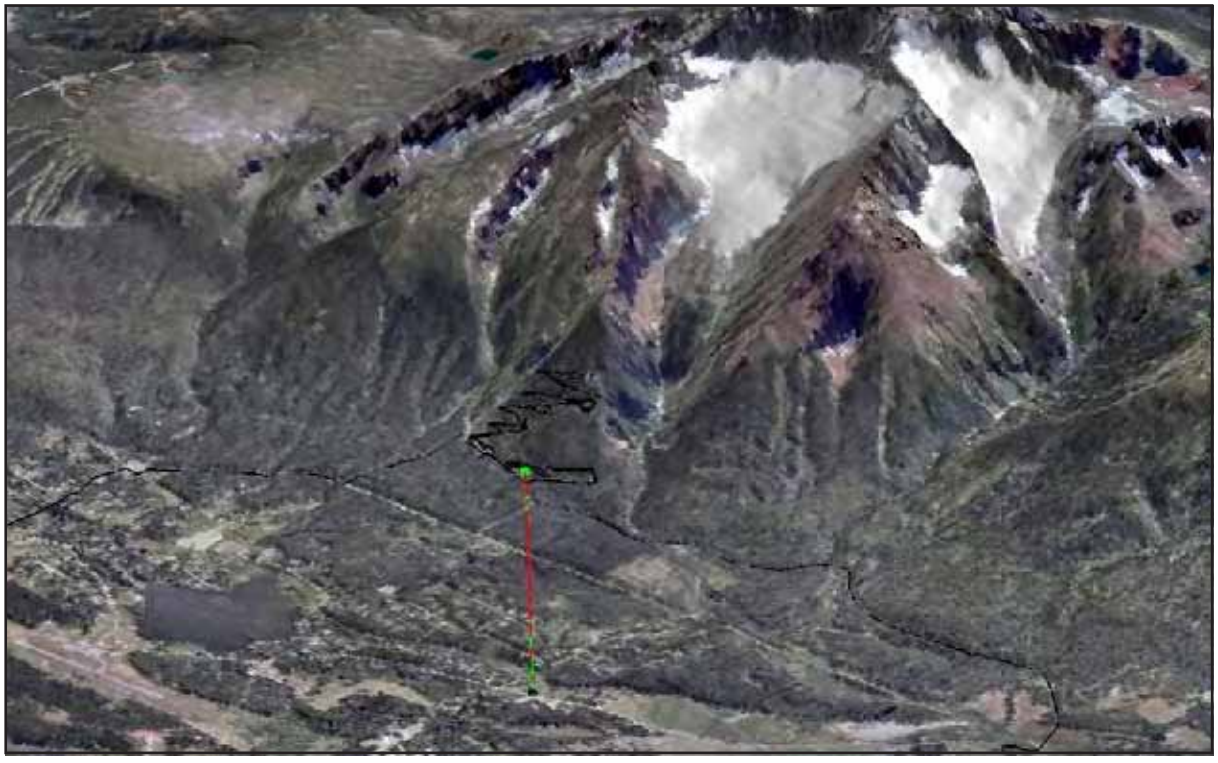
recreation sector; however, it may be a nuisance to local residents. The lighting used at the mine site will be designed to minimize potential visual impacts while ensuring safe operational conditions. The final lighting design will include the following considerations:

- the level of illumination will be the minimum required for the task;
- directed lighting rather than broad area lighting will be used wherever possible;
- lighting will be shielded and directed downwards using full cut-off fixtures; and
- lighting will only be switched on when it is necessary for safe mine site operations.

Emissions from the Underground Mine and Other Facilities

When ambient air temperatures are below 2°C, it is expected that condensation will form as air from the underground mine is exhausted out the portal of the 700 Adit. A cloud would only be visible if the condensation has not dispersed enough by the time the air rises above tree height. Since condensation is most likely to occur in the winter months, the visibility of the cloud would be masked against the white background of the snow-covered mountain and vegetation. Low-lying cloud is a natural phenomenon in the Bulkley Valley and fog regularly disrupts flights at the Smithers Airport; therefore, even if a small condensation cloud is visible, it should not detract from the visual experience of a person appreciating the local scenery of Hudson Bay Mountain.

Fugitive dust generated during construction, ore handling, and from trucks travelling on the unpaved haul road may also be visible from some locations. Construction areas and the haul road will be watered during dry periods to minimize dust generation.



Computer-generated line-of-sight analysis from Adams Igloo Viewpoint looking southwest.

Socio-economic and Community Effects

Baseline Conditions

In addition to biophysical environmental considerations, the environmental assessment process incorporates socio-economic factors to assess potential human environment effects from the pProject on provincial, regional, and local communities. The Project is located nine kilometres northwest of the town of Smithers, situated within the Bulkley-Nechako Regional District of northwestern British Columbia.

In 2006, BC Stats reported the population of the Bulkley-Nechako Regional District to be 38,243 persons, representing less than 1% of the total provincial population. Approximately 48% of the population reside within the boundaries of the eight major communities in the region, while the remaining majority are reported to live in unincorporated areas. The population of the district declined by 6.4% between 2001 and 2006.

Similar to the larger northwest region, the Bulkley Valley is reliant on natural resources and consequently has been subject to both economic booms and busts over time. Economic activity has been centred on forestry, mining, tourism, and agriculture. In 2001, the Bulkley-Nechako Regional District had a labour force participation rate of 70.3%, higher than the provincial rate (65.2%). With the expected closures of the Eskay Creek and Huckleberry mines, significant numbers of residents from the primary study communities may lose their current jobs by 2010, including an estimated 173 job losses in Smithers and 30 job losses in Telkwa.

A number of common issues are evident among the primary study communities, including:

- declining populations, largely in response to the loss of economic opportunities in the forest industry and uncertainty about future resource related opportunities;
- high rates of home ownership and occupancy in single-detached family homes;
- low average incomes, but relatively high median incomes for males and low median incomes for women compared to the province generally (the exception is Smithers, where the income of women is essentially on par with provincial median);
- limited educational options in the northwest;
- relatively low levels of education and skills development;
- significant employment in high-risk occupations characterized by a greater likelihood of fatal accidents;
- relatively high levels of crime, namely spousal assault, serious drug offences, juvenile property crime and total serious juvenile crimes; and
- high rates of school drop-outs and teen pregnancies.

These issues characterize the socio-economic environment of the primary study communities as a group and are also the basis for many individual community concerns.

Potential Effects and Mitigation

Employment and Income Generation Opportunities

Blue Pearl expects to employ an estimated 200 people during the 18-month period of construction. Construction employment will mostly be short-term contracts as opposed to full-time positions.

During operations, Blue Pearl expects to employ approximately 90 people at the mine site, and the majority of these employees will be hired directly by Blue Pearl. With an additional 35 haul truck drivers, a total of approximately 125 people will be employed during operations. Employment is predicted to be reduced to 15 people during decommissioning, further decreasing to only two at closure for maintenance of the water treatment facility. Supplier contracts will also end at this time, except potentially in areas such as environmental monitoring, but these contracts will be small.

