



KUTCHO COPPER CORP.

A Subsidiary of Capstone Mining Corp.

KUTCHO PROJECT

Project Description Report

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Prepared by:

Kutcho Copper Corp.
Allnorth Consultants Limited

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EXECUTIVE SUMMARY

The Kutcho Project (the Project) is a proposed open pit / underground copper, zinc, gold, and silver mine located 100 km east of Dease Lake, British Columbia (BC). The property, owned and operated by Kutcho Copper Corp. (KCC), is comprised of 49 100% owned Crown grants which host the Main, Sumac, and Esso deposits. The Project contains a resource inventory of 545.8 M lb of copper, 815.3 M lb of zinc, 143,000 ounces of gold, and 13,313,000 ounces of silver. With an expected mine life of 12 years, the Project will provide jobs and economic opportunities for the Kaska Dena and Tahltan First Nations, as well as the citizens of BC and Canada. In addition, the Project will contribute financially to provincial and federal tax revenues through provincial net proceeds and taxes. The total capital cost estimated in the prefeasibility study is \$213 million. Detailed engineering is continuing in an effort to increase environmental due diligence, improve the Project economics, and decrease investor risk.

The proponent, Kutcho Copper Corp., owns the property through claim staking and two separate purchase agreements with Royal Gold Inc. and Sumac Mines Inc., a subsidiary of Sumitomo Metal Mining Co. Ltd.

In February 2011, KCC released an NI 43-101 compliant prefeasibility study (PFS) that indicates the economic viability of the Project with a pre-production capital cost of \$187.3 million. The PFS estimates an average throughput of 2,500 tonnes per day (tpd) over a 12-year mine life. Average annual production during the full production period is estimated at 34.7 million pounds of copper, 54.5 million pounds of zinc, 4,664 ounces of gold and 671,800 ounces of silver in concentrates.

A small starter pit will be pre-stripped and provide ore for mill-feed (six months) while the underground mine is being developed. The proposed underground mining methods are mechanized cut-and-fill and sublevel long-hole stoping. Development will utilize electric hydraulic jumbos to bore the holes that will be blasted with bulk explosives. The fragmented ore and waste will then be loaded by scoop trams into either 30 or 50 tonne haulage trucks to surface.

The ore will then be hauled to a conventional concentrator. A 2,500 tpd plant is proposed to process the volcanogenic massive sulphide mineralization. The metals contained are copper, zinc, gold, and silver. The process plant will operate 365 days per year at 92% availability. The mill feed will be crushed, ground, then sequentially subjected to copper and zinc flotation.

Tailings will be sent to a paste backfill plant to produce a paste tailings; half of the paste will be sent to backfill for mine operations, while the other half will be sent to the surface tailings disposal. Copper and zinc concentrates will be thickened and then dewatered before load-out. Precious metals will be contained in and shipped with the copper and zinc concentrates. The

proposed transport route for concentrates will be by truck via Highway 37 to the port facilities in Stewart, BC.

Project components will include the following:

- Open-pit mining of a small starter pit at the beginning of operation phase
- Underground mine with access via declines from surface
- Surface ventilation fans
- Processing plant and associated structures
- On-land paste tailings storage facility
- Water treatment facility and collection pond with associated earthworks
- Storage of liquefied natural gas and diesel fuel
- Site roads and access road, including bridge upgrades
- Mine camp, maintenance facilities, sewage treatment, and waste disposal facilities
- Upgrades to the existing airstrip
- Transport of concentrate by truck to the Port of Stewart

The Project includes comprehensive environmental, economic, social, heritage, and health baseline studies in order to support appropriate due diligence. These studies have received input from the First Nations, local communities, and other stakeholders. The baseline studies have been conducted in the Project area since 2005 and will continue as the Project moves forward.

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ACRONYMS AND ABBREVIATIONS

Allnorth	Allnorth Consultants Limited
ANFO	Ammonium Nitrate/Fuel Oil
Application	Environmental Assessment Certificate Application
ARD	Acid Rock Drainage
BC	British Columbia
BC CDC	BC Conservation Data Centre
BC EAO	BC Environmental Assessment Office
BC MNRO	BC Ministry of Natural Resource Operations
BC WQG	BC Water Quality Guidelines
BEC	Biogeoclimatic Ecosystem Classification
Capstone	Capstone Mining Corp.
CEA Agency	Canadian Environmental Assessment Agency
CEQG	Canadian Environmental Quality Guidelines
cfm	cubic feet per minute
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
dtph	dry tonnes per hour
EA	Environmental Assessment
EAO	Environmental Assessment Office
EM	electromagnetic
eMW	electrical Megawatt
eGWh	electrical Gigwatt hour
Esso	Esso Minerals Canada Ltd
FWZ	Footwall Zone
Golder	Golder Associates Ltd.
g/t	grams per tonne
ha	hectares
KCC	Kutcho Copper Corp.
KDC	Kaska Dena Council
km	kilometer
kV	kilovolt
lb	pounds
LH	Long Hole
LHD	Load-haul Dump
LNG	Liquefied Natural Gas
m	metre
MCF	Mechanized Cut-and-Fill
ML	Metal Leaching
ML/ARD	Metal Leaching/Acid Rock Drainage
MMER	Metal Mining Effluent Regulations
NAG	Non-Acid-Generating
NI 43-101	National Instrument 43-101

ACRONYMS AND ABBREVIATIONS

Norecol	Norecol Environmental Consultants Ltd.
PAG	Potentially Acid Generating
PEA	Preliminary Economic Assessment
PEM	Predictive Ecosystem Mapping
PFS	Prefeasibility Study
Project	Kutcho Project
Rescan	Rescan Environmental Services Ltd.
ROM	Run-of-mine
RTEC	Rescan Tahltan Environmental Consultants
SAG	Semi-Autogenous Grinding
Sherwood Copper	Sherwood Copper Corporation
TCC	Tahltan Central Council
TEK	Traditional Ecological Knowledge
TEM	Terrestrial Ecosystem Mapping
TGI	Terasen Gas Inc.
THREAT	Tahltan Heritage Resources Environmental Assessment Team
TK	Traditional Knowledge
tpd	tonnes per day
tph	tonnes per hour
TSS	Total Suspended Solids
TU	Traditional use
UTM	Universal Transverse Mercator
VHMS	Volcanic hosted massive sulphide
VMS	Volcanogenic massive sulphide
Wardrop	Wardrop Engineering Inc.
WKM	Western Keltic Mines Inc.

1. GENERAL INFORMATION AND CONTACT(S)

1.1 GENERAL DESCRIPTION OF THE PROJECT

The scope of the Kutcho Project includes developing off-site and on-site surface infrastructure to support open-pit and underground mining activities required to extract mineral reserves from the Esso, Main, and, potentially, Sumac ore deposits. The Project will have a 2,500 tpd throughput over an expected 12-year mine life.

1.1.1 Proposed Infrastructure

Off-site infrastructure will include upgrades to the existing 120 km access road from Highway 37 to the proposed Project site and to the airstrip located approximately 10 km from the site.

On-site surface infrastructure will include an on-land paste tailings storage facility, paste backfill plant, water treatment facility, mill, surface ventilation fans, liquefied natural gas (LNG) power-generation facility, diesel storage, mine camp, and maintenance facilities.

1.1.2 Proposed Operations

Open-pit mining will consist of a small “starter pit” at the beginning of the Project’s operation phase. Underground development will include two access ramps to the Main and Esso Ore deposits, as well as ventilation raises and surface fan installations. Both declines will be collared on surface and will be used to provide an underground drilling platform for continued exploration of the Sumac and other ore deposits. The proposed transport route for concentrates is by truck via Highway 37 to the port facilities in Stewart, BC.

The Project has been designed to minimize the potential for adverse environmental, economic, social, heritage, and health effects. KCC is currently engaging First Nations, local communities, and other stakeholders with respect to the proposed development.

1.2 KUTCHO COPPER CORP. INFORMATION

1.2.1 Kutcho Copper Corp. Overview

The proponent, KCC, is a wholly owned subsidiary of Capstone Mining Corp. (Capstone). Capstone is a TSX-listed Canadian mining company whose principal business activity is the production of copper from the Company's two producing copper mines: the 100% owned Cozamin copper-silver-zinc-lead mine, located in Zacatecas State, Mexico, and the 100% owned Minto copper-gold-silver mine located in Yukon, Canada.

On May 27, 2008 Sherwood Copper Corp. (Sherwood) completed the acquisition of Western Keltic Mines Inc. (WKM), which at that time was the proponent for the Kutcho Project environmental assessment. The amalgamated company, a 100% owned subsidiary of Sherwood,

operated under the name Kutcho Copper Corp. On November 27, 2009, Capstone completed a plan of arrangement with Sherwood, whereby Capstone acquired Sherwood, and Kutcho Copper Corp. became a wholly owned subsidiary of Capstone.

Capstone's objective is to attain an average production of 120 million pounds of Cu per year by expanding operations at the Minto Mine in 2011 (operated by Minto Explorations Ltd.), maintaining production at the Cozamin Mine operation, and developing the Kutcho Project with a production target of 35 M lb by 2014. This growth strategy is shown in Figure 1.2-1. Additional growth is also being pursued through mergers and acquisitions.



Figure 1.2-1 Capstone Mining Corp. Growth Strategy

1.2.2 Kutcho Copper Corp. Address and Contact Information

Kutcho Copper Corp.
Suite 900–999 West Hastings Street
Vancouver, BC
V6C 2W2 Canada
Telephone: 604-684-8894
Toll-free: 1-866-684-8894
Fax: 604-688-2180
Website: www.capstonemining.com

1.2.3 President and Chief Executive Officer, Kutcho Copper Corp.

The Chief Executive Officer of Kutcho Copper Corporation is Mr. Gregg Bush.

Mr. Bush is a Metallurgical Engineer with 30 years of experience in feasibility, mine development, operations, international merger and acquisition strategies, permitting, alternative infrastructure projects supporting mine development, and project engineering. He speaks fluent Spanish and has experience in operations based in Chile, USA, Mexico, and Canada. With Capstone, Mr. Bush is responsible for the operations of both the Cozamin and Minto mines, as well as the development of organic growth opportunities for the company.

Mr. Bush's contact information is as follows:

Gregg Bush
President and Chief Executive Officer, Kutcho Copper Corp.
Email: gbush@capstonemining.com
Telephone: 604-684-8894

1.2.4 Principal Contact Person for Purposes of the Environmental Assessment

The principal contact person for the purposes of the environmental assessment is Ms. Colleen Roche. Ms. Roche's contact information is as follows:

Colleen Roche
Manager, Sustainability and Environmental Affairs
Email: colleenr@capstonemining.com
Telephone: 604-684-8894

1.2.5 Corporate Policies

Capstone and its subsidiaries have adopted the following comprehensive Health and Safety and Environmental Policies.

1.2.5.1 Health and Safety Policy

Capstone Mining Corp. believes that the health and safety of its employees is fundamental to its business operation. Work related injury or illness is unacceptable and the company is committed to the identification, elimination, or control of workplace hazards for the protection of all employees. The goal is to have zero lost-time accidents. The company is committed to implementing operational improvements that offer superior safety and occupational health management.

For the company to succeed in fulfilling this policy, all employees must undertake their work in accordance with this policy to the best of their ability and to take all reasonable care for their own safety and health, as well as the health and safety of their work colleagues.

As such, Capstone Mining Corp. commits to the following:

1. Providing the expertise and resources needed to maintain safe and healthy work environments.
2. Promote that occupational Health and Safety awareness is always at the forefront of daily operations.
3. Establishing clearly defined safety and occupational health programs.
4. Measuring safety and health performance, and making improvements as warranted.
5. Operating in accordance with recognized industry standards, while complying with local and international applicable regulations and laws.
6. Investigating the causes of accidents and incidents, and developing effective and immediate preventative and remedial action.
7. Training employees to carry out their jobs safely and productively. No employee will be permitted to commence a job without the requisite training.
8. Maintaining a high degree of emergency preparedness.
9. Requiring that contractors and vendors comply with all company health and safety standards.
10. Promote the Health and Safety Policy as a way of life in all aspects at our mines, project work sites, and in our family and local community.

1.2.5.2 Environmental Policy

Capstone Mining Corp., along with its subsidiaries, is committed to maintain sound environmental practices in all of its activities and to continuously improve the efficient use of resources, processes, and materials.

For the company to succeed in fulfilling this policy, all employees are responsible for incorporating into their work the actions necessary to take all reasonable care for the protection of the environment.

As such, Capstone Mining Corp. and its subsidiaries commit to the following:

1. Examine the potential impact to the environment of all proposed activities and take steps to minimize or, where possible, eliminate that impact.
2. Operate in accordance with recognized industry standards, while complying with local and international applicable regulations and laws.
3. On a regular basis, determine the Company's impact to the environment and, through continuous improvement, strive to attain higher levels of environmental performance.

4. Minimize all hazardous and non-hazardous materials generation and ensure the proper disposal of all wastes.
5. Maintain a high level of environmental protection by applying reasonable best practices and technologies that minimize impacts and enhance environmental quality in respect of bodies of water, air, vegetation, and wildlife.
6. Maintain dialogue with the communities and other stakeholders within the area of influence in order to understand their concerns, minimize negative impacts, and enhance environmental quality.
7. Progressively rehabilitate disturbed areas, where appropriate, and develop closure plans that can continuously improve and incorporate new technologies where practical.
8. Train and educate all employees to understand their environmental responsibility related to all activities related to the Company's operations and activities.
9. Require contractors and suppliers to operate according to Company's environmental standards and procedures.
10. Consider environmental factors when purchasing equipment and materials.

2. PROJECT INFORMATION

2.1 PROJECT HISTORY

The first claims were staked on the property in 1968. Exploration activity continued and the first environmental and engineering studies were conducted in 1980. Throughout the 1980s and 90s, ongoing exploration by various companies continued to improve resource estimates, whereupon it was acquired by WKM in 2004.

In 2005, a two-year program of environmental, economic, social, heritage and health baseline studies commenced, and WKM initiated the Pre-Application phase of the environmental assessment (EA) review process with the BC Environmental Assessment Office (BC EAO). As discussed in Section 1.2.1, WKM was acquired by Sherwood in 2008 as a subsidiary called Kutcho Copper Corp. Sherwood was then acquired by Capstone in 2009. The Kutcho Project is 100% owned and operated by KCC.

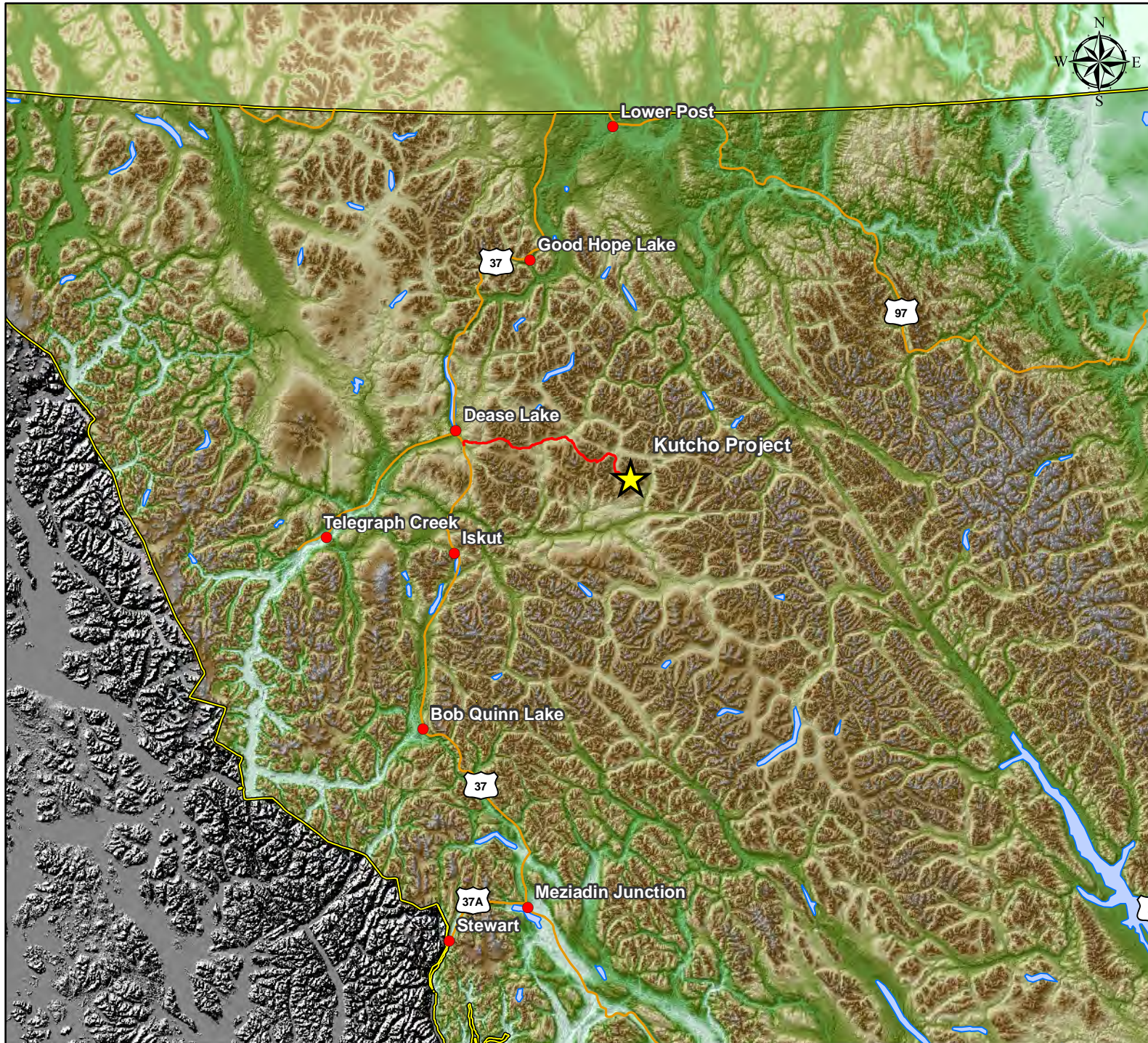
In 2009, the Project was re-designed and a Preliminary Economic Assessment (PEA) report was released, with improvements to the Project layout, including a significant reduction in the mine footprint and a revision in tailings disposal systems. A revised PEA was issued in 2010 that resulted in a significant decrease in operating costs and recommended completion of a PFS for increased accuracy. The PFS, released in February 2011, includes the Project design as described in this document, indicates the Project is economically viable, and recommends permitting and public consultation activities should re-commence.

2.2 LOCATION

The Project site is located approximately 100 km due east of Dease Lake in the Liard Mining division of northwestern BC (Figure 2.2-1). The center coordinates of the Main deposit are 128° 21' 32" W and 58° 12' 24" N (UTM 537,700 east, 6,451,900 north NAD83 Zone 9). The property is located at approximately 1500 m elevation. The property is accessible via a 900 m gravel airstrip, located 10 km east from the proposed mine site area, and a 120 km seasonal road from Highway 37 that is only suitable for off-highway vehicles during the summer months.

The Kutcho property is located within both the Cassiar Iskut-Stikine Land and Resource Management Plan (BC MNRO 2000) and the Dease-Liard Sustainable Resource Management Plan (BC MNRO 2004).

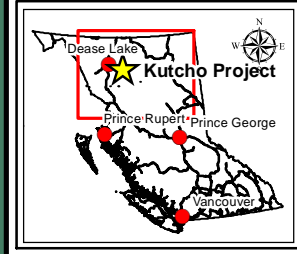
The property also lies within the traditional territorial claims of both the Tahltan Nation and the Kaska Dena Nation.



**Kutcho Project
 Figure 2.2-1
 Project Location**

Legend

- Project Location
- Community Location
- Proposed Access Road
- Highway
- Lake
- BC Outline



20K Mapsheets:
 Date: 5/4/2011
 Projection: UTM9N, NAD83
 Scale: 1:3,000,000
 Path: C:\10-VA-0146\11GIS\Kutch-3302-001.mxd
 Drawn By: TK
 Checked By: KB
 Revision #: 1



2.2.1 Mineral Tenure

Mineral tenure on the property is comprised of 48 mineral claims and one mineral lease for a total of 49 Crown Grants covering an area of 16,520.8 hectares. Tenure boundaries are shown in Figure 2.2-2.

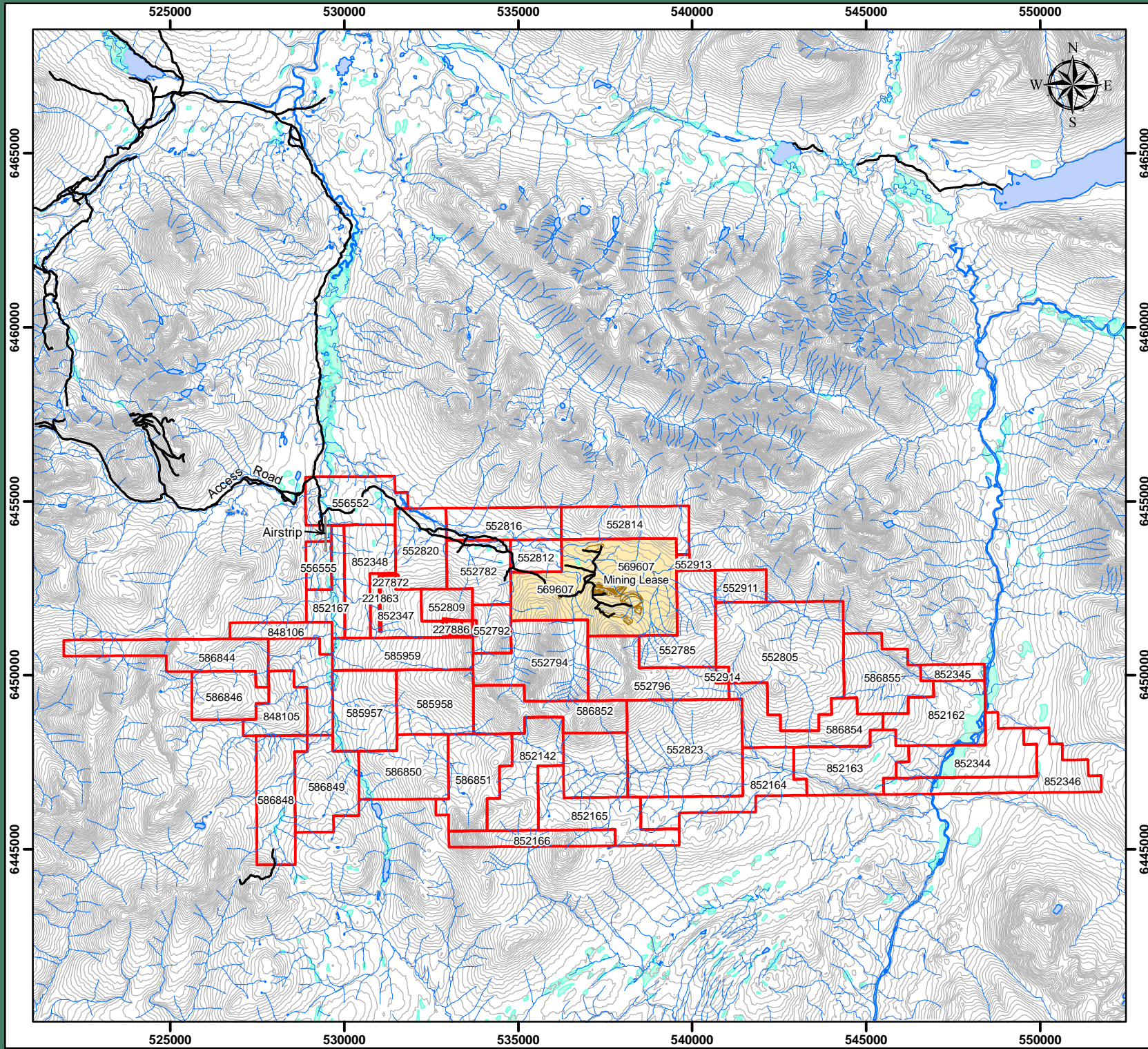
2.2.2 Site Map of Main Project Components and Activities

The proposed Project consists of the three main components: access road, airstrip, and mine site. The location of the airstrip is shown on Figure 2.2-2. Figure 2.2-3 presents the existing airstrip footprint and prospective extension. Figure 2.2-4 presents the proposed access road alignment in relation to local watersheds.

Figure 2.2-5 is an illustration showing the proposed mine plan with the proposed locations of the starter pit, mill, temporary waste rock storage areas, processing facilities, camp, on-land paste tailings storage facility, water collection pond and dam, and fuel storage area.

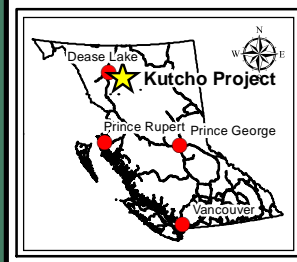
KCC proposes to transport the concentrate by truck to the Port of Stewart via Highway 37.

Kutcho Project
Figure 2.2-2
Claim Area



Legend

- Air Strip
- Existing Access Road
- Stream
- Contour
- Lake
- Wetland
- Mine Site Schematic
- Mining Lease
- Mineral Tenure



20k Mapsheets: 1041018, 19, 28, 29
 Date: 5/4/2011
 Projection: UTM8N, NAD83
 Scale: 1:150,000
 Path: C:\10-VA-0146\11GIS\Kutch-3302-004.mxd
 Drawn By: TK
 Checked By: KB
 Revision #: 1

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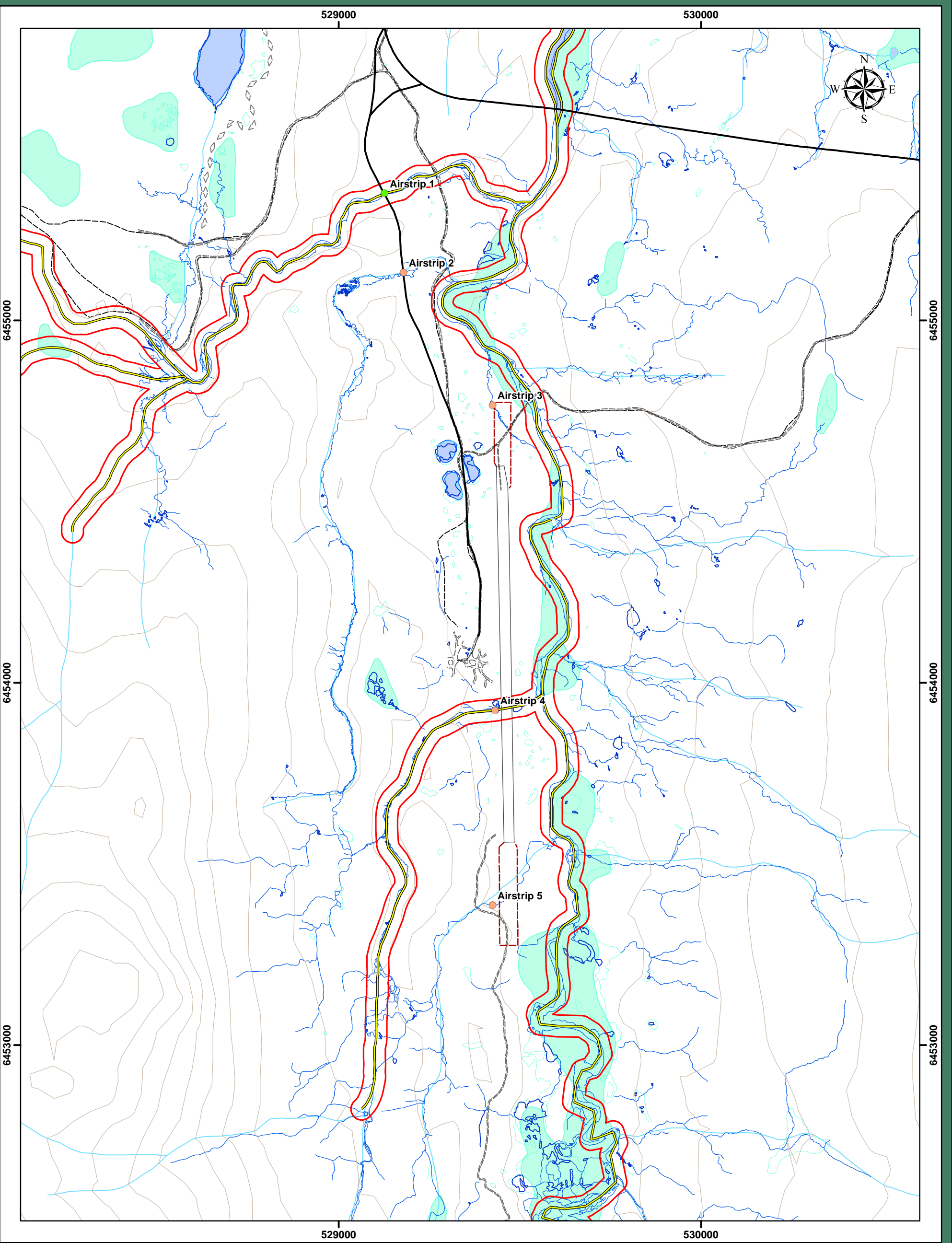
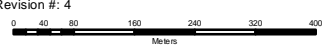


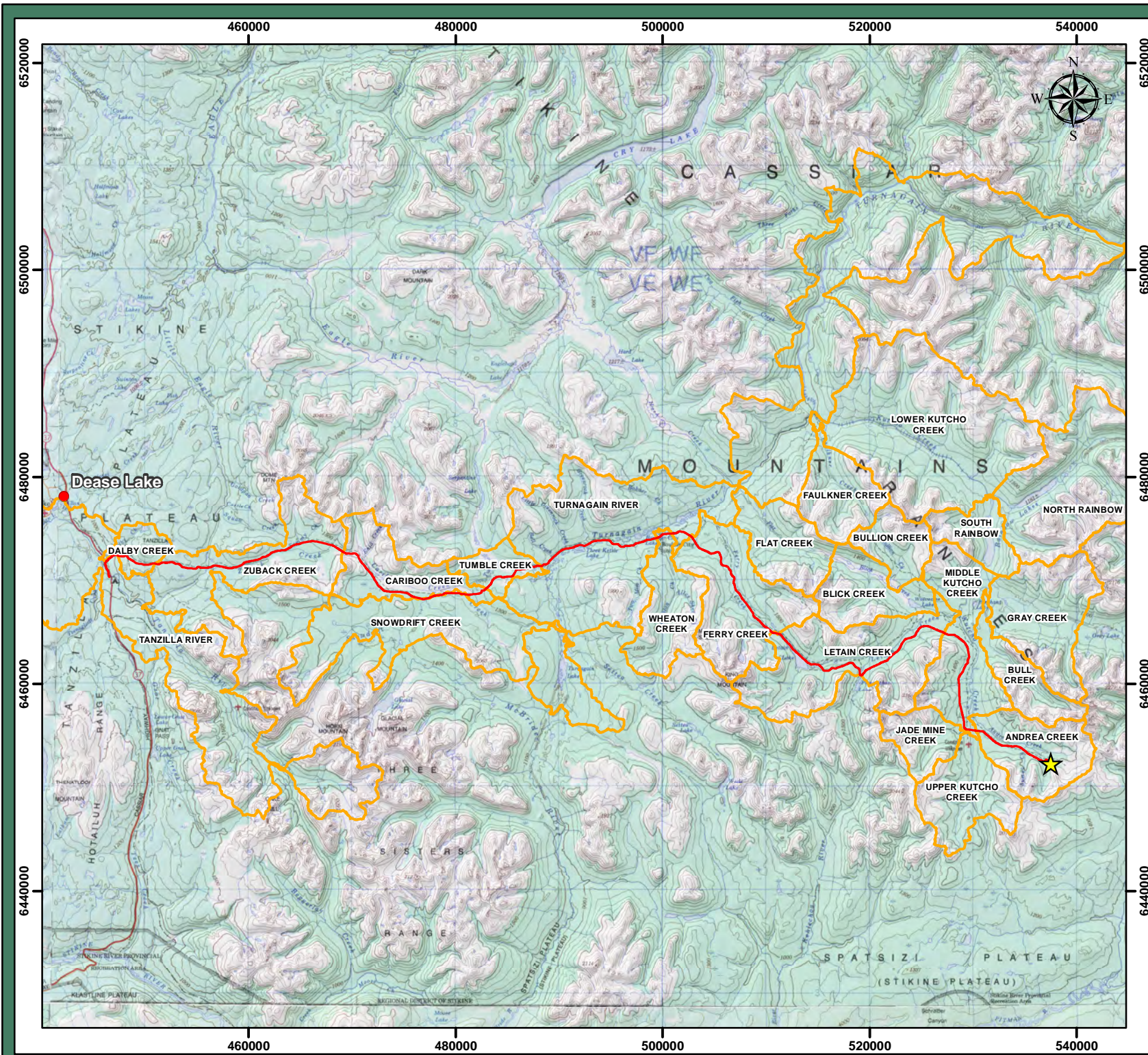
Figure 2.2-3
Existing Airstrip Footprint
and Prospective Extension

50k Mapsheets: 104G,H,I,J
 Date: 7/28/2011
 Projection: UTM9N, NAD83
 Scale: 1:10,000
 Path: C:\10-VA-0146_Kutcho\11GIS\Kutch-3225-005.mxd
 Drawn By: ainglis
 Checked By: GW
 Revision #: 4



Legend	
●	Potentially Navigable (km)
●	Non-Navigable (km)
	Proposed Access Road
	Prospective Airstrip Extension Footprint
	Fish Bearing Streams
	30m Riparian Setback Zone
	Existing Airstrip
	20m Contour
	McElhanney Stream
	Gravel Road
	Rough Road
	Trim Stream
	Esker
	Lake
	Floodplain





KUTCHO COPPER CORP.
 A Subsidiary of Capstone Mining Corp.