Mitigation tTo enhance to benefits during operations and construction will include, Blue Pearl will implement a local hiring policy to maximize the number of local hires and the potential income generating opportunities for the local population.

At closure, the loss of jobs and income is expected to have a low but adverse impact. The magnitude of this effect will be determined by the strength of the economy and employment opportunities at the time of pProject closure, and will be limited primarily to employees and their families. Blue Pearl will also provide assistance to employees in the form of transition workshops to helping employees to find further work upon Project closure.

Skills and Training Opportunities

The Project is expected to generate demand for a wide range of skills resulting in increased employment prospects for skilled workers during the construction and operations phases. Employees will receive on-the-job training and skills development through employment both at the Project and as a result of indirect and induced employment experience.

Blue Pearl will implement a Skills Development and Training Plan to further enhance training and skill development. A local skills inventory will allow for the development of training programs whichthat will enable increased hiring from within the local area.

Blue Pearl expects ongoing skill development and training throughout the Project , as well as transition workshops, to help workers in finding new employment and opportunities for skills and training development upon Project closure.

Business and Economic Development Opportunities

The construction phase of the Project will provide opportunities for local and regional businesses to fill construction and service contracts. The primary business contract opportunities during construction will be for general earthworks, tree felling, road-building contracts, and construction of the load-out and water treatment facilities. The primary contracting opportunity during operations will be for trucking.

Following the expiration of most contracts at closure a decrease in business opportunities is expected, with the exception of some maintenance and monitoring, which will continue beyond closure of the mine. Additionally, business opportunities could also decline if reductions in

indirect and induced economic activity result in decreased demand for goods and services. This would translate as a general decline in economic development and diversity at closure. The potential exists for low adverse residual effects on business and economic development opportunities at closure.

Blue Pearl has developed initiatives laid out in a Suppliers and Contractors Plan to source materials and contractors from the regional area enhance the positive effects of business opportunities. This plan includes also includes holding business fairs locally and advertising expected contracting needs to increase the accrual of business opportunities to the local area.

Population and Community Infrastructure and Services Change

As a result of the employment and skills and training opportunities it is possible that the population will increase in response to the pProject. Blue Pearl's local hire policy is expected to minimize the potential effects of population change as a result of in-migration. As at least a small degree of population change is likely, Blue Pearl employees will be required to participate in cross-cultural training, which will assist in mitigating potential effects of change in community relations due to changes in population size and demographics.

An increase in population during construction and operations could also exert pressure on community infrastructure and services if existing capacity is already stretched. Most of these communities however have sufficient capacity in most areas to increase their populations, except in terms of housing, and as such there is potential for moderate level adverse residual effects. In response, Blue Pearl has formeddeveloped a Community Development Plan whichthat will include a Community Advisory Panel. The panel will be comprised ofhave community members, NGO representatives, service providers, community based organizations, and Blue Pearl representatives. It will help Blue Pearl identify ways of investing into the local community and supporting support community development projects contributing to community well-being. The company will also offer its employees a range of health services alleviating any community resource pressures in this area.

Quality of Life

The concept of quality of life is founded upon aspects of an individual's well-being that relate to such factors as work responsibilities, finances, health, family and social life, and environmental conditions, as well as by one's perception of these conditions. For the Project assessment, quality of life was evaluated through the following socio-economic/cultural parameters:

- change in employment status and income;
- change in cost of living and purchasing power;
- changes in the environment; and
- change in road traffic and safety.

These factors have been identified through baseline studies and community consultation as important values and concerns to the local residents. Overall, there should be an improvement in human quality of life due to Project development. Improvements to quality of life will be felt most directly by employees and their families as a result of direct access to job and income opportunities. However, the wider communities will also benefit from indirect and induced economic effects from

the pProject. Higher earnings, as well as the potential for an increased population, may lead to an increase in the variety of goods and services being made available.

Potential adverse effects also exist. It is also possible that there will be increased demand for goods and services, putting pressure on existing supplies and generating price increases. While local hiring is hopedwill help reduce housing market pressures which often drive inflation, it is possible that inflationary pressure will be sustained as a low adverse residual effect.

Similarly, adverse effects can develop from shift work, and increased income whichthat may lead to anti-social behaviour during the construction and operation phases; although anti-social behaviour is more common in fly in/out operations it remains a possibility. The loss of job opportunities and income at Project closure could also affect quality of life. Mitigation measures such as Life Skills Training, Drug and Alcohol Zero Tolerance Policy, Drug and Alcohol Prevention Program, and transition workshops at Project closure will help mitigate these potential effects. Potential Residual effects are rated as low significance.

Traffic and construction on roads within the immediate Project vicinity will affect the residents of this area, and a change in community nature will likely be perceived by the residents. The traffic and construction disruption will be felt during construction, operations, and also, to a lesser extent, at closure, although to a lesser extent. Residents may feel that these time-specific effects have long-lasting effects on the community's nature. The significance of this potential adverse residual effect is medium. Mitigation activities include following best practice environmental management, promoting employee ride-sharing, and supporting initiatives to enhance community well-being deriving from the Community Development Plan.