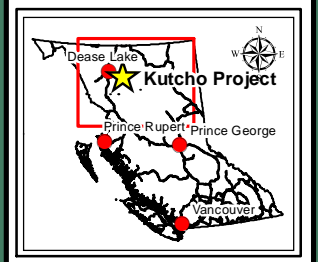
Kutcho Project

Figure 2.2-4

Access Road to the Kutcho Property

Legend

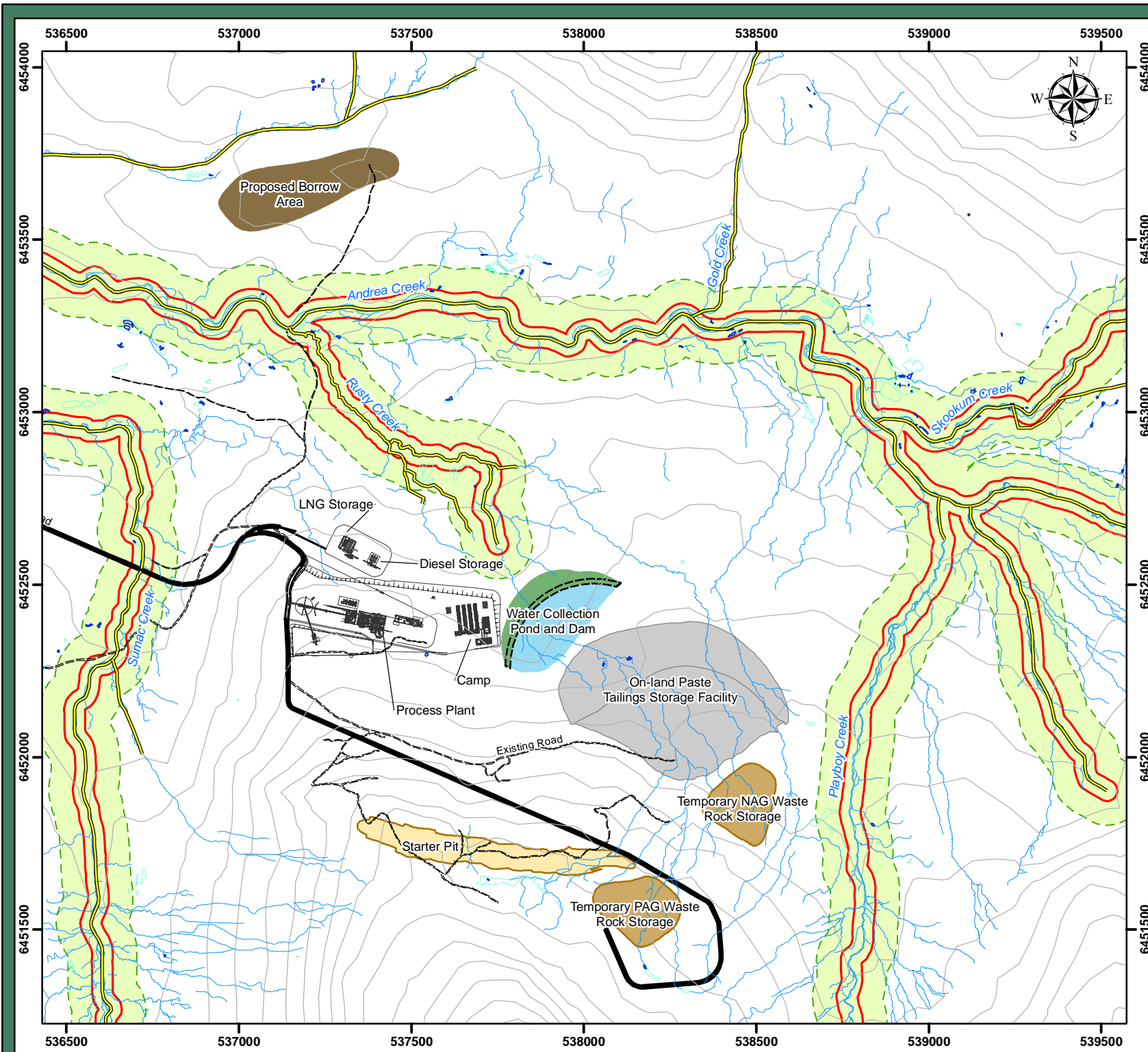
- Project Location
- Community Location
- Proposed Access Road
- Watershed Boundary



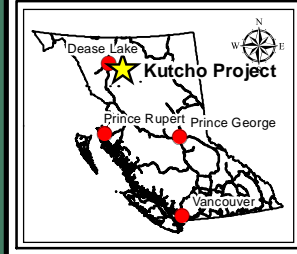
20K Mapsheets:
 Date: 7/27/2011
 Projection: UTM9N, NAD83
 Scale: 1:500,000
 Path: C:\10-VA-0146_Kutcho\1\GIS\Kutch-3302-02.mxd
 Drawn By: TK
 Checked By: KB
 Revision #: 1

0 1.5 3 6 9 12 15
 Kilometers

**Kutcho Project
 Figure 2.2-5
 Layout of Kutcho
 Project Mine Site**



- Legend**
- Proposed Access Road
 - Fish Bearing Streams
 - Existing Road
 - Creek
 - Lake
 - Wetland
 - Contour
 - Dam Crest
 - 30m Setback Zone
 - 100m Setback Zone



20k Mapsheets: 104i018, 19, 28, 29
 Date: 8/3/2011
 Projection: UTM8N, NAD83
 Scale: 1:15,000
 Path: C:\10-VA-0146_Kutcho\11GIS\Kutcho-3302-008.mxd
 Drawn By: TK, revised by AI
 Checked By: DJ
 Revision #: 3

Figure 2.2-6 and Figure 2.2-7 show a plan view and cross-section of the proposed underground development for the Main and Esso ore deposits. The Sumac deposit is not a classified NI 43 101 compliant reserve. There is potential that the access decline to the Esso deposit could include an exploration drift that would be utilized as a platform to continue exploration drilling of the Sumac deposit.

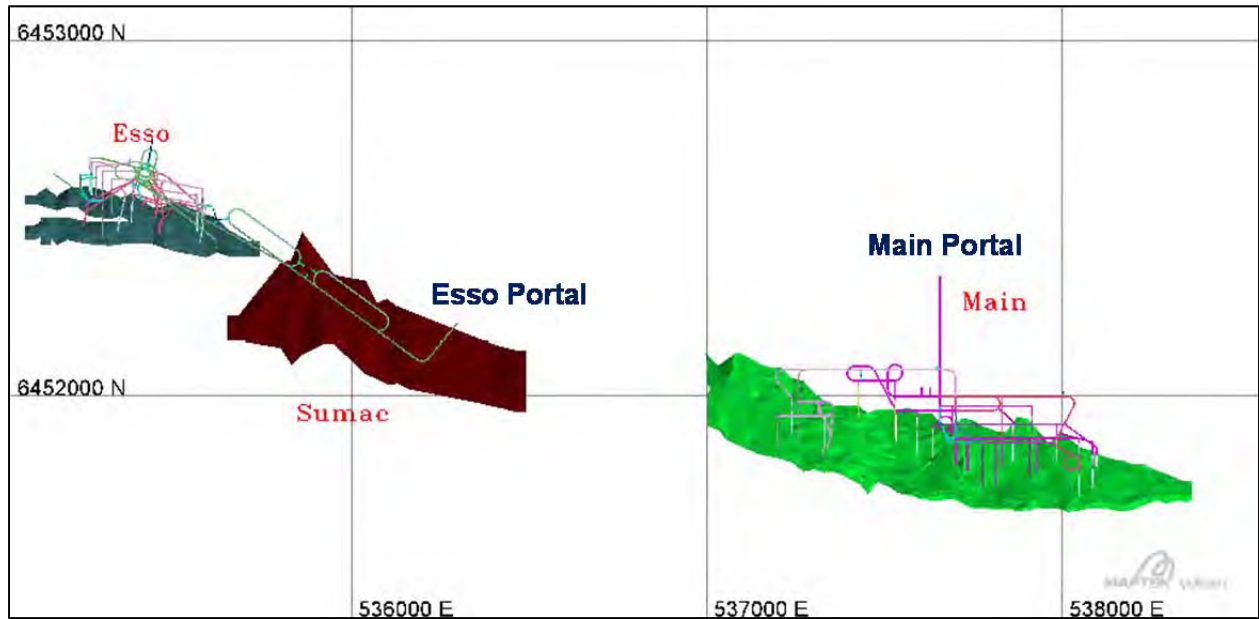


Figure 2.2-6 Plan View of the Main and Esso Underground Development

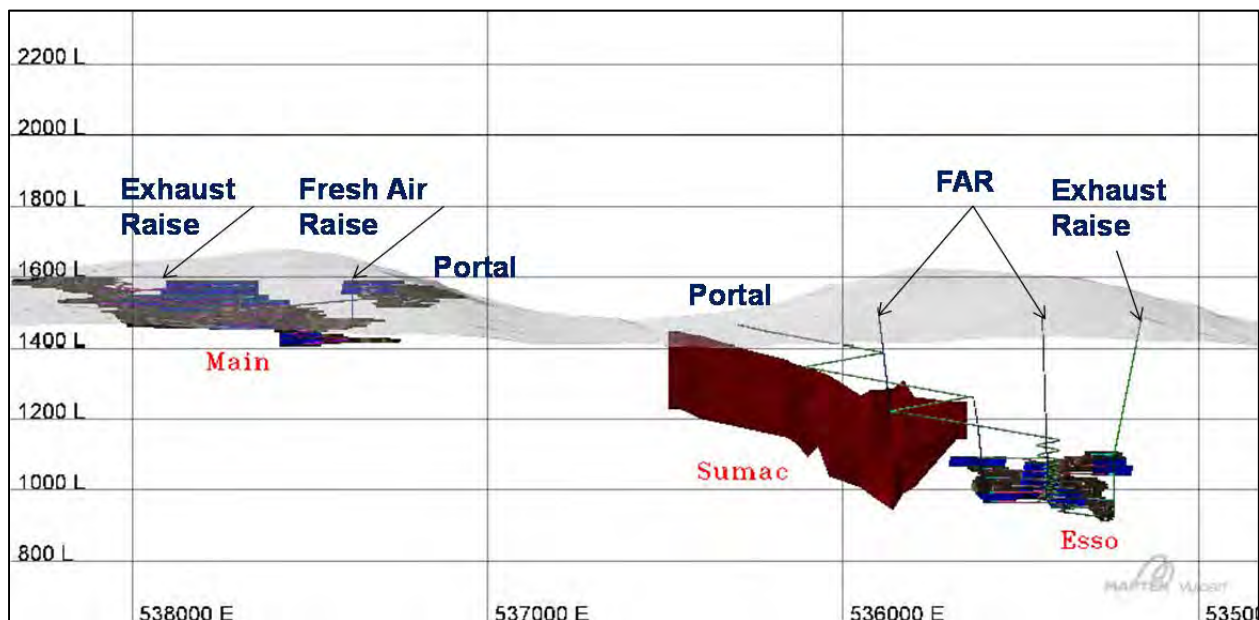


Figure 2.2-7 Cross-Section of Underground Developments

2.2.3 Location of First Nations, National Parks, and Environmentally Sensitive Areas

The Tahltan Nation and the Kaska Dena Nation are the relevant First Nations groups of the Project. Three Tahltan communities have been consulted: Iskut, Telegraph Creek, and Dease Lake (note that Dease Lake has both First Nations and non-aboriginal residents). Two Kaska communities have been consulted: Good Hope Lake and Lower Post. Additional details regarding the location of these First Nations communities, their traditional territories, and current and traditional land use are presented in Section 6 of this report. It is noted that the traditional territories of these groups overlap with respect to the proposed Project.

There are no national parks, national historic sites, or communities within the immediate vicinity of the Project area. The closest community is Dease Lake, BC. Provincial parks and protected areas in the region are described in Section 6 of this report.

There is no commercial fishing in the area. There is aboriginal recreational fishing that is mainly confined to the Kutcho Creek.

Figure 2.2-4 presents the water courses and water bodies in the proposed mine site area. These include “unnamed” creek, Playboy Creek, Kutcho Creek, and Andrea Creek. Andrea Creek is considered to be an environmentally sensitive area since it provides habitat for bull trout that are “red listed” by the Province of BC.

There are no protected areas with respect to wetlands and migratory bird sanctuary reserves in the vicinity of the mine site or access road. There are no marine protected areas or National Wildlife Areas considered to be priority ecosystems as defined by Environment Canada.

2.2.4 Photographs of Work Locations

Plates 2.2-1 through 2.2-3 present photographs of the Project area.



Plate 2.2-1 Looking northeast from Kutcho Camp



Plate 2.2-2 Jade boulders stockpiled at Kutcho Camp (photo taken in 2006)



Plate 2.2-3 Baseline field work in Project study area

3. PROJECT PURPOSE AND RATIONALE

3.1 PROJECT JUSTIFICATION

KCC proposes to develop a 10.4 million metric tonne copper-zinc ore reserve Project. With an expected mine life of 12 years, the Project will provide jobs, economic opportunities for local First Nations (the Kaska Dena and Tahltan), and the people of BC and Canada. In addition, the Project will contribute financially to provincial and federal tax revenues through provincial net proceeds and taxes. The proposed Project will be constructed, operated, and decommissioned in compliance with applicable legislation using modern environmental best practices. The Project will also contribute positively to the sustainability of the communities in this area of the Province, and BC in general, by providing economic stimulus and facilitating the acquisition of job skills that can be applied to mining and other sectors in the future.

3.2 ESTIMATED RESOURCE

The mineral resources of the Kutcho property were classified as having a reasonable expectation of economic extraction, according to the Canadian Institute of Mining (CIM) definition standards and best practices referred to in NI 43-101. The qualified person for the mineral resource estimate was Garth Kirkham, P.Geo., Kirkham Geosystems Ltd. The mineral resource estimate has an effective date of December 6, 2010. The mineral reserve estimate is 10.4 million tonnes with an average grade of 2.01% copper, 3.19% zinc, 34.61 grams per tonne (g/t) silver, and 0.37 g/t gold.

The mineralization of the proposed Project satisfies criteria to be classified into Measured, Indicated, and Inferred mineral resource categories, the results of which are presented in Table 3.2-1.

Table 3.2-1 Kutcho Project Mineral Resource Summary

Kutcho Project - Mineral Resource Estimate at a 1.5% Copper Cut-Off for All Deposits ⁽¹⁾									
Class	Tonnes (000's)	Grade				Contained Metal			
		Copper (%)	Zinc (%)	Gold (g/t)	Silver (g/t)	Copper (M lb)	Zinc (Mlb)	Gold (Koz)	Silver (Koz)
Measured (M)	5,421	2.15	2.86	0.34	31.4	256.6	341.8	59	5,482
Indicated (I)	5,859	2.24	3.67	0.45	41.6	289.2	473.5	84	7,831
M & I	11,280	2.19	3.28	0.39	36.7	545.8	815.3	143	13,313
Inferred	1,090	1.74	2.04	0.35	30.7	41.9	49.1	12	1,077

Economic Analysis calculated using these metal prices in US\$: Cu=\$2.25/lb; Zn=\$0.80/lb; Ag=\$13.50/oz; Au=\$850.00/oz

Note:

(1) Numbers may not total due to rounding.

These resources are sufficient for approximately 12 years of operation at an average throughput of 2,500 tpd over the full production period. Average annual production during the full production period is estimated at 34.7 million lb of copper, 54.5 million lb of zinc, 4664 ounces of gold and 671,800 ounces of silver in concentrates.

3.3 CAPITAL COST AND TAXATION

The PFS estimates the pre-production capital costs at C\$187.3 million.

Included in the capital estimate are costs for the initial mining equipment, pre-production stripping, a 2,500 tpd copper concentrator, shop, warehouse, infrastructure, indirect costs associated with the design engineering procurement, and construction, commissioning, spare parts, contingency, sustaining, and owner's costs. This does not include leasing of \$32.4 M. A summary of PFS capital costs for the Project is presented in Table 3.3-1.

Table 3.3-1 Kutcho Project PFS Capital Costs
(Page 1 of 2)

Area	Item	Initial Capital	Total Capital	Capital Leases
		C\$ Millions		
Mine	Capital Development	\$4.356	\$11.769	-
	Mobile Mine Equipment	-	-	\$15.172
	Starter Pit Pre-stripping	\$2.990	\$2.990	-
	Site Services Equipment	-	-	\$4.468
	Stationary Equipment & Other	\$2.656	\$7.010	-
	Pre-production Development	\$12.695	\$12.695	-
	Mine Sub-total	\$22.697	\$34.464	\$19.640
Processing Plant	New & Used Plant Building and Equip.	\$58.750	\$58.750	-
	Plant Sub-total	\$58.750	\$58.750	-
Backfill System	Paste Plant	\$4.400	\$4.400	-
	Surface Pipe	-	\$1.301	-
	Backfill Sub-total	\$4.400	\$5.701	-
Power	Natural Gas Gensets	-	-	\$12.800
	Power Sub-total	-	-	\$12.800
Waste & Water Management	Tailings Management Facility	\$6.700	\$9.500	-
	Water Collection Pond	\$1.500	\$1.500	-
	Surface Water Berms/Ditches	\$0.200	\$0.200	-
	Starter Pit Closure Cover	-	\$2.500	-
	Waste & Water Management Sub-total	\$8.400	\$13.700	-

Table 3.3-1 Kutcho Project PFS Capital Costs
(Page 2 of 2)

Area	Item	Initial Capital	Total Capital	Capital Leases
		C\$ Millions		
Site Infrastructure	Camp	\$5.350	\$5.350	-
	Water Treatment Plant	\$2.925	\$2.925	-
	Diesel Storage	\$0.584	\$0.584	-
	LNG Storage	\$2.764	\$2.764	-
	Maintenance Building.	\$5.800	\$5.800	-
	Maintenance Tooling	\$0.203	\$0.203	-
	Communications	\$0.750	\$0.750	-
	Site Infrastructure Sub-total	\$18.376	\$18.376	-
Capitalized OPEX	General & Administration	\$8.755	\$8.755	-
	Capitalized OPEX Sub-total	\$8.755	\$8.755	-
Off-site Infrastructure	Access Road	\$13.948	\$17.543	-
	Stewart Con Shed	\$3.550	\$3.550	-
	Air Strip Extension	\$0.400	\$0.400	-
	Off-site Infrastructure Sub-total	\$17.898	\$21.493	-
	DIRECT COSTS TOTAL	\$139.276	\$161.239	\$32.440
Indirect Costs	EPCM (@ 7% for non-mining only)	\$6.295	\$6.295	-
	Construction Indirect (@ 11%)	\$15.320	\$15.320	-
	Freight & Logistics (@ 8%)	\$11.142	\$11.142	-
	Commissioning Spares (@ 1%)	\$1.393	\$1.393	-
Total Capital	Indirects Sub-total	\$34.150	\$34.150	-
	Sub-totals	\$173.426	\$195.389	-
	Contingency (@10%)	\$13.927	\$16.124	-
	Sustaining Capital (0.5% of OPEX)	-	\$2.033	-
	GRAND TOTALS	\$187.353	\$213.546	\$32.440

The Project will contribute financially to the provincial (BC) and federal governments through corporate taxes, provincial net proceeds and net revenue taxes, and sales taxes.