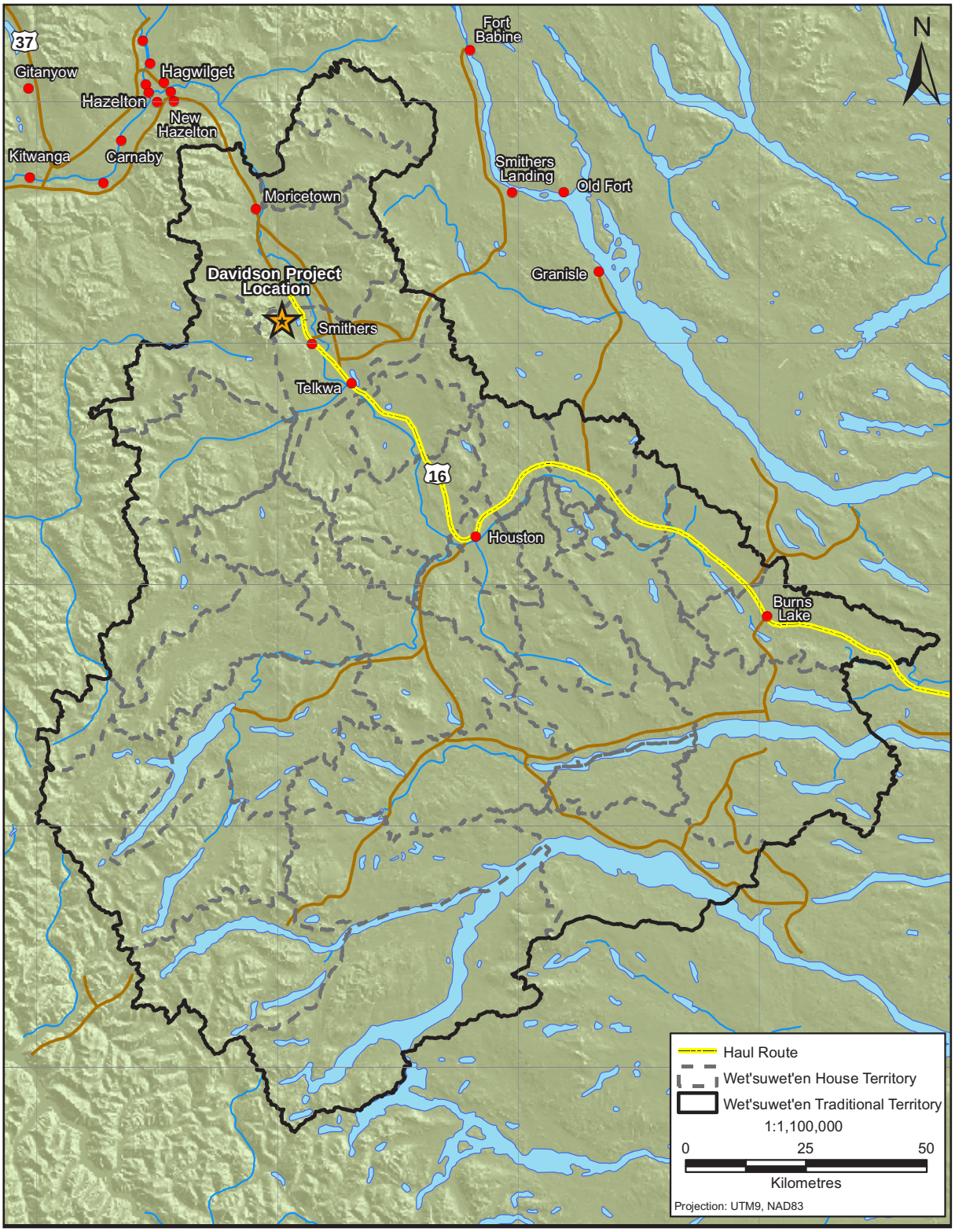
Wet'suwet'en Effects

Baseline Conditions

The Project falls within the traditional territory of the Wet'suwet'en, which has an estimated total membership of 5,000 peoples. As part of the environmental assessment process, Blue Pearl are required to evaluate the potential socio-economic and land use effects of the Project on the Wet'suwet'en, including the on-reserve communities of Moricetown and Hagwilget. Moricetown and Hagwilget are both on Highway 16, respectively located approximately 30 and 70 kilometres northwest of Smithers, B.C. Both these communities are represented by the Office of the Wet'suwet'en.

The on-reserve population at Moricetown is estimated between 600 and 700 persons, and was reported to have increased by about 20% since 2001; however, anecdotal evidence suggests the population is in early stages of decline, with growing levels of out-migration in response to the lack of employment opportunities and housing. In Hagwilget, the on-reserve population is estimated to be between 200 and 300 persons, and has decreased by about 3% since 2001. A number of Hagwilget residents have recently emigrated to larger centres due to housing pressures.

In Moricetown, the majority of residents are classified as labourers, indicating incomplete high-school education and little job experience, followed by vocational workers, with up to two years of on-the-job training. Skill levels in Hagwilget are slightly higher, with a majority of vocational



Wet'suwet'en Traditional Territory

workers, followed by technical workers, with post-secondary, apprenticeship, and/or significant job experience.

Participation Agreement

Negotiations between Blue Pearl and the Office of the Wet'suwet'en are ongoing as both parties work towards a Participation Agreement. The outcomes of the negotiations are unknown at present, but Blue Pearl would like to address items such as hiring, education/training, scheduling, and revenue-sharing in a Participation Agreement with the OW.

ly undefined***Potential Effects and Mitigation***

Employment

The majority of employment effects will be positive, including increased employment opportunities for Wet'suwet'en residents. However, the potential for barriers to employment remains. Vulnerable groups, including low-income individuals and those with low levels of education and training, may be particularly affected. A relatively small group of people will be affected after mitigation measures have been applied; however, these issues are pre-existing, and depend on many factors external to the Project.

Mitigation will include the establishment of minimum First Nations hiring targets, offering employment information sessions in the Wet'suwet'en communities, and ensuring the development of transferable skills. Potential residual adverse effects include decreased access to employment opportunities (due to pre-existing socio-cultural barriers) during construction (low significantce) and operations (medium significance);, and the loss of employment opportunities at closure (low significance).

Business Opportunities

The majority of business effects will be positive, including an increased number of business opportunities for Wet'suwet'en residents and businesses. Blue Pearl will encourage local and Wet'suwet'en businesses to provideing contracting, supplies, and other services related to the Project. However, but, Wet'suwet'en access to business opportunities may be limited by pre-existing socio-cultural barriers. This may be particularly evident when Wet'suwet'en businesses are put in competition with larger, more experienced contractors. The loss of business opportunities at closure is also a potential effect.

Mitigation will include business information sessions in the Wet'suwet'en communities, sponsoring a business development program, and the consideration of First Nations participation when evaluating contracting proposals. However; however, socio-cultural barriers may still inhibit Wet'suwet'en access to business opportunities (low significance);, while the loss of business opportunities at closure may also be a residual effect (low significance).

Skills and Training

The majority of expected effects on skills and training will be positive, although after Project closure opportunities for skills development and on-the-job training will be lost. As job-specific

training and experience is important for many residents—who may not achieve formal education and training—this is expected to have a moderate impact for Project employees; however, skills developed in mining are transferable to other industries. Mitigation will include training and documentation of transferable skills, and significance is expected to be low.

Income Generation

The majority of changes to income are expected to be positive, with the exception of the loss of income at closure. The magnitude of this effect will be determined by the strength of the economy and employment opportunities at the time of closure, and will be limited primarily to employees and their families. Assuming the present growth in economic opportunities continues, including in the mining industry, new employment opportunities should be available and Blue Pearl will aid employees in finding new work. Thus, significance is expected to be low.

Community Well-being

The greatest number of potential residual adverse effects relate primarily to community well-being, including social dysfunction and the removal of labour (paid and unpaid/household) from the community. These issues are noted to currently exist in the community, the roots of which may be outside the scope of influence of Blue Pearl and the Project (*e.g.,* legacy effects of residential schools, income inequalities, vicious cycles of substance abuse, violence, low self-esteem and other issues).

The Project may exacerbate the baseline situation through shift scheduling and increased incomes. While the magnitude of this effect may potentially be high overall, and will have implications for the entire community, deviation from the baseline situation is expected to be less. Significance during operations is predicted to be low -to -medium, depending on local capacity and resources to address these issues.

Increased pressure on household labour is also a concern, particularly the provision of child-care while parents are employed, as well as care for elders and other household duties. No mitigation is proposed for this effect, and sSignificance is predicted to be low during construction, and medium during operations.

The loss of skilled workers from other roles in the community, including administration and social services, will be largely mitigated by a recruitment scheme targeted at the unemployed population. However, there will undoubtedly be incentive for residents working in other areas to seek higher-paying jobs with the Project. Significance is expected to be low.

Accumulation of the above effects may result in increased pressure on existing community resources, including health and social programs. Income inequalities within the Wet'suwet'en community may also be seen, and may result in varying levels of access to goods and services. No mitigation is proposed, and sSignificance is expected to be low during construction, and medium during operations.

Cultural Sustainability

There is potential for the loss of traditional values as a result of integration into a mixed (First Nations and non-Aboriginal) workforce during operations, as well as transition from a subsistence to wage economy. In the longterm, a degradation of cultural values may affect the wider Wet'suwet'en community (and the culture of future generations), and may be irreversible if it persists. The potential loss of traditional values will be mitigated by cross-cultural training in the workplace, and significance is expected to be low.

Decreased participation in traditional activities, including hunting and fishing, may also result from increased employment. No mitigation is proposed, and residual significance is low. However, tThis effect may be balanced by a potential increased participation in these activities, due to increased incomes and access to equipment, and successive days off work.

Land Use

The effect of noise, dust, and industrial presence near the Project may have a detrimental effect on the quality of land use activities. While noise and dust can be controlled by the implementation of the mitigation measures discussed previously, residual effects will remain. However, effects will be periodic in nature, will only be apparent to land users in the immediate vicinity of the Project, and will be fully reversible. Significance is expected to be low.

Noise

Baseline Conditions

Potential noise effects are an important concern to local residents due to the proximity of the Project to residential areas. Through the consultation process, residents identified the "peace and quiet" associated with the rural nature of the local area as an important attribute.

Average baseline noise levels in Smithers at receptors along the proposed haul route (Project haul road and Highway 16 corridor) range from 24.6 decibels to 56.4 decibels. Average baseline noise levels at the closest residence to the mine site are approximately 40 decibels during the day and 25 decibels during the night.

Noise Guidelines and Perception

An increase of 3 decibels is just barely perceptible by the human ear, a difference of 5 decibels is noticeable, and a change of 10 decibels is perceived as twice as loud.

British Columbia does not have any regulations or guidelines for community noise, other than noise ordinances in cities like Vancouver, which would not be appropriate for the Davidson Project. Ontario has the most established and complete noise guidelines in Canada. Ontario puts a lower limit on the sound levels they control, and in most areas this limit is 45 decibels. In rural areas, any sound level of 40 decibels or below is considered acceptable at night (there is a higher limit during the day), no matter what the existing ambient may be. The lower limit is set at a point where the sound should not interfere with normal activities such as conversation, sleeping, *etc*. Ontario has a blasting guideline of 120 decibels.

Potential Effects and Mitigation

Two noise modelling studies were carried out for the Project, one to estimate the noise effects related to haul truck traffic along the new haul road and along Highway 16, and one to estimate the effects related to day-to-day activity at the minesite, including blasting.

Haul Road

The model results indicate that the addition of Project haul traffic will have negligible effects on noise levels along Highway 16. Potential effects will be higher for the few residences located near the intersection of the haul road with Highway 16.

To reduce the effects of haul traffic, the speed limit (40 kilometres per hour) will be posted and enforced along the haul road, and use of engine brakes will be avoided by haul truck drivers, especially near residential areas and at night, when ambient noise levels are low. During operation noise will be monitored at the closest residence to the haul road to ensure that truck noise is within the level predicted.

Mine Site and Loadout

Day-to-day activities at the mine site, including construction activities, ore handling, and operation of the mine ventilation fans, could increase noise levels and disturb nearby residents. To reduce noise, the ore loadout facility will be specially designed to minimize noise. All mine equipment and haul trucks will be subject to a thorough maintenance program to ensure vehicles operate at minimum noise levels. The largest change in noise levels at the mine site are likely to occur during the construction phase during the night, although noise levels are predicted to remain below 45 decibels.

Blasting was modelled at the surface, and at 100 metres and 300 metres into the 700 Adit. The surface blast represents the worst-case scenario; as construction extends underground, noise from the blasting will be muffled by the mountain. Noise from the surface blast was modeled to be 115 decibels at the nearest receptor, below the Ontario guideline of 120 decibels. The effects of blasting noise will be mitigated by limiting the blasts to twice per day and providing the public with a blasting schedule that will include the days and times that the blasting will occur. To help residents prepare for the blast noise, blasting times will be scheduled for the same time period each day. The noise from blasting will decrease as work progresses farther underground.

Health Effects

Project development and operation could affect environmental media such as air quality, noise levels, drinking water, and country foods. Changes in these media have the potential to affect human health.

Air Quality

Air quality is a current concern in the Bulkley Valley, with the pollutant of greatest concern being particulate matter. The existing major sources of particulate matter in the region are smoke

(from sources such as beehive burners, forest harvest debris burning and residential heating) and fugitive dust (especially in early spring due to sand on roads from winter traction control).

The effects assessment found that the Project will have negligible health effects for all air quality parameters evaluated except for particulate matter. Blue Pearl will implement a fugitive dust management plan, including regular road watering during, dry periods (*e.g.*, summer), to minimize the generation of fugitive dust from the mine site and loadout facility and along the unpaved haul road. After mitigation the significance of effects from potential increases in particulate matter is low.

Noise

The results of the noise modelling carried out for the Project are described in Chapter 6, Section 15. Although the predicted noise levels do not exceed guidance values, increased noise levels may be a nuisance to affected residents.

Daytime outdoor truck pass-by noise will be detected by people who live within 500 metres from the haul road. There is one confirmed residence that is approximately 400 metres from the centerline of the haul road. The maximum pass-by truck noise levels along the haul road are predicted to occur four times per hour during the operation phase of the Project. Although there is no maximum noise level guideline for daytime pass-by noise, the truck noise may be an irritant. The significance of this effect was rated as low to medium.

Truck pass-by noise will be mitigated by enforcing speed limits. During operation, noise will be monitored at the closest residence to the haul road to ensure that the pass by truck noise is within the level predicted. The people that own the property have been consulted with respect to their proximity to the proposed haul road. They have agreed with the proposed haul road route and are aware that there will be some nuisance noise from trucks passing by. Upon mine development and operation, the residents of the house will be interviewed to identify how they are coping with the pass-by truck noise; this will determine whether adaptive management is required.

Noise levels from surface blasting are predicted to be 115 decibels outside the residence closest to where the blasting will take place (approximately one kilometre away). This level is 5 decibels within the World Health Organization guidelines of 120 decibels. Noise levels inside the residence will be well within these guidelines. As construction extends underground, noise from the blasting will be muffled by the mountain. Overall the level of significance of this effect is considered low to medium.