The taxation estimate takes into account investment allowances and new mine allowances for the BC Mineral Tax. Both the federal (to a low of 15%) and the BC (to a low of 10%) taxation rates were used as per 2011 Q1 legislation.

4. PROJECT OVERVIEW

4.1 PROJECT COMPONENTS

Mine site Project components are expected to include the following:

- Starter pit
- Underground development
- Processing plant
- Paste backfill plant
- On-land paste tailings storage facility
- Temporary waste rock storage facilities
- Water management facilities
- Onsite laboratory
- Power plant
- Site haul roads
- Borrow source
- Water supply
- Explosives storage facility
- Fuel storage
- Camp, administrative, and maintenance facilities.

Off-site Project components are expected to include the following:

- Upgraded access road
- Upgraded airstrip
- Transport of concentrate to the Port of Stewart

4.2 MINING METHODS

Average annual production during the full production period is estimated at 34.7 million lb of copper, 54.5 million lb of zinc, 4664 ounces of gold and 671,800 ounces of silver in concentrates. The Mine Plan estimates extraction of 10.4 million tonnes (2,500 tpd) over a 12-year mine life. The proposed Mine Production Plan is shown in Table 4.2-1.

Production will focus on the Main and Esso deposits. Proposed development of the underground mine and pre-stripping of a small starter pit on the Main deposit commences in Year -1. The small starter-pit ore will supplement initial production of ore in order to attain full

mill capacity (2,500 tpd) in the first year of production. The underground mine will supply all mill feed commencing in Year 2 to the end of the mine life.

Underground development will consist of two access ramps from surface to the Main and Esso deposits, as well as ventilation raises and surface fan installations. Construction of the access ramp to the Main deposit will begin in Year -1 and full production from underground on the Main deposit will be achieved in Year 2 after an 18-month pre-production development period. The access ramp to the Esso deposit will also begin in Year -1 and will be completed in Year 1; Esso has a pre-production period of approximately 40 months when production begins in Year 3. Both declines will be collared on surface and will also be used as an underground drilling platform for continued exploration of the Sumac and other ore deposits. Two underground mining methods are proposed: mechanized cut and fill (MCF) for the shallow dipping mineralization, and sublevel long-hole (LH) stoping with backfill for those blocks amenable to bulk mining.

Backfill is an integral part of the underground mine plan and will incorporate process plant tailings as well as mine development waste. The primary purposes of the backfill are:

- Underground support and working platform in MCF mining; and
- Storage of PAG waste rock and process plant tailings.

Waste rock will be scheduled so that material mined early in the underground development effort, and more likely to be classified as non-acid generating (NAG), will be hauled and used on surface for construction purposes (pads, haul roads, etc.). Therefore, there are no permanent PAG or NAG waste storage areas planned on surface at the end of the mine life. Temporary storage areas will be established during the initial startup that will either be utilized for construction (NAG) or used to backfill the vacant open pit or underground workings (PAG and NAG). A portion of the waste will also be mixed with the paste tailings and will remain in the paste-fill storage facility.

Table 4.2-1 Kutcho Project Proposed Mine Production Plan

Parameter	Unit	Production Year												Totals	
		-1	1	2	3	4	5	6	7	8	9	10	11		12
Starter Pit Production	Tonnes	-	446,215	-	-	-	-	-	-	-	-	-	-	-	446,215
Main Production	Tonnes	-	466,285	912,500	673,863	365,000	365,000	365,000	458,744	912,500	912,500	912,500	912,500	403,661	7,660,052
Esso Production	Tonnes	-	-	-	238,637	547,500	547,500	547,500	453,756	238,637	-	-	-	-	2,334,894
Total Mine Production	Tonnes	-	912,500	912,500	912,500	912,500	912,500	912,500	912,500	912,500	912,500	912,500	912,500	403,661	10,441,161
Daily Production Rate	Tpd	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Starter Pit Waste	Tonnes	1,532,608	1,215,414	-	-	-	-	-	-	-	-	-	-	-	2,748,021
Copper Grade	%	-	1.94	2.13	2.01	2.02	2.26	2.12	2.06	1.88	1.91	2.07	1.81	1.87	2.01
Zinc Grade	%	-	1.92	2.62	2.91	3.71	5.30	4.41	3.76	2.64	3.06	2.78	2.43	2.27	3.19
Silver Grade	g/t	-	26.41	31.00	42.34	47.19	41.49	46.87	35.22	27.64	29.21	27.97	27.32	30.15	34.61
Gold Grade	g/t	-	0.30	0.32	0.44	0.47	0.45	0.47	0.35	0.36	0.31	0.32	0.27	0.39	0.37
Capital Development	Metres	3,875	2,637	1,465	362	-	-	-	-	-	-	-	-	-	8,339
Sustaining Development	Metres	360	1,400	2,350	1,952	2,034	2,267	973	1,772	1,184	1,234	789	351	170	16,835
Total Lateral Development	Metres	4,235	4,037	3,815	2,314	2,034	2,267	973	1,772	1,184	1,234	789	351	170	24,174
	metres/day	11.6	11.1	10.5	6.3	5.6	6.2	2.7	4.9	3.2	3.4	2.2	1.0	1.0	5.5
Capital Raise Development	Metres	467	809	441	40	-	-	-	-	-	-	-	-	-	1,757
Mined UG Waste	Tonnes	297,211	274,098	261,714	156,185	137,271	153,033	65,669	119,637	79,904	83,264	53,248	23,693	11,475	1,716,401
Paste Backfill Placed	Tonnes	-	227,969	408,344	408,344	408,344	383,921	408,344	408,344	408,344	408,344	408,344	408,344	180,638	4,467,622

4.3 MINE SITE LAYOUT AND FACILITIES

Proposed mine site infrastructure will include a starter pit, underground mine, surface air ventilation, tailings paste storage facility, water collection pond, workshop, fuel storage, processing plant site, and an accommodation/administration complex, all of which are planned to be located within an area bordered by Andrea, Sumac, and Playboy Creeks (Figure 2.2-4). The mine site footprint will be approximately 300 ha.

4.3.1 Starter Pit

The proposed starter pit will be located where the Main deposit outcrops on surface and will be developed to provide initial ore feed in to the mill during underground mine development. NAG waste from the starter pit will be used for surface construction. PAG waste will be temporarily stored in a surface storage area adjacent to the pit, and after completion this material will be stored permanently in the mined out pit. The starter pit will also be used for permanent tailings storage.

Design criteria for the pit consists of 10 m high double benches with 70° bench face angles and 8 m wide catch benches. At its highest point, the pit will be 60 m deep. Ramp grade will be approximately 10% with a 16.5 m width to accommodate single-lane traffic. The pit will have an area of approximately 13 ha. The pit will provide 446,215 ore tonnes and 2,748,021 tonnes of waste for a waste-to-ore ratio of 6.1:1. Approximately 55% of the waste is expected to be PAG material that will be backfilled into the pit when surface mining is complete.

4.3.2 Underground Development

Two underground mining methods are proposed for the Main and Esso deposits: sublevel LH stoping and MCF with paste backfill. MCF will be utilized in the shallow dipping areas (less than 50°), while LH is proposed for areas where the dip is greater than 50°.

4.3.2.1 Mechanized Cut Fill

Average stope dimensions are estimated at 5 m high by 5 m wide and will be developed first on the lowest level of each 25 m high stoping block. Blastholes will be charged with Ammonium Nitrate/Fuel Oil (ANFO) and high explosive primers and initiated with NONEL caps. The broken ore will then be mucked with load haul dump (LHD) units into trucks and hauled to surface. Completed stopes will be filled with paste backfill and/or development waste.

4.3.2.2 Longhole Stoping

Average stope dimensions are estimated at 10 m wide by 20 m high with 2.5 m ring burdens. Blastholes will be charged with ANFO and high explosive primers and initiated with NONEL caps. The broken ore will be mucked from the bottom of the stope by remote-control LHD units and

loaded into trucks and hauled to surface. The mined out stopes will then be backfilled with a mixture of paste fill and/or development waste.

The Main and Esso deposits vary in dip from 30-70° and in width from 3-20 m. The Main deposit essentially outcrops on surface and extends to depth of approximately 250 m below surface, while the Esso deposit extends to a depth of 420-600 m below surface. The Esso deposit is approximately 1,500 m west of the Main deposit. Approximately 61% of the total mining resource will be mined with MCF stopes and the remaining 39% with LH stopes.

4.3.2.3 Access and Layout

The primary access for the Main deposit will be a single straight incline with a cross-sectional area of 5 m by 5 m to provide adequate clearance for equipment and ventilation. Two ramp systems will be driven off to the east and west of the primary ramp to access the additional ore zones (Figure 2.2-6).

A 2,600 m long decline ramp will be established to the top of the Esso ore body. The decline will be developed to the bottom of the deposit and additional east and west accesses will be driven east and west to the Esso mining zones. The Esso access ramp may be used for future exploration drilling on the Sumac deposit.

The mine will require an extensive system of raises for ventilation as well as ore handling. Each deposit will have a central ore pass raise system with dump points at various levels in order to minimize internal mine haulage. A truck loading chute will be installed at the bottom of each ore pass.

4.3.3 Processing Plant

The proposed 2,500 tpd processing plant will operate 365 days per year at 92% availability. The mill feed will be crushed, ground, then sequentially subjected to copper and zinc flotation. The tailings will be sent to a paste backfill plant to produce paste tailings; half of the paste will be sent to backfill for mine operations, while the other half will be sent to the surface tailings disposal facility. Copper and zinc concentrates will be thickened and then dewatered before load-out. Precious metals will be contained in and shipped with the copper concentrate. The process plant is discussed in more detail in Section 4.5.

4.3.4 Paste Backfill Plant

The paste plant and associated equipment will be sized for the production rate of 912,500 dry tonnes per year of mine tailings at an operating rate of 2,500 dry tonnes per day or 102 dry tonnes per hour. The equipment within the paste plant will be sized for intermittent surges of 15% or 117 dry tonnes per hour. It is anticipated that the tailings will be received from the flotation circuits at approximately 26 wt% solids, and dewatered to approximately 73-76 wt%

solids. The equipment selected will provide cemented paste backfill that will be utilized underground to stabilize excavations. Non-cemented high-density paste fill tailings will also be well-suited for surface tailings disposal.

4.3.5 On-Land Paste Tailings Storage Facility

The proposed on-land paste tailings storage facility consists of a containment berm, a bottom liner system, and a top closure cover system.

The design storage capacity of the tailings facility is approximately 2.04 M m³ or 4.08 M tonnes of dry mine waste (including 3.45 M tonnes of tailings and 0.63 M tonnes of PAG waste rock). The paste tailings will be discharged into the facility at a single point that is approximately 300 m away from the upstream crest of the final containment berm. The final elevation of the discharge point will be 1556 m, which is 15 m higher than the final crest elevation of the tailings containment berm. The paste tailings will form a cone shape sloping down from the proposed discharge point.

4.3.6 Waste Rock Management Facilities

The proposed temporary PAG waste rock storage area will be located immediately southeast of the east end of the starter pit. A portion of the PAG waste rock from the starter pit will be placed in the storage area in Years -1 and 1 and re-handled back to the mined-out starter pit in Years 2 and 3. This waste rock storage area location will also facilitate the site water management, since the contact water from the waste rock storage area will naturally flow down the slope where it will be collected and sent to the water collection pond. Diversion ditches/berms are proposed to convey contact water into the water collection pond.

A proposed temporary NAG waste rock stockpile is required to store the NAG waste rock generated during early years of mine operation. This NAG waste rock will be gradually reduced over the mine life as it is used for construction of site facilities operation, as underground backfill during late years of mine operation and at mine closure.

The mined-out starter pit will become one of the permanent mine waste management facilities for paste tailings and PAG waste rock.

4.3.7 Water Management Facilities

4.3.7.1 Water Treatment Plant

Surface, underground, and process plant water will be treated by a single high-density sludge lime treatment plant with a capacity of 163.6 l/s (600 m³/hr). It is anticipated that the water treatment plant will consist of a rapid mix tank, which will receive the incoming water to be treated, lime slurry, and recycled sludge from the clarifier. The slurry will gravitate from the rapid mix tank to the lime reactor tank, allowing for additional agitation and the injection of

compressed air to accelerate the chemical reaction. From the lime reactor tank, the slurry will gravitate to a clarifier. Flocculant will be added to improve the sludge settling rate and density and to produce a clear overflow product. A comprehensive monitoring program will be required to ensure the plant operates efficiently.

This plant will pump water from the water collection pond and treat the water for discharge. The volume of water treated from the pond will be managed in order to prevent release of any impacted water from the water collection pond. Sludge produced by the treatment plant will be disposed in the landfill or underground.

4.3.7.2 Water Collection Pond and Dam

The proposed water collection pond dam will be a zoned earth and rock fill structure with an upstream low-permeability clay silt zone to control the seepage through the dam. The dam will have a crest elevation of 1504 m, a maximum dam height of approximately 22 m, a crest width of 14 m, a 2.5H:1V downstream slope and a 3H:1V upstream slope. The water collection pond and dam will be located east of the process plant and camp area and northwest of the on-land paste tailings storage facility. Diversion ditches/berms are proposed to convey contact water into the water collection pond. The proposed water collection dam is located greater than 100 m away from major creeks (such as Andrea Creek, Sumac Creek, Playboy Creek, Rusty Creek) and will not impact any fish-bearing streams or creeks.

The ground will be excavated under the portion of the dam and under the proposed water collection pond to a depth of approximately 4 m. This will increase the water storage capacity of the water collection pond, reduce the seepage through the overburden zone in the dam foundation, and result in sufficient till fill materials for construction. A seepage collection sump will be located immediately downstream of the water collection pond in order to collect minor seepage through the dam. The water in the seepage collection sump will be regularly pumped back to the water collection pond.

4.3.7.3 Water Management Structures

Water diversion ditches/berms are proposed to divert the clean runoff water from the undisturbed areas and convey the contact water into the water collection pond.

4.3.8 Reagent Handling and Storage

Reagents proposed for use in the copper flotation circuit will include Na₂SO₃, P7583, sodium silicate, Frother CC-1064, and ammonium bisulphate. The zinc flotation circuit will include lime, CuSO₄, and Aero 3477. Reagents will be warehoused and prepared in a designated area of the processing plant.

4.3.9 Assay and Metallurgical Laboratory

The assay laboratory will be equipped with the necessary analytical instruments to provide all routine assays for the mine, the concentrator, and the environmental departments.

4.3.10 Air Supply

4.3.10.1 Mine Ventilation

Total air requirements are based on the yearly production rates for the Main and Esso deposits and the air requirements of diesel equipment to be used in operations.

Main deposit: During full production, fresh air will enter the mine through the primary decline and the west fresh air raise. Air requirements are 200,000 cfm (94.4 m³/s) and 150,000 cfm (70.8 m³/s) for the portal ramp and west intake raise, respectively. Fresh air will exit the mine through the east exhaust raise. Ventilation will be distributed to the working areas via auxiliary ventilation fans and ducting.

Esso deposit: A fresh air requirement of 210,000 cfm (99 m³/s) is required for full production at the Esso Mine. This requirement will be delivered by primary intake air fans with a capacity of 150,000 cfm (71 m³/s) at the portal and a secondary intake air fan with a capacity of 60,000 cfm (28 m³/s) at the access ramp vent raise.

Fans with specifications to meet the modeled air requirements will be installed at the key locations discussed above.

4.3.10.2 Process Plant

Compressed air will be generated for filter, instrument, and maintenance purposes. Blowers will produce low pressure air for the flotation process.

4.3.11 Power Supply and Distribution

LNG is proposed as the power supply for the Project. LNG will be supplied from Terasen Gas Inc.'s (TGI) facilities at Tilbury Island in Delta, BC. This supply will require TGI to apply to the BC Utilities Commission for amendments to its tariff rates to accommodate the supply. The LNG will then be delivered to the mine site in cryogenic tanks by truck with tractors powered with diesel fuel.

The electrical power requirement for the mine, mill, and camp is expected to vary over the mine life, reflecting the various stages of Project development. The peak average energy requirement is estimated to be 52.6 eGWh/year, and the peak capacity requirement is expected to be approximately 7 eMW. The power plant will feed power to a 13.8 KV metal-clad switchgear located inside a prefabricated building. This building will be located near the power plant. The 13.8 KV switchgear will contain seven breakers (one spare) that will distribute the power

throughout the site. Remote loads will be served by a 13.8 KV overhead power line. The power line will be a single pole structure and will feed power to the Esso mine portal.

4.3.12 Mine Site Haul Roads

Mine site haul roads will be constructed within the mine footprint to connect key parts of the site infrastructure. Construction materials are anticipated to include NAG waste rock.

4.3.13 Borrow Sources

Till fill will be required for construction of the mine waste and water management facilities. It is anticipated that the required "clay silt" fill will be derived from the thick till deposits in a borrow area north of Andrea Creek and will be used for constructing the clay silt zones in the water collection pond dam, the on-land paste tailings facility, including the closure cover, and the closure cover for the starter pit. It is estimated that an average excavation depth of approximately 6 m in the area will provide the required total clay silt quantity. The borrow area will remain active for the life of the mine and will be reclaimed according to best practices at closure.