The effects of blasting noise will be mitigated by limiting the blasts to twice per day and providing the public with a blasting schedule that will include the days and times that the blasting will occur. To help residents prepare for the blast noise, blasting times will be scheduled for the same time period each day.

Drinking Water Quality

The water quality baseline showed that surface water within the Project area includes several parameters that exceed one or more of the regulatory agency drinking water guidelines. Based

on these results a human health drinking water baseline risk assessment was conducted. The risk assessment found that water originating from the existing 1066 Adit is not safe for human consumption at the sampling locations. The unacceptable health risks are primarily due to the elevated levels of arsenic and, to a lesser degree, the levels of molybdenum and antimony at these sampling locations. Due to the elevated levels of arsenic and molybdenum in the adit water, it was recommended that drinking water advisories be posted at the site and workers be advised not to consume the water.

Baseline concentrations of chemicals of potential concern in Glacier Gulch Creek are much lower than the adit water. However, potential unacceptable risks to human receptors were found from exposure to molybdenum. All other parameters evaluated were within the acceptable risk thresholds.

The mine site water management plan is designed to isolate the mine site footprint area from the local watershed to ensure the protection of local water supply. Erosion and sediment control plans will be implemented during mine site and road construction, and during closure and decommissioning activities. Blue Pearl will also implement a Spill Contingency Plan. After mitigation, the significance of effects is rated negligible.

Country Foods

The baseline country foods study predicted no unacceptable risks to human receptors from consumption of moose, grouse, Dolly Varden, salmon, snowshoe hare, cow-parsnip, devil's club, and black huckleberry.

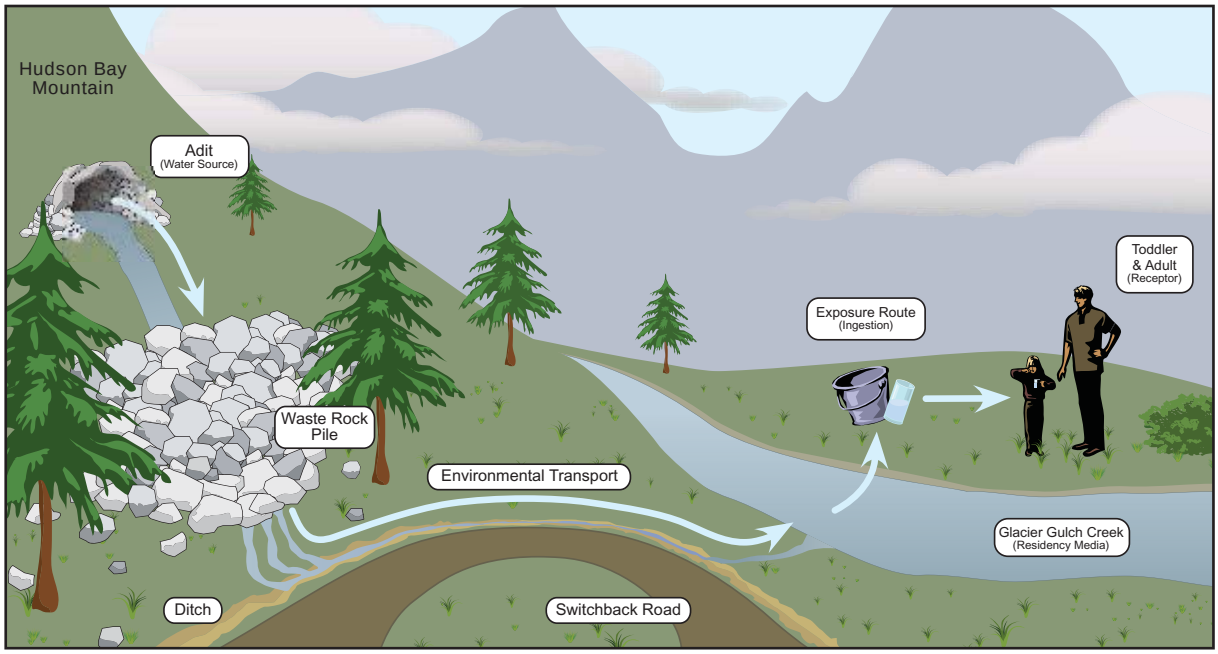
The quality of country foods is directly related to the concentrations in environmental media, such as water, soil, and vegetation. The level of significance of all residual effects on water quality was found to be negligible. Therefore, the nature and extent of effects on country foods from changes in water quality are also predicted to be negligible. Impacts on soil quality from minor fuel spills or surface runoff are not likely to result in uptake of contaminants by plants or animals to a degree that would cause their tissues to be no longer safe for human consumption.