4.3.14 Water Supply and Management

Water will be supplied from wells drilled on the mine site for potable water requirements and from a water treatment plant for use in the process make-up, fire, fresh, and pump gland seal. Potable water will be treated and stored separately at a facility located in the accommodation and office complex. Dewatering of the underground workings and surface contact water collected within the mine site footprint will be the major sources of water to the treatment plant.

4.3.15 Explosives Storage Facility

Bulk explosives and blasting agents will be utilized for all mining and will be stored on the mine site at permitted locations as per the BC Mines Act and Regulations.

4.3.16 Solid and Waste Water Management Facilities

4.3.16.1 Solid Waste Management

A proposed onsite landfill may be constructed for disposal of non-salvageable and non-hazardous solid waste from mining operations that cannot be incinerated. The operation may generate waste products considered hazardous such as reagents, hydrocarbons, and combustibles. Any hazardous waste will be segregated and transported offsite for appropriate disposal at an approved disposal site.

It is anticipated that a solid waste incinerator may be commissioned onsite for incineration of putrescible waste such as paper, wood, and food waste. This would eliminate materials from the landfill waste stream that may produce odours and attract wildlife.

A landfarm may be constructed for treatment of any hydrocarbon contaminated soil.

4.3.16.2 Waste Water Management

A pre-packaged sewage treatment will be purchased and commissioned onsite. Treated sewage water will be discharged in compliance with applicable regulations.

4.3.17 Communications

Conventional phones connected either by copper wire or fibre optic cable will be provided at selected locations on surface and underground. In addition, a leaky feeder system will provide radio communications from the portal collar to the main levels, ramps, and production areas.

Underground workers will be assigned individual lamp/radios and a "personnel working alone system" will be implemented using the leaky feeder system and the lamp/radios.

A video system will be installed to observe all key fixed operations areas underground and a number of areas on surface.

The control and business networks will be physically separated. Fibre optic cables will be installed on the surface and underground via the ramps to connect the local programmable logic controllers (PLCs) to the control network. The office computers, video cameras, and telephones will be connected to the business network.

4.3.18 Fuel Storage

4.3.18.1 Liquefied Natural Gas Storage

The main components of the LNG gasification facility are the storage tanks, hot water vaporizer, containment system, and control system. The recommended capacity of the LNG storage tanks is a minimum of 454,000 L (120,000 USG). This will provide 5.7 days of capacity after the tanks are completely filled. This is considered to be a minimum to allow for disruption in the fuel supply due to weather or equipment breakdown. The total footprint of the proposed facility is approximately 50 m x 50 m (164' x 164').

4.3.18.2 Diesel Fuel Storage

The diesel facility is similar in overall design to the LNG facility. The proposed facility has seven days of supply, approximately 120,000 litres, will have a footprint of 26 m x 35 m (85' x 115'), and will have double-walled storage vessels that do not require additional berms or other secondary containment measures. The diesel supply will meet fuel requirements of mining equipment and vehicles.

4.3.19 Camp, Administrative, and Maintenance Facilities

The camp accommodations complex will consist of modular units constructed off-site and placed on a pre-graded foundation area adjacent to the process plant. The camp will initially serve the construction requirements of up to 288 personnel over the course of an 18-month period. Once construction is complete, the long-term operational needs of 224 personnel will be met with the same structure. It is estimated that the Project will generate approximately 3,120 person years of direct employment through the construction and operations phases. The camp and office complex will consist of the following components:

- Kitchen and dining complex with capacity to serve up to 144 personnel in one seating
- Recreational facilities including games, television, and fitness areas
- Single-room sleeping accommodations
- Washroom facilities (shower, basins, toilets, and laundry)
- Waste-water treatment facility and solid-waste incinerator
- Potable water storage and treatment facility
- Mine offices for construction and operations personnel
- Mine dry facility for construction and operations personnel
- Emergency response and first aid facilities, including covered vehicle storage
- Cold storage and Seacan laydown area
- Parking area.

Cold storage and warehouse facilities will be located adjacent to the process plant for ease of commodity storage and retrieval. The warehouse will be interconnected between the plant and truck shop to serve both primary user areas.

The maintenance facility will accommodate the ongoing maintenance of the mining fleet and site service vehicles will be located on the south-west side of the plant.

4.4 OFF-SITE FACILITIES

4.4.1 Access Road

The existing access road leading to the mine site from Highway 37 will be used to mobilize initial construction equipment and supplies. Minor upgrades to this road will be performed to maintain safe and environmentally responsible passage, and use will be scheduled to coincide with low impact seasons.

The access road will later be upgraded to a higher standard to coincide with the initial site development activities and facilitate the establishment of the construction camp, offices, and

process plant foundation. This upgrade will generally follow the existing alignment and be of a standard that can accommodate the long-term and continuous passage of mine construction and operations commodities. It will be designed as a private, single lane, radio-controlled mine access road with a 50 km/hr speed limit and turnouts to accommodate two-way traffic and maximize safety.

Mine access beyond the mine site will be restricted for safety reasons to minimize light vehicle traffic around the heavier mining fleet. This portion of the road will be designed to accommodate the large mine haulage equipment and will be constructed of mine NAG waste rock.

4.4.2 Airstrip

The existing airstrip, which is approximately 1,067 m, with a useable runway area of approximately 900 m, is located approximately 10 km west of the mine site. The airstrip will be extended to a maximum length of 1,495 m to accommodate regular passenger and freight services by Beech 1900 Class turbo prop aircraft. Upgrading the airstrip to accommodate larger aircraft will facilitate air access to the mine site and aid in controlling traffic on the access road by reducing the requirement for ground transport of personnel and supplies. Use of a larger aircraft will also improve mine safety (i.e. emergency evacuation capacity) and facilitate a condensed rotation schedule by reducing mobilization time to the mine site, which will aid employee recruitment and retention. Access to the airstrip from the camp will be via the main site access road. With the exception of equipment to power landing lights, no permanent power or facilities will be established at the airstrip. Figure 2.2-3 shows the existing airstrip and prospective areas for extension; proposed upgrades will be determined during the detailed engineering phase.

4.4.3 Concentrate Transport to Port of Stewart

Concentrate will be transported from the mine site to the Port of Stewart by standard six axle 50 tonne haul trucks at an estimated frequency of approximately seven trucks per day average with a peak frequency of 10 trucks per day. The proposed transport route includes travel west on the access road to the Highway 37 junction and then approximately 400 km south to Stewart. Concentrates from the operation will be stored at the Port of Stewart.

Appendix A includes additional information on the projected usage of the Highway 37/37A corridor for the proposed transport of concentrate, as well as fuel and supplies to and from the mine site.

4.5 MINERAL PROCESSING

4.5.1 Crushing Operations

Run-of-mine (ROM) ore will be delivered to the surface primary crusher by haul trucks from the underground mine. The ROM material will feed a dump pocket via a stationary grizzly at an average rate of 150 tph. Grizzly oversize will be broken by a rock breaker. Grizzly undersize will be discharged to a dump hopper and fed via apron feeder to the primary jaw crusher and crushed to 80% passing 125 mm. Crusher product will be transported to a 2,500 t (live) stockpile via belt conveyor.

4.5.2 Grinding Circuit Operation

The crushed mill feed will be reclaimed from the stockpile by two apron feeders at a controlled rate of 113 tph, and fed via a conveyor to a 4.9 m diameter x 1.8 m long, 750 HP semi-autogenous grinding (SAG) mill.

The SAG mill discharge will feed onto a vibrating screen. Any screen oversize will be crushed and returned to the circuit.

Secondary grinding will take place in a 3.7 m diameter x 7.3 m long, 1750 HP ball mill. SAG mill screen undersize will discharge into a cyclone feed pump box together with the ball mill discharge. The combined slurry will be pumped to cyclones. The cyclone underflow will report back to the ball mill grinding circuit. The cyclone overflow will be directed to the copper flotation circuit.

Steel balls will be used as the grinding media. Lime will be added to maintain design pH parameters.

4.5.3 Copper Flotation Circuit

The cyclone overflow will feed a conditioner which feeds to six 20 m³ flotation cells. Rougher flotation will produce a concentrate which will be advanced to the copper regrind mill, a 2.1 m diameter x 4.3 m long 300 HP ball mill, complete with hydrocyclone classification. The reground copper rougher concentrate will be cleaned in five 5.0 m³ flotation cells. The first copper cleaner tailings will be scavenged before being sent to the zinc rougher circuit. The scavenger concentrate is cleaned once and sent to the second cleaning stage. The first copper cleaner concentrate will be cleaned again in five 3.0 m³ flotation cells. The second copper cleaner tailings will return to the first cleaner flotation. The second copper cleaner concentrate is further cleaned in two 3.0 m³ cells in the third copper cleaner circuit. The third cleaner concentrate will be pumped to the copper concentrate thickener. The third copper cleaner tailings will return to the second copper cleaner. The copper rougher tailings will advance to the zinc circuit.

4.5.4 Zinc Flotation

The copper tailings will be advanced to a conditioner and then to six 20 m³ zinc rougher flotation cells to produce a zinc rougher concentrate. The zinc rougher flotation tailings will report to the tailings discharge pump. The zinc rougher concentrate will be cleaned in four 3.0 m³ flotation cells. Tailings will join the final tails while the concentrate will advance to the second zinc cleaner consisting of three 3.0 m³ flotation cells. The tailings will be re-circulated to the first cleaner and the concentrate advanced to the third zinc cleaner. This consists of two 3.0 m³ flotation cells. The tailings will be re-circulated to the second cleaner while the concentrate will be pumped to the zinc concentrate thickener as the final zinc concentrate.

4.5.5 Product Dewatering

Copper and zinc concentrates will be separately thickened and further dewatered in pressure filters to a moisture content of 8%. The dewatered concentrates will discharge to separate storage areas. Dedicated front-end loaders will load the concentrates into road tractor trailers and weighed prior to transportation to the Port of Stewart.

4.6 TAILINGS MANAGEMENT

The tailings from the mill will be disposed of in three areas: 1) underground mines as backfill material; 2) on-land paste tailings storage facility (discussed in Section 4.3.5); and 3) as backfill in the mined-out starter pit.

A portion of the tailings will be directed to a backfill plant to be conditioned and sent to the underground mine as paste backfill. The portion of the tailings that can be used as paste backfill is the coarse fraction of the tailings. Some fine fraction of the tailings will also be used to backfill mined Esso drifts in Year 8 and early Year 9. The remaining portion of the tailings will be dewatered to a consistency of "paste" and pumped into the lined on-land paste tailings storage facility and the mined-out starter pit for disposal.

Tailings are approximately 80% pyrite and are strongly net acid generating. During mine operation, water that runs off the surface of the paste tailings will be collected and piped to the water collection pond for potential use as make-up process water. If it has to be discharged, then it will be pumped to a water treatment plant and treated to meet the discharge standards stipulated under the Metal Mining Effluent Regulations (MMER) and provincial water quality criteria before being released into the receiving environment (i.e., Andrea Creek). The treatment plant will remain operational for as long as necessary after mine closure until the quality of water from the mine site is suitable for direct discharge.

4.7 WASTE ROCK MANAGEMENT

Waste rock from the mine operation includes both PAG and NAG waste rock, which will be separated at the sources during mine operations. The NAG “waste rock” herein also includes a small portion of the overburden materials from the starter pit excavation. The total tonnage of the overburden materials from the starter pit is not implicitly estimated from the block model at this stage.

There will be two temporary waste storage areas during preparation of the starter pit for production to accommodate storage of PAG and NAG rock as discussed in Section 4.3.6.

A portion of the on-surface NAG waste rock will be directly used as site construction materials during the initial site construction stage. The remaining NAG waste rock will be temporarily stored in the stockpile and used as site construction materials and underground mine backfill during the late stage of mine operation and at mine closure for post-closure reclamation requirements. The PAG waste rock generated from the starter pit in Year –1 and early Year 1 will be temporarily stored in the PAG waste rock storage area. The PAG waste will be re-handled and placed back to the mined-out starter pit in Years 2 and 3.

A major portion of the waste rock from underground will be placed in the open stopes and used as passive support for the underground excavations. Depending on the size of the excavation, a mixture of cemented paste fill may be included. The operation will attempt to use PAG waste as much as possible for underground excavations. The remainder of the underground waste rock will be sent to surface. If it is NAG, then a portion will be saved for reclamation and construction as described above.

On-surface PAG waste rock disposal will consist of three methods: 1) co-disposal with paste tailings in the on-land paste tailings storage facility; 2) co-disposal with paste tailings as backfill in the mined-out starter pit; and 3) hauled back underground as backfill. The waste rock management plan will result in no waste piles at closure, an aesthetic benefit that is a significant improvement for the mitigation of environmental risk over the previous Project design and avoids ARD issues associated with waste-rock piles.

4.7.1 Identification and Management of ML/ARD Rock

Acid-Base Accounting and Metal Leaching/Acid Rock Drainage (ML/ARD) studies were initiated in the Project area in the mid to late 1980’s, and further work commenced in 2005 after the Project was reactivated by KCC. Drill-hole sampling in 2005 focused on the footwall of the Main deposit, particularly along the up-dip edge, which would be exposed by mining. More extensive work in 2006 collected continuous samples through the hanging wall and foot walls, proximal to the mineralization in order to define contacts between the PAG rock and NAG rock areas.

Subsequent sampling in late 2006 collected additional samples throughout the upper parts of the hanging wall rocks.

Additional ML/ARD studies were conducted in 2007 to provide a better understanding of ARD production in Project rock. The studies included the following activities:

- Ongoing on-site monitoring of the ARD cribs and ML/ARD seeps in Sumac and Andrea creek valleys
- Additional ML/ARD studies, including a geochemical comparison of the Main, Sumac, and Esso deposits
- ML/ARD survey of the access road
- Completion of column tests of simulated tailings
- Geochemical analysis of fresh tailings solids and fresh and aged tailings supernatant.

The studies of the existing ARD cribs provided a better understanding of ARD production from NAG rock and helped improve ARD modeling that has been conducted to date. The test work on the Sumac and Esso mineral deposits was required to confirm that this rock is geochemically similar to the Main deposit. The ML/ARD survey of the road was conducted to characterize any current, naturally occurring acid generation or metal leaching along the road alignment. Areas requiring further testing were identified and a more detailed baseline study may be required prior to road construction.

A library of continuous samples from the 2008 drill program will be available for further ARD investigations with the objective of increasing the current understanding of drainage chemistry. This information will be an important component of the Application and the closure plan for the mine.

4.8 WATER MANAGEMENT

The general water management plan during the mine operation includes the following components:

- Constructing diversion ditches and berms around the proposed mine waste management facilities to divert the clean surface runoff water from the undisturbed ground above the mine facilities and minimize the overall quantity of the contact water
- Constructing a water collection pond dam to store contact water from the mine waste facility
- Regularly pumping the contact water from the water collection pond to a water treatment plant

- Directly pumping contact water from underground mine and other mine site areas to the water treatment plant for treatment
- Reclaiming a portion of the treated or untreated site contact water and process water for ore processing
- Discharging the treated water to the receiving environment after the water quality meets the discharge criteria.

After mine closure, the water from the covered on-land paste tailings storage facility and starter pit areas will be collected in the water collection pond and then pumped to the water treatment plant for treatment. The water can be discharged directly to the environment when the water quality meets the discharge criteria. The water collection pond may be decommissioned and the dam breached after a monitoring period specified in the associated authorizations and management plans.

4.9 ALTERNATIVES ASSESSMENT

KCC has considered a number of alternative options on infrastructure and systems since the original Project design proposed in 2007. The Project design has been revised considerably from a large open pit and tailings pond to the current design of a small starter pit, underground development and on-surface paste tailings, which has significantly reduced the Project footprint and potential for adverse environmental, economic, social, heritage, and health effects.

Several alternatives of the mine waste and water management plan were assessed during the early stage of the PFS. These included on-land “dry-stacked” tailings disposal and wet slurry tailings dam options. The alternatives evaluated included:

- Dry stack facility at the same location as the proposed paste / waste rock facility
- Slurry tailings retained by a dam across Andrea Creek
- Slurry tailings retained by a dam across the upper portion of Sumac Creek
- Slurry tailings retained by a dam across the headwater channel of Playboy Creek.

On-land tailings paste storage with a temporary water collection pond and water treatment plant is the preferred alternative, since this scenario ensures due diligence with respect to closure and mitigates acid generation risk. The paste fill will retain its moisture which will prevent oxidization to occur, i.e., the same process as a tailings pond facility. However, once mine operations cease the water treatment plant and pond will continue to be utilized until there is confidence that discharge criteria can be attained without treatment, i.e., the paste fill facility is retaining its moisture and oxidization. Then the water treatment plant and pond will be dismantled. The dry stack tailings does not have this benefit, i.e., there is no water treatment plant and pond that can be utilized to ensure discharge criteria is attained. The tailings pond is

also a concern with respect to post closure, i.e., the water treatment plant would have to be operated for a far longer period than that associated with the paste-fill system.

Various options for power were considered including diesel, LNG, and wind power. LNG has been chosen as the preferred alternative as it is the most feasible and cost effective option.

The options for transport of concentrates to either Skagway, Alaska or the Port of Stewart, BC were considered, and the Port of Stewart has been chosen as the preferred alternative. This route is advantageous with respect to providing economic benefit to BC and Stewart rather than Alaska.

Additional alternatives may be considered as the Project moves forward through the review and detailed engineering phases.