Transportation

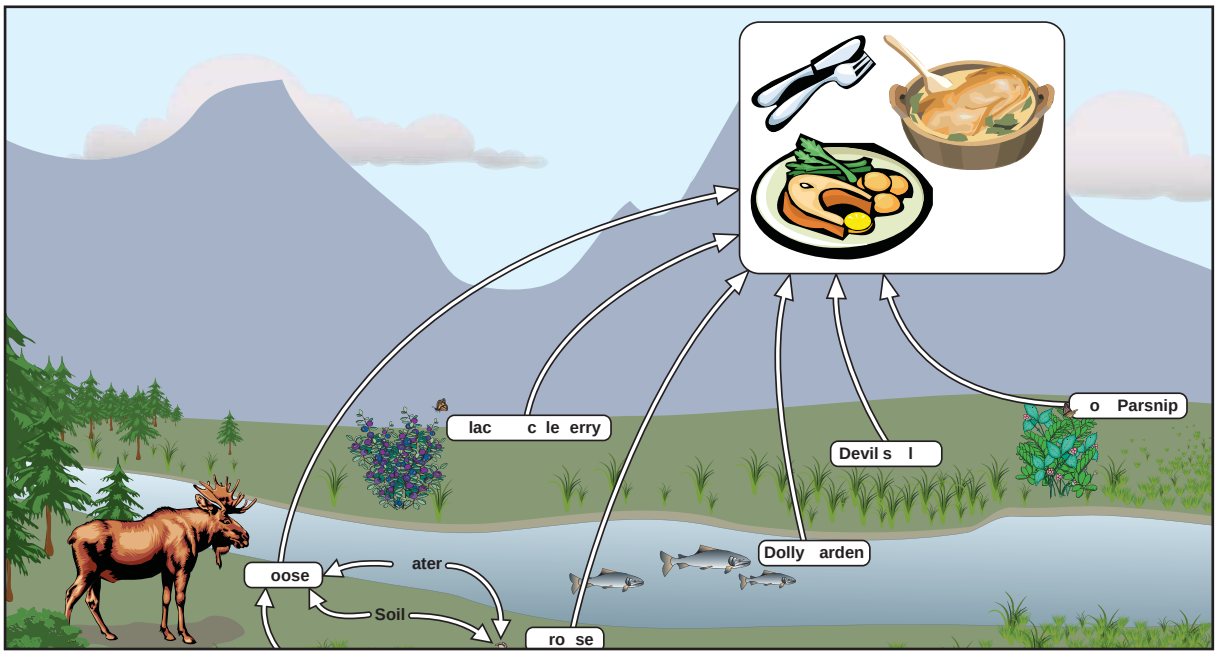
Highway Traffic

Traffic count records published by the BC Ministry of Transportation were reviewed for the length of highway between the proposed haul road intersection with Highway 16 and Endako Mine. At the nearest count station to the proposed haul road entrance, the trend in the annual average daily traffic data represents an average annual growth rate of 2% over the period 1994 to 2001. Additional traffic counts were carried out by McElhanney for the Project in 2006. Traffic volumes at critical locations along the proposed haul route were forecast for the years 2007 and 2017, using a traffic growth rate of 2% applied to the traffic data recorded in 2006.

Haul traffic from the Project is anticipated to be 50 round trips per day. Traffic projections for 2007 indicate that truck traffic generated by the Project would form less than 2% of the total traffic on Highway 16 at the entrance to the new haul road. This percentage would decrease through time, as background traffic volumes on the highway would increase and Project



Conceptual Model of Drinking Water Human Health Risk



Conceptual Model of Country Foods Human Health Risk

generated traffic would remain constant. Project generated trucks are predicted to comprise 24.2% of the heavy vehicles on Highway 16 in 2007. Again this percentage is likely to decrease over time for the same reasons described above. The significance of hauling ore between Davidson and the Endako Mine along Highway 16 was assessed as low for traffic volumes and traffic safety.

Local Road Traffic

Employees and service vehicles will access the mine site via Lake Kathlyn and Glacier Gulch roads. Employee traffic at shift changes would substantially increase traffic along these roads compared with baseline conditions. While the road network can accommodate this increase in traffic volumes, the higher volumes on the roads will lead to a potential increase in traffic safety issues and accidents. The significance of increased traffic along Glacier Gulch Road during shift changes was assessed as medium for traffic volumes and low for traffic safety.

Navigable Waters

Protection of Navigable Waters

Transport Canada defines navigable waters as any inland or coastal waters capable of being navigated by floating vessels of any description for the purpose of transportation, commerce, or recreation. Navigable waters were assessed because the public right to navigate Canadian waterways is protected by the *Navigable Waters Protection Act*. From this Act, any works to be built or placed in, on, over, under, through, or across navigable water have to be approved by the Navigable Waters Protection Program.

Stream Crossings

The Project will require twenty-one stream crossings along the proposed haul road and pipeline alignments, plus installation of the treated mine water pipeline diffuser in the Bulkley River. Based on stream dimensions, seven crossings were identified as potentially navigable, and were submitted to Transport Canada for review. In July 2007, Transport Canada responded that each of these crossings was considered non-navigable. It should be noted that the stream crossings submitted to Transport Canada were based on the original haul road alignment. However, the re-alignment of the haul road has not substantially changed the locations of the crossings on the large creeks, and in general the crossings have moved farther upstream and therefore should not be navigable.

Pipeline Diffuser in Bulkley River

The Bulkley River is a navigable river and as such installation of the diffuser will require approval through the Navigable Waters Protection Program. It is likely that the diffuser will be installed outside the boating season (*i.e.*, during winter low flow). If installed during the boating season, special measures (*i.e.,* signage) may be required to warn boaters of activity in the area. Regulations state that the diffuser can only span half the channel width; therefore, even during installation half of the channel, which is 80 metres wide at the proposed location, would be open for navigation. Once installed, the diffuser will be buried in the bed of the river and only short, flexible, angled ports will extend out of the substrate. The presence of the diffuser is not expected to have a long-term influence on navigability.

Accidents and Malfunctions

Risk Assessment Method

An assessment of the probability and potential magnitude of accidents and/or malfunctions associated with the Project was carried out to meet the requirements of the *Canadian Environmental Assessment Act*. The evaluation used a Failure Modes and Effects Analysis methodology. The risks of the identified potential accidents/malfunctions were assessed with respect to environmental consequences, public health consequences, and worker health and safety consequences. The final assessment of risk was based on the likelihood of occurrence and the severity of the consequences, taking into account all proposed mitigation measures.

Risk Assessment Results

No high, intolerable, or extreme risks were identified during the evaluation process. This does not imply that there are no high hazard failure modes or potential for failures resulting in unacceptable consequences, but indicates that the level of design and the application of mitigation measures have reduced the risks to appropriately low levels.

Only one accident/malfunction was rated as posing a moderate risk: falling rocks during development drifting, *e.g.,* unstable rocks following a blast. This evaluation highlights the importance of employee training, operational protocols, good communication, and emergency response plans when undertaking this potentially dangerous work.

All other accidents/malfunctions were rated as posing possibly tolerable risks or lower. The majority of possibly tolerable risks are concerned with worker health and safety, emphasizing the importance of safe working practices. Accidents and malfunctions with possibly tolerable environmental and public safety risks were:

- spills of fuel, oil, or hydraulic fluid during mine site grading and construction (before the water collection system is fully installed) or during haul road construction; and
- catastrophic failure of adit bulkheads during the post-closure phase.

The likelihood of small spills of hydrocarbons and other fluids occurring during construction activities and affecting the surrounding environment was conservatively rated as high. This is in part because the permanent site drainage system, which would intercept spills, will not be fully functional during the early stages of construction. However, with the deployment of best construction and site management practices, including spill response plans and training, the consequences of any spills would likely be low or negligible.

The likelihood of a catastrophic bulkhead failure is very low. The proposed engineering design will be reviewed and refined as necessary as the mine prepares to enter the closure phase. Concrete bulkheads are a widely used and understood method for sealing underground mines. The integrity of the bulkheads will be monitored regularly following mine closure.

Effects of the Environment on the Project

Environmental Factors

Changing or extreme environmental conditions have the potential to affect Project infrastructure and operations. The environmental assessment considered the following environmental factors:

- extremes in current climate;
- climate change;
- extreme natural events;
- forest fires; and
- seismic activity.

Extremes in Current Climate

Potential effects of extended periods of drought and an associated decrease in annual rainfall and snowfall would be an increased risk of forest fires and a decreased capacity of the receiving environment to dilute the discharged mine drainage. The engineering design of the diffuser in the Bulkley River has taken into account extreme low flow conditions that may be associated with drought conditions. The diffuser has been designed to provide adequate mixing and dispersion of mine effluent so that water quality guidelines should be met even under these conditions.

Water management structures have been designed to accommodate the volume of water associated with an extreme storm event. Advance weather forecasts and rainfall warnings will be monitored on a daily basis to provide advance warning of severe rainstorms, thunderstorms, or snowfall. This will allow time for the appropriate preparation of structures and equipment.