4.10 CLOSURE, DECOMMISSIONING, AND RECLAMATION

4.10.1 Reclamation Objectives

The Project will be developed, operated, and closed with the objective of leaving the property in a condition that will mitigate potential environmental impacts and restore the land to its pre-mining land use and capability. Closure and reclamation activities will be carried out concurrent with mine operation wherever possible, and final closure and reclamation measures will be implemented at the time of mine closure.

Under the BC Mines Act and the Health, Safety, and Reclamation Code for BC, the primary objective of the reclamation plan will be to return, where practical, all areas disturbed by mining operations to their pre-mining land use and capability. Before exploration began in the Project area, the principal land uses were wildlife habitat that supported hunting, guide outfitting, trapping, and some general outdoor recreation. The following goals are implicit in achieving this primary objective:

- The long-term preservation of water quality within and downstream of decommissioned operations
- The long-term stability of engineered structures, including the reclaimed starter pit, and tailings storage facility
- The removal and proper disposal of all access roads, structures, and equipment that will not be required after the end of the mine life
- The long-term stabilization of all exposed erodible materials
- The natural integration of disturbed areas into the surrounding landscape, and the restoration of a natural appearance to the disturbed areas after mining ceases, to the best practical extent

- The establishment of a self-sustaining cover of vegetation that is consistent with existing forestry and wildlife needs.

Under published guidance in support of the Application Requirements for a Permit Approving the Mine Plan and Reclamation Program Pursuant to the Mines Act R.S.B.C. 1996, C.293, the BC Ministry of Energy and Mines has established key information that is to be provided in the reclamation program component of the Application. These requirements are summarized as follows:

- Pre-mine land uses and proposed end land use objectives
- Pre-mine land capability or productivity and proposed post-mine capability or productivity objectives for all significant land uses. This information is required to create the property reclamation program and is used as a measure of reclamation success.
- Plans for characterizing the soils and overburden resource for reclamation purposes (not already completed)
- Plans for salvaging, stockpiling, and replacing soils and other suitable growth media
- Consideration of future erosion and mass wasting for long-term stability
- Treatment of structures and equipment
- Reclamation of water courses
- Sealing of underground workings
- Tailings impoundment reclamation
- Road reclamation
- Pre- and post-mine trace element concentrations in soils and vegetation
- The general composition, size, shape, and location of all consolidated and unconsolidated geological units disturbed by the Project
- Prediction of the geochemical performance of the various geological units in the form which they will be exposed, and a determination of the potential for deleterious effects
- Determination of disposal and remediation methods, their effectiveness, and quantities by area requirements
- Determination of monitoring requirements for extraction, waste handling, and disposal operations
- Determination of the time to onset of ML/ARD in materials where there is a delay in the application of remedial measures
- Programs for prevention, treatment, and control of ARD and ML

- Toxic chemical disposal
- Environmental monitoring
- Preliminary characterization of surficial and bedrock materials for geotechnical assessments
- Preliminary design of
 - Ore processing facilities
 - Tailings impoundment facility
 - Starter pit and underground workings
 - Access roads
 - Water storage facilities

4.10.2 Reclamation Units

For the purposes of reclamation planning, the Project has been broken down into the following key reclamation units:

- Underground mine
- Starter pit
- Waste rock storage
- Tailings paste storage facility
- Effluent treatment facility
- Mine site facilities
- Access road
- Airstrip

4.10.2.1 Underground Mine

Once all material disposal underground during reclamation is complete, the portal entrance and all surface raise openings will be permanently sealed with concrete bulkheads. During operations, in-the-field data will be available to confirm due diligence with respect to ensuring groundwater quality and mitigating risk associated with seepage from underground workings both during operations and at closure.

4.10.2.2 Starter Pit

The closure cover design for the mine waste in the mined-out starter pit applies best engineering measures to minimize or prevent surface infiltration and ingress of oxygen to reduce the risk of mine waste oxidation and generation of acid drainage. The cover system consists of a top native soil layer followed by a capillary barrier layer, a low-permeability clay silt layer, and a geomembrane liner installed over the final paste tailings.

4.10.2.3 Waste Rock Storage

A temporary PAG waste rock dump is required to store the PAG waste rock during early mine operation before the waste rock is permanently disposed. The storage capacity of the dump is approximately 0.46 M m³. The PAG waste rock will be placed in the dump in Years -1 and 1. The PAG waste will be re-handled and placed back to the mined-out starter pit in Years 2 and 3.

A temporary NAG waste rock stockpile is required to store a portion of the NAG waste rock generated during early years of mine operation and be later used as site construction materials and as underground mine backfill. The stockpile has a maximum storage capacity of 0.36 M m³ in Year 3. The storage volume will be gradually reduced over the rest of mine life when some NAG waste rock is used as construction materials and underground mine backfill.

4.10.2.4 Tailings Storage Facility

A multiple-layer soil cover will be placed over the top of the paste tailings at mine closure to minimize the water infiltration into the facility and provide an oxygen diffusion barrier to minimize the influx of oxygen. The cover system consists of a top native soil layer, a top capillary barrier layer, a compacted low-permeability clay silt layer, and a bottom capillary barrier layer over the paste tailings. The key design objective for the low-permeability layer is to maintain a high degree of saturation under all conditions. This objective is achievable for the current cover design under the meteorological, hydrological, hydrogeological, and ground conditions of the Project site.

The moisture content in the majority of the paste tailings placed in the on-land paste tailings storage facility will be maintained in a nearly saturated condition over the long-term because of the lined sides and bottom of the facility, the fine-grained nature and intrinsic low permeability of the paste tailings, the cover design that limits moisture loss of the tailings, and a gentle surface slope.

4.10.2.5 Water Treatment

A high-density sludge lime treatment plant will be constructed on site during the operational phase of the mine to treat mine effluent. This plant will pump water from the water collection pond and treat the water for discharge. The volume of water treated from the pond will be managed in order to prevent release of any contaminated water from the water collection pond into Andrea Creek. Sludge produced by the treatment plant will be disposed in the landfill or underground.

Flows from the waste dump will be directed to the water collection pond during operations, and this configuration may also be maintained after closure if required.

The effluent treatment plant may not be required post-closure as all mined PAG rock will be permanently stored underground.

During mine operation, alternative treatment methods will be assessed and considered for the post-closure phase. Water management strategies will also be assessed and optimized to minimize the volumes of water requiring treatment.

After mine closure, the water from the covered on-land paste tailings storage facility and starter pit area will be collected in the water collection pond and then pumped to the water treatment plant for treatment. The water can be discharged directly to the environment when the water quality meets the discharge criteria. The water collection pond can be decommissioned and the dam be breached after a monitoring period specified in the associated authorizations and management plans.

4.10.2.6 Mine Site Facilities

Buildings and structures that compose the mine site facilities (mill camp, administration, maintenance shop, laboratory, site roads, and fuel storage) will be removed at closure. These facilities will be dismantled or demolished. Salvageable materials will be removed from site and sold. Hazardous wastes will be removed from site and disposed of in an approved facility.

The majority of the non-hazardous, inert building materials will be disposed of in the site landfill or placed underground. Concrete footings will be broken up and disposed of underground. Any metal-contaminated soils will be removed and disposed underground. Hydrocarbon-contaminated soils will be excavated and treated on-site in a land farm. Once successfully treated, these soils will be placed in the landfill or underground.

Following removal of the facilities and any associated contamination, the disturbed areas will be re-graded, capped with top soil where needed, and fertilized and seeded with native species. Mine site roads will be scarified and seeded, with all stream crossings returned to their pre-mining condition. The site landfill will be closed using best practice methods.

4.10.2.7 Access Road

Road access to the site will be required if the effluent treatment plant is required. The road surface, security gates, bridges, and culverts will be maintained during this period.

4.10.2.8 Airstrip

The airstrip does not belong to KCC, but KCC will work with the owners to determine any closure and reclamation requirements.

4.10.3 Post-Closure Monitoring

Long-term monitoring requirements will be developed in detail during the operational phase of the mine life. During the active closure and reclamation phase, where the mine is being decommissioned and reclaimed, monitoring will continue at the same level as during the operational phase. However, once the major closure and reclamation activities are completed,

and the mine moves into the post-closure phase, the monitoring requirements will decrease. Post-closure monitoring will likely consist of the following:

- Water-quality monitoring of applicable sampling stations, including the effluent treatment plant discharge, water collection pond, open pit discharge, and downstream flows on Andrea and Sumac Creeks
- Environmental effects monitoring, including studies on water quality, sediment quality, benthos, and fish to assess effects on the aquatic receiving environment
- Engineering inspections by qualified persons of the water collection pond and all engineered structures, including the effluent treatment plant and landfill.

Water quality monitoring will be completed on a regular basis by the on-site effluent treatment plant staff. It is assumed that daily measurements of the plant inflows and outflows will be required as part of the plant operation.

Monitoring requirements will decrease once the contents of the water collection pond are suitable for direct discharge to Andrea Creek and the geotechnical stability of the engineered structures is demonstrated. However, water quality and environmental effect monitoring will be required as long as operation of the effluent treatment plant is required.

4.10.4 Reclamation Security Bond

Section 10 of the BC Mines Act stipulates that the Chief Inspector of Mines may, as a condition of issuing a permit, require that the mine owner provide monetary security for mine reclamation and to provide for protection of, and mitigation of damage to, watercourses and cultural heritage resources affected by the mine.

Performance bonds are an acceptable means of providing this security. In addition, enough hard security must be posted so that at any point in time, the amount will fully cover the next five-year period of expected post-closure costs related to water treatment and site management and monitoring (BC MEMPR, 2006).

The amount of security required, and the form in which the security is to be provided, will be agreed between KCC and the Chief Inspector of Mines as part of the permitting process. The predicted capital and long-term operating costs of the mine site water collection and treatment system will likely be taken into consideration when deciding the amount of security required (BC MEM and MELP, 1998).

5. ENVIRONMENTAL SETTING

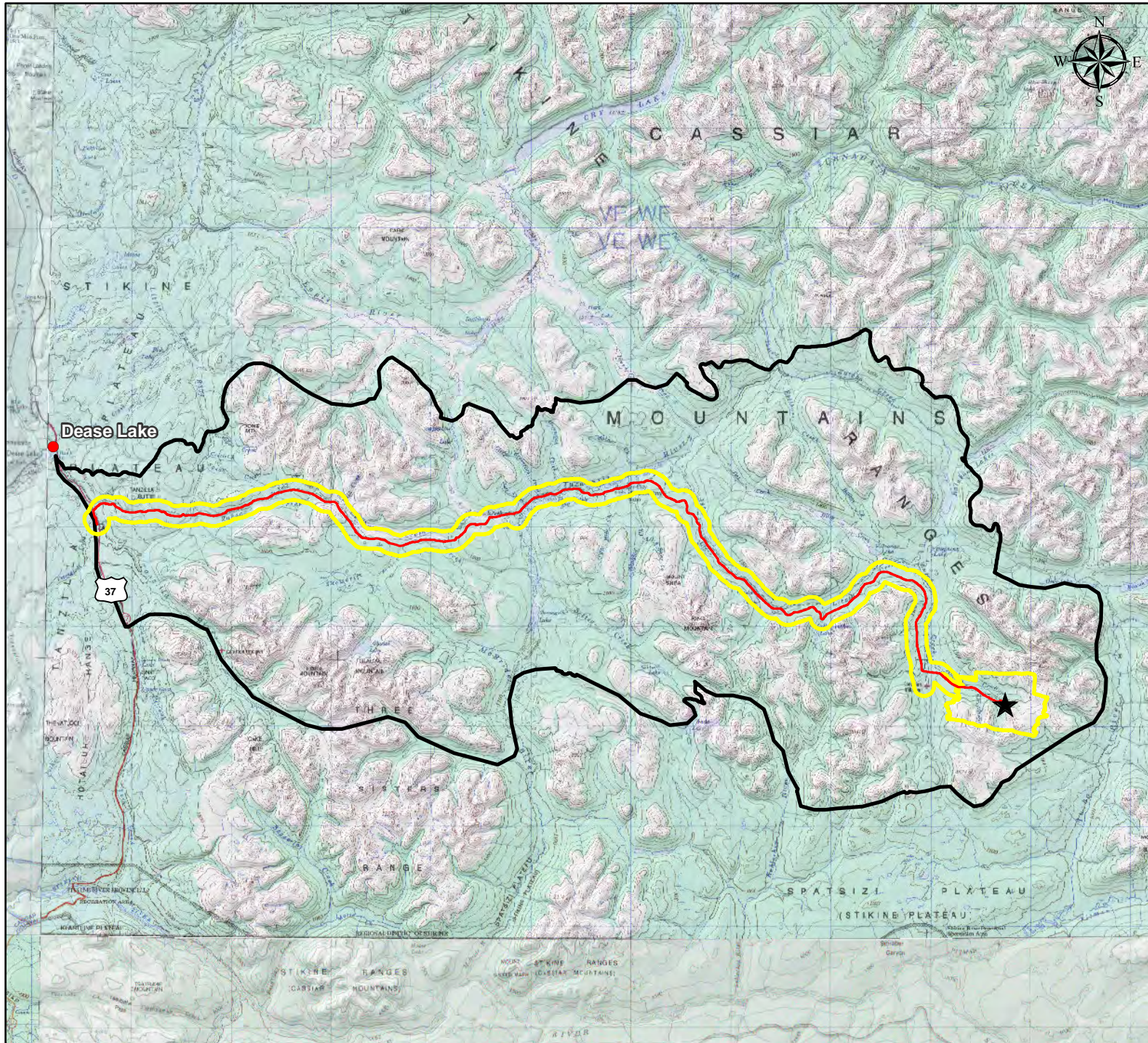
5.1 OVERVIEW

In 2005, KCC initiated a program of baseline studies to provide the information necessary to prepare the Environmental Assessment Certificate Application and to develop management and monitoring plans. That program was largely completed by the end of the 2007 survey season. Since 2007, monitoring of meteorology, air quality, hydrology, and water quality has been ongoing. In 2010 and 2011, several of the baseline reports were updated or amended to reflect the more recent data.

Historical studies were carried out in the Project area and are available. These reports (e.g., BC Research 1979 a and b; Northwest 1979; LGL 1980; Remington 1990; Golder 1984 and 1985; Norecol 1986; Urban Systems Ltd. 1986; URS 2003; Webb 1979 and 1980) provide supplemental information to the more recent studies. However, many of the studies conducted in the 1970s and 1980s were not sufficiently comprehensive to meet present-day standards nor did they collect the kind of geo-referenced data that are required for Geographic Information System (GIS) mapping. Consequently, these studies are only referenced where applicable.

5.2 STUDY AREAS

Environmental baseline studies were typically carried out at two general scales: broad (Regional Study Area) and fine (Local Study Area). The Regional Study Area covers approximately 305,000 ha and is located within the Stikine Range, which forms a part of the larger Cassiar Mountains (Figure 5.2-1). The Local Study Area includes the proposed mine site area and a 2 km wide corridor surrounding the proposed access road (1 km either side from the centre line).

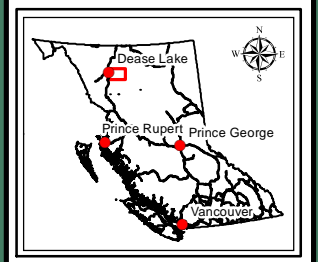


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Kutcho Project
Figure 5.2-1
Baseline Study Areas

Legend

- ★ Project Location
- Community Location
- Proposed Access Road
- ▭ Local Study Area
- ▭ Regional Study Area



20K Mapsheets:
 Date: 3/22/2011
 Projection: UTM8N, NAD83
 Scale: 1:550,000
 Path: C:\10-VA-0146\11GIS\Kutch-3302-003.mxd
 Drawn By: TK
 Checked By: KB
 Revision #:

0 2 4 8 12 16 20
 Kilometers

5.3 GEOLOGY

5.3.1 Regional Geology

The Project lies within the King Salmon Allochthon, a narrow belt of Permian-Triassic island arc volcanic rocks and Jurassic sediments sandwiched between two northerly dipping thrust faults: the Nahlin fault to the north and the King Salmon fault to the south (Figure 5.3-1). Penetrative foliation and axial planes of major folds are parallel to these east-west trending bounding faults. The belt of volcanic rocks is thickest in the area hosting the volcanogenic massive sulphide (VMS) deposits due to primary deposition and to stratigraphic repetition by folding and possibly thrusting. The King Salmon Allochthon extends to the west for hundreds of kilometres. To the east, the Kutcho strike-slip fault terminates the King Salmon Allochthon near the eastern edge of the property (Gabrielse 1978). Stratigraphy of the King Salmon Allochthon consists primarily of the Kutcho Formation, which is overlain by limestone of the upper Triassic Sinwa Formation, which in turn is overlain by predominately argillaceous sediments of the Lower Jurassic Inklin Formation. Major folds are delineated by the Sinwa limestone and, where the Sinwa is absent, by the contact between the Kutcho and Inklin Formations (Figure 5.3-2). Kutcho Formation rocks thin to the west, and do not occur or are rarely exposed 10 km to the west of Kutcho Creek.