During the winter, removal of excess snow from the haul road and active areas of the mine site and load-out facility will be managed and scheduled to maintain safe working conditions without inferring with production. Operational protocols will be put in place to ensure safe and efficient traffic flow during periods of reduced visibility, including speed limits, radio communication, and cessation of hauling during extreme periods of poor visibility.

Climate Change

Climate change projections for the Project area into the 2020s, 2050s, and 2080s were obtained from the Pacific Climate Impacts Consortium. Although the projections exhibit a high degree of variability between the low, median, and high estimates for each climate normal period, the overall trend is towards a higher annual mean temperature and increased annual precipitation.

The annual precipitation projections suggest that the mean annual precipitation experienced at the end of the Davidson mine life will be higher than current conditions, but that it will not be greater than the 1-in-5 wet year annual precipitation under current climate conditions.

Based on studies involving observed historical data as well as hydrologic modelling of British Columbian watersheds, there is general agreement that under warmer and wetter conditions

annual surface runoff from a given watershed will have an earlier, but potentially lower peak flow during freshet, lower late summer flow, and higher early winter flow.

Surface water management systems designed based on current climate conditions should be sufficient to handle most changes in mean conditions as a result of climate change. Long-term changes in regional annual precipitation could alter the dilution capacity of the Bulkley River, which will be the final recipient of all mine water. Annual low flows occur in the Bulkley River during the winter when precipitation is mainly in the form of snow and is being stored in the snow pack. Warmer, wetter winters will likely lead to higher winter flows and therefore improve the dilution capabilities of the Bulkley River.

Changes to temperature and precipitation as a result of climate change will influence the amount of precipitation and snowfall on the haul road, potentially increasing the costs for maintaining the road and keeping it open year-round.

Long-term changes in annual precipitation could affect the groundwater system in the Project area and lead to changes in the discharge of groundwater into the adit and underground mine. However, over the ten-year life of the mine, this change is likely to be insignificant.

Floods

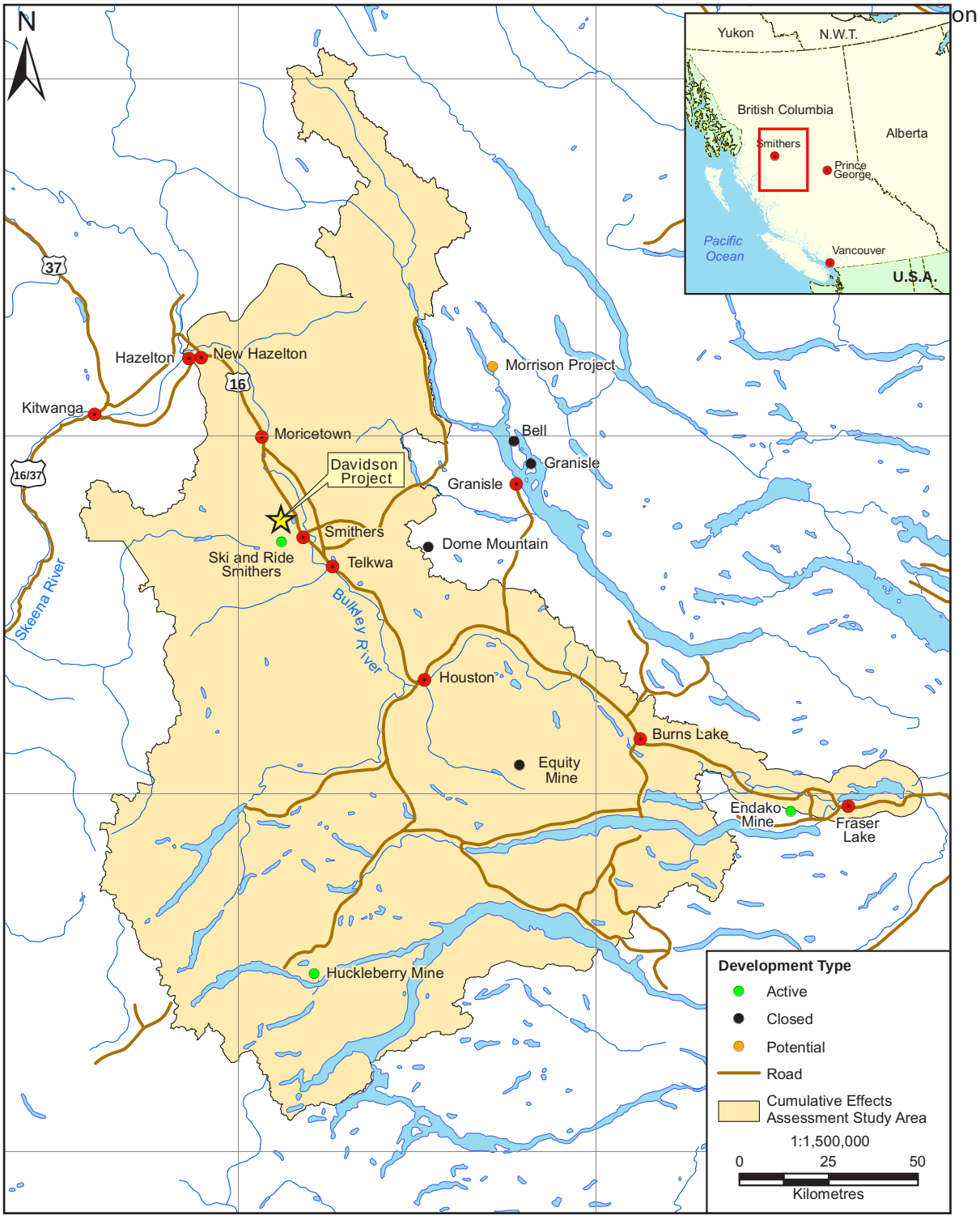
Flood flows in the Bulkley River are almost always generated by freshet snowmelt. The design and location of the diffuser are intended to minimize effects from flood events. The diffuser will be located in a straight, stable reach. The diffuser is designed with almost no profile above the channel bed to reduce exposure of the diffuser ports to high stream velocities and debris. Temporary failure of the diffuser during flood conditions is unlikely to result in poor water quality in the Bulkley River, due to a high amount of natural dilution and mixing available during flood conditions. An operational protocol will be developed for temporary diffuser failure to ensure efficient maintenance and repair.

Flood flows in Kathlyn Creek and other small tributaries near the Project occur in response both to freshet snowmelt and to rain storms in late summer or autumn. Floods occurring along the haul road could result in haul road closures due to excess water on the road surface, erosion of the road surface, damage to stream crossings, or debris blocking the roads. In extreme flood conditions, there is the potential for drainage structure washouts (bridges, culverts, and cross-drains).