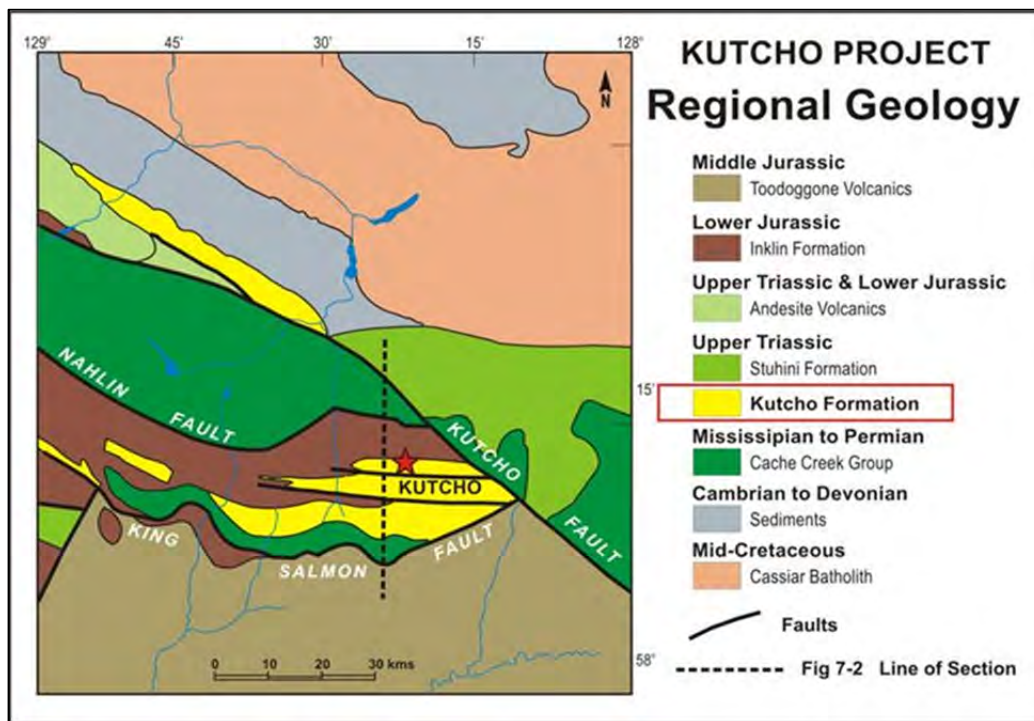


Figure 5.3-1 Kutcho Project - Regional Geology

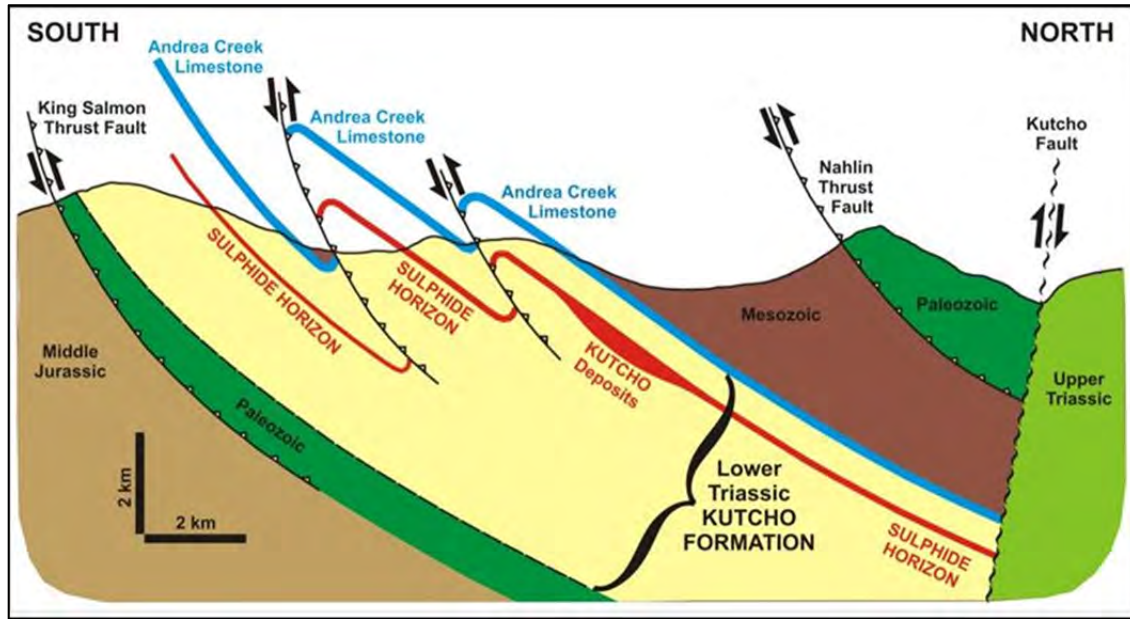


Figure 5.3-2 Kutcho Project - Schematic Cross Section

5.3.2 Property Geology

5.3.2.1 Stratigraphy

The stratigraphy of the Kutcho property, described in detail by Bridge (1984), Thorstad (1983), and Holbek (1985), is summarized here. Figure 5.3-2 shows a map of the property geology, and Figure 5.3-3 shows a generalized reconstructed stratigraphic section.

Stratigraphy is best understood in the upper part of the Kutcho Formation where units are better exposed and diamond drill core information is available. The footwall stratigraphy, particularly away from the deposit area, is not well understood.

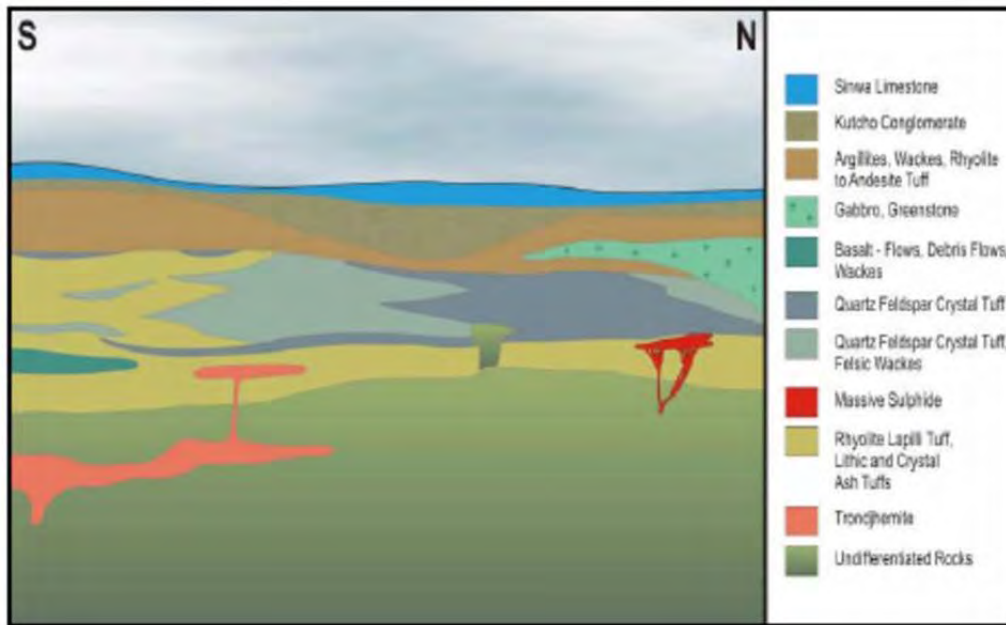


Figure 5.3-3 Kutcho Project - Property Stratigraphy Schematic ~10x Vertical Exaggeration

5.3.2.2 Structure

Rocks of the Kutcho Formation are characterized by penetrative axial planar foliation that has a relatively constant strike direction of 270° to 290° with northerly dips from 45° to 65°. Minor but systematic changes in foliation from the east to west suggest low amplitude buckling of the fold axes. The dip of the foliation often appears to decrease with structural depth, indicating the axial planes are convex to the south.

Folds are open to tight, asymmetrical, inclined, and verging to the south. Fold plunges range from 0° to 30° in a westerly direction. Folds are most evident in well-bedded competent units, and therefore spatial distribution of the fold data is heavily biased to the western property area, where these units predominate.

5.3.2.3 Deposit Types

Features of the Kutcho deposits suggest formation at or very near the water-seafloor interface in a structurally controlled depression, likely a half-graben type structure. The Kutcho deposits have some uncommon features; the rarity of lead and barite is likely due to the low potassium content of the volcanic host rocks (and presumably the associated rhyolite dome) and the abundant carbonate is probably of exhalative origin.

Alteration associated with VMS deposits is well-documented and provides a valuable exploration tool in that the area of alteration is 10 to 100 times larger than the actual sulphide deposit, thereby providing a much more broad initial exploration target. Extensive studies of the

alteration around the Kutcho deposit have been undertaken, and the chemical composition of the alteration is well zoned about the hydrothermal vent areas. This zonation allows the use of geochemical analysis of drill core within the alteration zone to provide vectors towards the hydrothermal vent area and, theoretically, the sulphide deposits.

Geophysical techniques such as electromagnetic and gravity surveys are useful for locating conductors or possible sulphide concentrations. Electromagnetic methods can be used in airborne and ground surveys, but can also be used down drill holes to locate "off-hole" conductors, thereby effectively increasing the search area of a drill hole. A large number of airborne and ground-based geophysical surveys have been completed on the Kutcho property and high-priority targets have been tested. However, many subtle or lower priority targets require follow-up.

5.3.2.4 Mineralization

Mineralization of the Kutcho Project is part of the VMS or volcanic hosted massive sulphide (VHMS) family of deposits. These deposits are major sources of copper, zinc, lead, silver, and gold around the world. VMS deposits have been classified into various subtypes, depending upon the composition of the host rocks and the mineralization and on the tectonic setting of origin. The Kutcho deposits are VMS deposits of the Kuroko type or felsic volcanic-siliciclastic, depending upon the classification scheme. Mineralization is related to felsic volcanism in island arc or back-arc tectonic settings. Perhaps the most significant feature of these deposits from an exploration perspective is their tendency to occur in clusters. Larger VMS camps can have up to 25 discrete deposits, and mineralized districts are common.

Three known deposits comprise the Kutcho Project. From east to west, the Main (previously known as Kutcho), Sumac and Esso deposits form a westerly plunging linear trend. The Main deposit comes to surface at its eastern end; the Esso deposit occurs at depths about 550 m below surface at its western end. The Sumac deposit lies between the two. (Wardrop 2007) The three known Kutcho area massive sulphide deposits (as modeled in 2007), drill holes, and topography are shown in Figure 5.3-4.

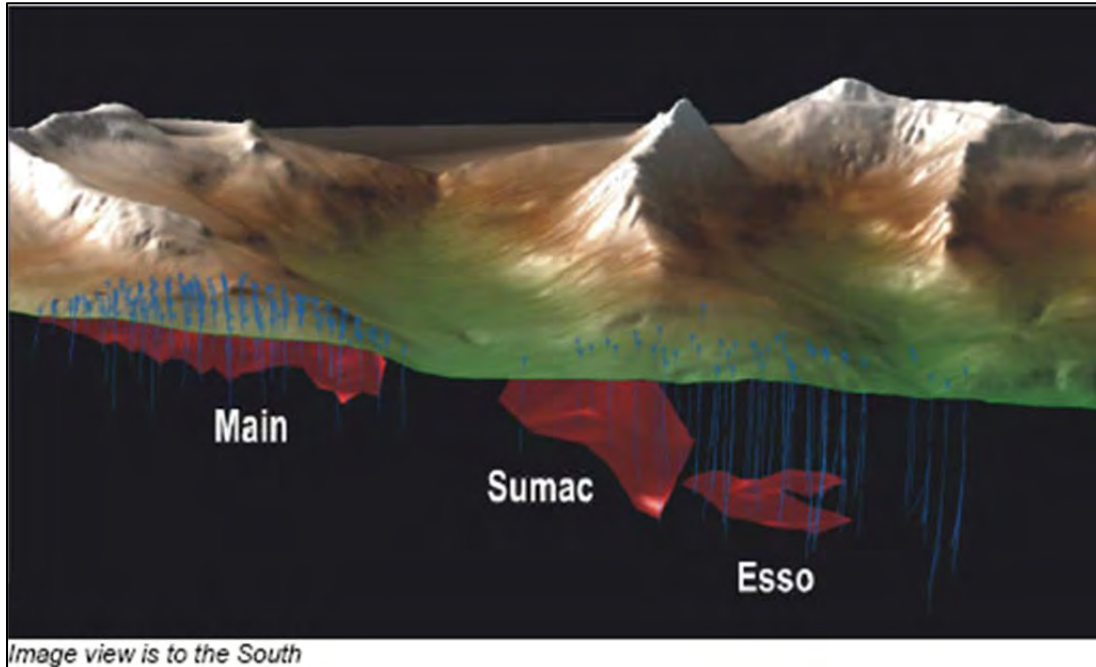


Figure 5.3-4 Kutcho Project - Three Known Deposits (2007 model)

5.3.2.5 Main Deposit

The Main deposit has an elliptical, lenticular shape with approximate dimensions of 1,500 m long, 260 m wide (down-dip), and 36 m maximum thickness. The long axis of the deposit plunges to the west at about 12°, just slightly less than the regional fold axes. The deposit is conformable with stratigraphy, dipping moderately to the north. There is a gentle warping of the deposit, such that the dip of the deposit changes from east to west and north to south. The shallowest dip (about 38°) occurs at the south-eastern edge and becomes progressively steeper (to about 63°) at the north-western edge. In general, the up-dip edge of the sulphide lens is narrow and pinches out, whereas the down-dip edge is thicker and interlayered with tuffaceous rock, giving the deposit an approximate flattened arrowhead shape (Figure 5.3-5).

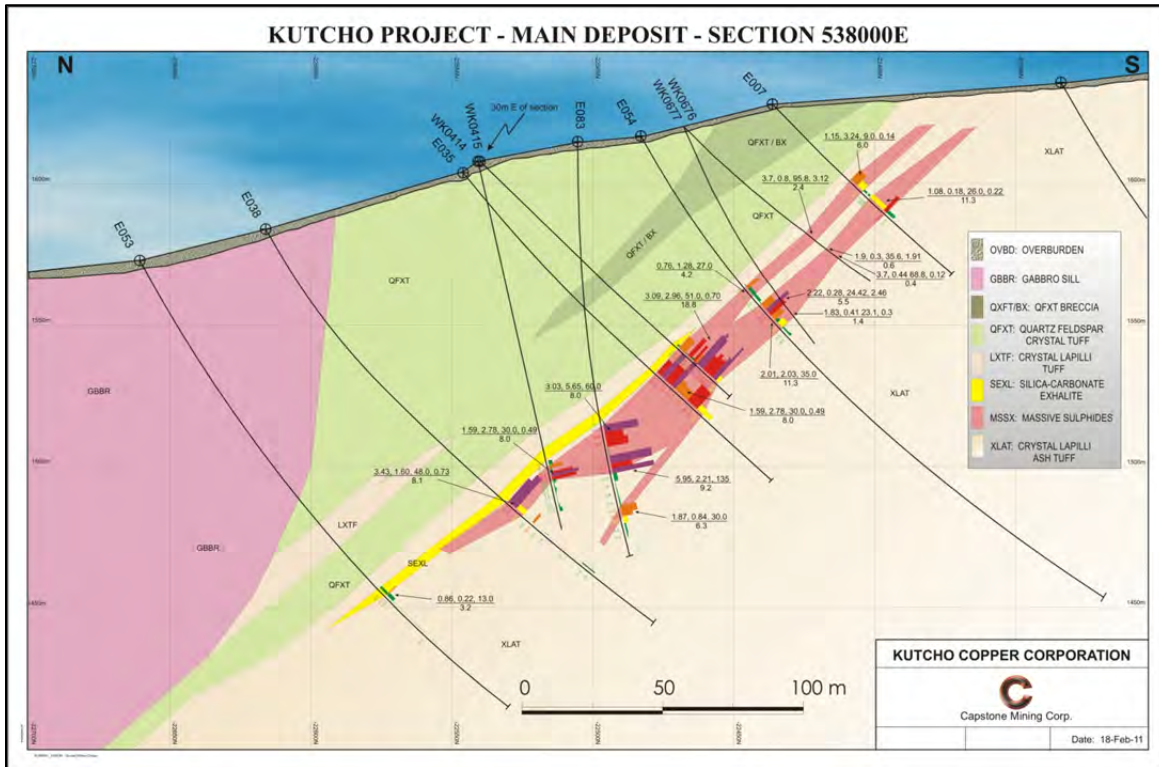


Figure 5.3-5 Main Deposit Cross-Section

The Main deposit is composed of three depositional cycles. The cycles are interpreted to begin with pyritic mineralization, which then becomes more copper-rich and finally zinc-rich. The cycles are variably separated by siliceous or carbonate exhalative material and minor volcanic ash and detritus. Interpretation of the shape of the sulphide zone, taken together with the observed volcanic and depositional textures of the enclosing rocks, suggests the sulphide mineralization was deposited in a structural depression, likely a half-graben type structure. Fine mineralogical layering and sulphide-ash, sulphide-silica, or carbonate inter-layering, as well as framboidal and "snowball" textures in both the sulphide and carbonate minerals, suggest quasi-sedimentary deposition at the seawater seafloor interface. Polished section analysis indicates very little sulphide recrystallization has taken place.

Sulphide mineralogy of the deposit is relatively simple, consisting of pyrite, chalcopyrite, sphalerite, and bornite, with minor sulphide minerals chalcocite, tetrahedrite, digenite (and related minerals), galena, idaite, hessite, and electrum. Gangue minerals include quartz, dolomite, ankerite, sericite, gypsum, and anhydrite. Fluorite and barite have been observed, but do not occur in volumetrically significant amounts.

Areas of late overprinting by oxidized copper species and enrichment in precious metals are interpreted as indicators of vent areas, and occur along a linear trend on the down-dip side of

the deposit, with two "hot-spots" near each end of the deposit. However, no well-defined areas of classical footwall stringer mineralization have been identified by drilling.

The upper contact of the sulphide mineralization is sharp, with almost no sulphide minerals occurring in the hanging wall rocks with the exception of scattered coarse grains of porphyroblastic pyrite. However, alteration of feldspar to sericite and carbonate in the hanging wall is intense, and occurs for up to 50 m above the sulphide contact. It is common for a small shear zone to occur at the sulphide-schist contact, which varies in thickness from 20–200 cm, and in many drill holes carries some grade.