Stream crossings on the haul road will be designed to pass the 1-in-100-year instantaneous peak flow. Bridges will be designed with additional freeboard to provide clearance for debris within the floodwaters. Appropriately sized riprap will be placed at the inlet and outlet of bridges and culverts to protect structures from erosion.

Avalanches, Landslides, and Debris Flows

Terrain stability mapping was carried out for the Project by BGC Engineering. The study was carried out at an overview level following the guidelines and standards set by the Resources Inventory Committee and the Mapping and Assessing Terrain Stability Guidebook. It was based



Closed, Active, and Potential Future Projects in the Cumulative Effects Study Area

fieldwork and air photo interpretation. The landslide prone terrain was mapped with a potential landslide return period of up to 100 years.

Three switchbacks along the road to the 1066 Adit were identified as extending into a snow avalanche path and are subject to snow avalanche hazard. Avalanches may cause damage to or closure of the switchback road and it may not be safe for vehicles to traverse the road during periods of high avalanche risk. The switchback road will be used regularly during the construction phase of the Project; however, during operations use of this road will be very limited. During construction, avalanche control blasting will be used as required to ensure safe use of the road. The road will not be used or maintained through the winter during operations; therefore, avalanches will not pose a risk to personnel.

The utilities corridor crosses through the Kathlyn and Simpson creek watersheds. The alluvial fans from these watersheds are subject to debris flows or debris floods, and the runout zones may impinge on the utilities corridor. However, the utilities will be buried, and would not be affected by these events.

The haul road crosses the Glacier Gulch and Toboggan fans. The haul road alignment avoids the most active areas on the Toboggan fan; however, the fan is geomorphically active, and there is potential for debris flows to affect the road, causing minor damage, or potentially washing out road infrastructure at stream crossings. This may cause temporary closure of the haul road until maintenance crews can repair the road surface.

The haul road crosses nine streams and floodwaters and debris flows could affect the road at the crossing locations. The haul road stream crossings will be designed to accommodate the 1-in-100-year flood flows, and bridges will have additional freeboard to provide clearance for debris within the floodwaters. Riprap will be placed at the inlet and outlet of stream crossing structures for protection. These measures will allow the road to accommodate small debris flow events. Regular monitoring and maintenance will be conducted along the haul road. Extra monitoring and maintenance may be required during the freshet and autumn periods, when debris flow potential is greatest.

Forest Fires

The number and size of forest fires in a region each year varies with annual weather (dry or wet years), and natural disturbance type (or NDT), which reflects climate and suppression effect. The ecosystem units around the Davidson mine site area are classified as Interior Cedar Hemlock (NDT2): ecosystems with infrequent stand-initiating events. The mean return interval for fire disturbances in these ecosystems is about 200 years.

In the immediate vicinity of the proposed haul road and utilities corridor, the majority of the areas are classified as Sub-Boreal Spruce (NDT3): ecosystems with frequent stand-initiating events, which have a mean fire disturbance return interval of about 125 years. The remaining areas are classified as NDT2.

Blue Pearl will develop a safety plan for the Project that will outline and describe appropriate procedures and protocols to effectively deal with emergency situations including forest fires. In the event of a forest fire near Project infrastructure, Blue Pearl will rely on outside support from the Province and from Smithers Volunteer Fire Department.

Seismic Activity

Based on the 2005 National Building Code of Canada Seismic Hazard Maps, the Smithers area is in a region of low hazard. The National Building Code of Canada sets criteria for the design of building foundations and materials based on the seismic hazard of the area. All surface infrastructure will be designed and built to meet the requirements of the building code. The stability of the underground mine workings will be checked each shift as mining progresses, in accordance with the mine safety system. Blue Pearl will develop an evacuation procedure for the underground mine.

Cumulative Environmental Effects

A cumulative effect assessment considers the potential for the residual environmental effects of a project to interact with the effects of other human actions. The Project cumulative effects assessment considered the existing and reasonably foreseeable future human actions within an area that included the Bulkley Valley watershed, the Bulkley Land and Resource Management Plan and Timber Supply Area, the Wet'suwet'en Traditional Territory, and the transport corridor between the Project and Endako Mine.

Local Ecosystems and Land Use

There are no other existing or reasonably foreseeable future actions that require use of the new haul road or the mine site footprint, or that will further increase the pressure on the existing road that provides access to the 1066 Adit. Reclamation of the Project utility corridor where it crosses the existing transmission line right-of-way may be impaired by recreational use of this area, but with appropriate mitigation the effects are not expected to be significant.

In the Smithers area, expansion of Ski & Ride Smithers, expansion of Smithers Regional Airport, and general population growth is expected to result in habitat alteration and increased human presence. This could increase the pressure on vegetation communities, aquatic life, and wildlife populations in the Hudson Bay Mountain and Smithers areas.

Regional Ecosystems and Land Use

On a regional scale there are a number of human actions that could affect the same environmental components as the Project. Soils, vegetation and plant communities, aquatic life, wildlife populations, and land and resource use within the cumulative effects assessment study area could all be affected by actions such as forestry, outdoor recreation, population growth, mineral exploration and mine development, and increased road and railway traffic.

Transportation

Along the Highway 16 corridor, human actions including the Morrison Project, population growth, changes in forestry patterns, and increased recreation and tourism are expected to produce a steady increase in road traffic volumes. Railway traffic through the area is also

expected to increase due to development and expansion of the Prince Rupert Container Port. The projected traffic volumes are not predicted to have significant effects on highway or railway safety, or on human health in terms of noise levels and air quality. However, increased traffic volumes could result in increased nuisance levels and decreased quality of life in some areas. It is also expected that the number of vehicle/wildlife collisions will increase.

Future Condition of Environmental Components

Overall, it is expected that the condition of environmental components within the cumulative effects assessment study area will decline in the foreseeable future as a result of combined human actions, although the long-term viability of aquatic life and wildlife populations is not expected to be threatened. The quality of life for residents may be affected in some locations. The contribution of the Project to cumulative effects in the cumulative effects assessment study area will be small in comparison with other human actions. The contribution of the Project is assessed as not significant and the cumulative effects assessment does not alter the conclusions of the effects assessment.

Conclusions

The results of the environmental assessment process suggest that, with the implementation of the proposed mitigation measures, the Project will not have any major long-term impacts on the receiving environment. This conclusion assumes that the mine footprint, including the haul road, will be decommissioned and successfully reclaimed at Project closure. This conclusion also assumes that the engineered mitigation measures, including the mine site water management system, design of the haul road and pipeline stream crossings, design of the pipeline diffuser, the mine water treatment plant, and the adit bulkheads, will operate as described.

There remain some socio-community concerns regarding employee and supply traffic on local roads, especially during shift changes, the change in land use associated with the planned closure of the existing access road to the 1066 Adit, and noise generated during surface blasting. Although these do not affect the overall feasibility of the Project, these are issues that may need to be addressed further by Blue Pearl in consultation with the local community.