The base of the deposit consists of nearly barren massive pyrite with interstitial quartz. The contact between ore and the footwall pyrite zone can be either gradational or sharp. Below the footwall pyrite zone is quartz-sericite schist with bands of generally barren massive to semi-massive pyrite.

The footwall pyrite content diminishes with depth away from the deposit, but extends to a maximum depth of 200 m below the central part of the deposit. Although the footwall material appears incompetent in the drill core, it holds up very well in the underground adit (Wardrop 2007).

Additional features also cause complexity to the internal sulphide stratigraphy, such as an irregular depositional surface, localized slumping of sulphide mineralization or chimney collapse, and late-stage (post depositional) hydrothermal activity.

5.3.2.6 Sumac Deposit

The Sumac deposit is relatively low grade. The Sumac deposit is nearly continuous with the Esso deposit, but sits within a local depression relative to the Main and Esso deposits.

Reinterpretation of the Sumac drill data suggests the core of the deposit has a much steeper plunge than previously suspected, indicating historical drilling in the deposit's eastern end was likely too shallow. Further drilling is required to test the eastern extent of the deposit. The Sumac deposit is finely banded, massive and competent, and has the highest sulphide content (+90%) of the three deposits. Alteration of the host stratigraphy around the Sumac deposit is very similar to that of the other two deposits (Wardrop 2007).

5.3.2.7 Esso Deposit

The Esso deposit lies between 400-550 m below the surface. It was discovered by following the down-plunge westward trend of mineralization beyond the Main and Sumac deposit areas. The Esso deposit has an elongate lens shape with a strike length of approximately 640 m, a dip direction of 240 m and is up to 21 m thick, averaging approximately 12.2 m thick.

5.3.2.8 Other Mineralization

Other zones of mineralization include the Footwall Zone (FWZ), and the Jenn Area. The FWZ occurs approximately 100 m stratigraphically below the Main deposit and slightly up-dip and to the east of the centre of the Main deposit. The FWZ is relatively narrow at 2-5 m thick and relatively zinc-rich. The mineralization was only systematically drilled up to the historical Esso-Sumac property boundary, but a number of drill holes by SMC and WKM demonstrate the FWZ does not extend for significant distances to the west and down-dip of its current position.

The Jenn Area is on the eastern end of the property. Although significant alteration and some local mineralization were intersected in a number of drill holes, no resources have been defined in the Jenn Area. Structural and stratigraphic complexities in the region complicate interpretation of drill data and past airborne geophysical surveys did not detect significant untested conductors in the area, suggesting potential ore deposits would be at considerable depths (Wardrop 2007).

Exploration activities continue on the property regionally and in the vicinity of the deposits to identify potential for other mineralized areas.

5.4 METEOROLOGY AND AIR QUALITY

The meteorological monitoring program is based on two automated weather stations equipped with sensors for temperature, wind speed and direction, snow depth, total precipitation, and evaporation. The Kutcho Airstrip Station has been operational since September 2005 and the Deposit Station has been operational since September 2006. Snow-water-equivalent was measured at snow survey sites in the proposed mine area for the first time in January 2007. Long-term records from five government weather stations and some historical baseline data are also available.

Climate monitoring using the two existing stations is ongoing. Dustfall data was collected from six stations throughout the summer months of 2006 and 2007. A snow survey was conducted once per month from January to March 2008.

At the Deposit Station, measured monthly average air temperatures were as low as -18.6°C in December 2008 and as high as 14.0°C in August 2008. The extreme minimum hourly temperature of -41.0°C was recorded in January 2008, while the extreme maximum temperature of 28.2°C was recorded in July 2009 (Rescan 2008a, 2010a). The average annual temperature at the Deposit Station was -2.3°C from November 2007 to October 2008 and -2.2°C from October 2008 to September 2009. Monthly average air temperatures at the two on-site meteorology stations generally followed the seasonal trends from the regional meteorology stations operated by Environment Canada–Meteorology Services of Canada and the historical on-site weather

stations. Permafrost ground is not expected under these climatic conditions and was not observed during site investigations in the mine site area.

The average annual precipitation estimates for the Andrea Creek watershed, which includes the proposed mine site, were between 771 mm to 806 mm (Rescan 2010a). This estimate of average annual precipitation was based on an orographic correction factor of 8% and ClimateBC software estimates. Open water or lake evaporation, based on regional historical data and on-site monitoring with a Class A pan, was estimated to be in the range of 288 to 319 mm for the Andrea Creek watershed, which includes the proposed mine site. Between October 2008 and September 2009, average wind speed observed at the Deposit Station was 2.1 m/s. Wind mainly blew from the south at the Deposit Station. The maximum instantaneous wind gust at the Deposit Station was approximately 18 m/s (65 km/h). The peak snow depths recorded at the Deposit Station was 161 cm on February 6, 2009 and 160 cm on April 11, 2008.

The highest dustfall measured was 0.31 mg/dm²/day, which was the only reading above the detectable level. Dustfall levels at the other stations were generally below the detection limit of 0.10 mg/dm²/day. Results from all of the dustfall samples collected to date were well below the 1979 BC Pollution Control Objectives for Dustfall (1.7 to 2.9 mg/dm²/day). Based on the dustfall monitoring results to date and recognizing the absence of any human activities in the area it can be concluded that the air quality in the Kutcho project area is pristine. The monitoring results available to date indicate a temperature inversion at the mine site, which may have implications for the management of air quality during operations.

5.5 HYDROLOGY

The key watersheds within the Kutcho Project area are presented in Figure 5.5-1. Most of the mine infrastructure (e.g., starter pit, underground workings, process plant, waste and water management facilities, camp) will be located within the Andrea Creek Watershed (Figure 5.5-2). The Andrea Creek Watershed is approximately 70 km² in size at its confluence with Kutcho Creek. There are a number of small headwater streams within Andrea Creek. The mine infrastructure will be located primarily in two sub-catchments: Sumac Creek and Rusty Creek. The Project airstrip will be located adjacent to Kutcho Creek, which is close to (and upstream of) the confluence of Andrea Creek and Kutcho Creek.

The Andrea Creek Watershed is one of two main headwaters of Kutcho Creek, a sixth-order stream that flows 50 km north from the confluence of Kutcho and Andrea creeks to the Turnagain River. The Turnagain River drains eastward into the Kechika River, then into the Liard River, and finally the MacKenzie River, which spills ultimately into the Arctic Ocean.

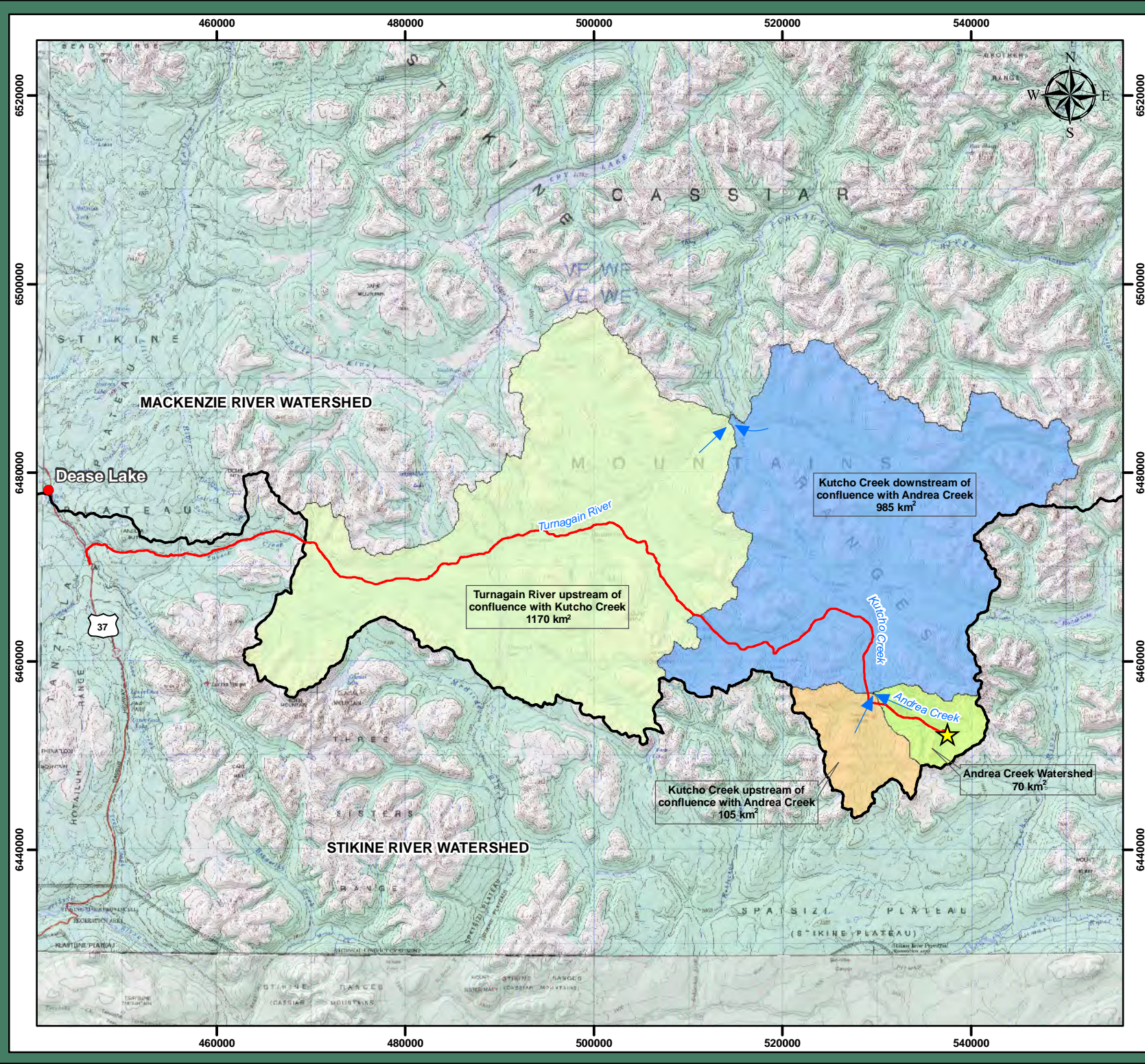
Hydrometric stations were established at a number of locations within the mine site study area during two periods of study. Initial data was collected in 1984 and 1985 by Norecol (1986) and additional information was obtained by Rescan Environmental Services Ltd. (Rescan) (in

partnership with Rescan Tahltan Environmental Consultants [RTEC]) in 2006, 2007, and 2008. Estimates of a number of key hydrological parameters were made for the study area, including average annual runoff, average monthly flows, flood flows, and extreme low flows.

During 2007, the flow monitoring stations installed in 2006 were re-mobilized and additional manual flow measurements were undertaken during the summer to improve the existing rating equations (i.e., stage/discharge curves) for each station. Additional monitoring on the main channel of Kutcho was also conducted. During the winter months of 2007-2008, three sets of manual flow measurements were taken to characterize winter low flow conditions in the study area.

Flow rates in Andrea Creek, which flows into Kutcho Creek, are seasonally variable with low to negligible stream flow during the winter months and high flow rates during the spring as a result of snowmelt. Stream flows during summer months are generally low, with short-lived high flow events following rainfall. There are no glaciers or permanent ice fields within the mine site area and as a result snow melts by early to mid-summer.

Automated hydrometric monitoring continued in 2008 at three locations within the Andrea Creek drainage and one location on Kutcho Creek. Several manual flow measurements were conducted at the monitoring sites through the open water season, but no winter low flow measurements were collected over the 2008/2009 winter period. Average annual runoff for Andrea Creek was estimated at 738 mm. Values for monthly average flow for locations within Andrea Creek were also determined.



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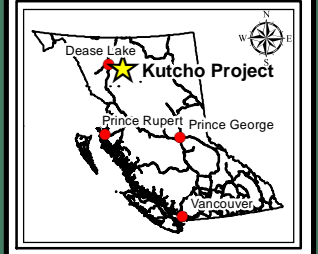
Figure 5.5-1

Key Watersheds

within the Study Area

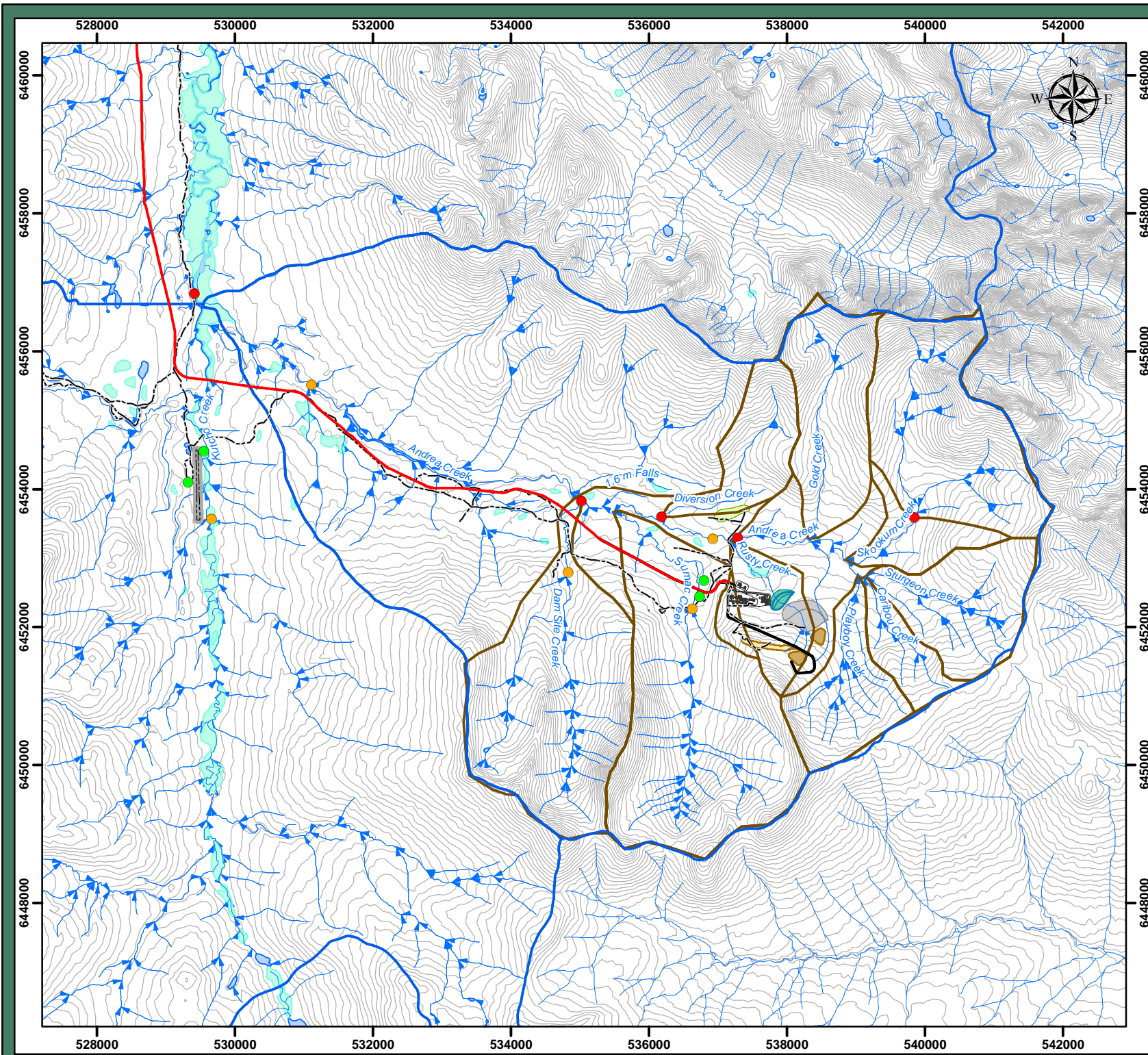
- Legend**
- Community Location
 - ★ Project Location
 - Proposed Access Road
 - Stikine River/Mackenzie River Watershed Boundary
 - ▶ Flow Direction

Note: Shaded areas refer to Watershed boundaries



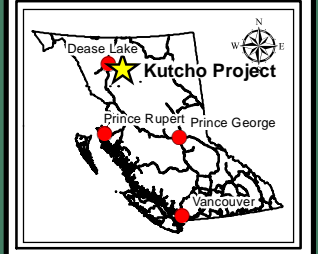
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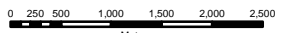





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Figure 5.5-2
Mine Site Catchments
and Flow Direction

- Legend**
- Baseline Hydrometric Station
 - Meteorology Station
 - Historical Hydrometric Station
 - Proposed Access Road
 - - - Rough Road
 - Airstrip
 - Access Road
 - Minesite Infrastructure
 - Contour (20 m)
 - Flow Direction
 - Stream
 - Regional Watersheds
 - Sub-watershed Boundary
 - On-land Paste Tailings Storage Facility
 - Proposed Borrow Area For Clayey Silt Fill
 - Starter Pit
 - Temporary Waste Rock Storage
 - Water Collection Pond & Dam
 - Lake
 - Wetland



Date: 9/13/2011
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5.6 WATER QUALITY

Discharge from the proposed Project has the potential to effect downstream water quality. Potential effects will be determined in advance of the Application for the construction, operation, and decommissioning phases of the Project.

All mine site infrastructure and mining related activities will occur in the Andrea Creek watershed. The Project airstrip will be located near to Kutcho Creek, just upstream of this river's confluence with Andrea Creek. The access road to the Project site will pass through the watersheds of a number of streams, the largest of which are Turnagain Creek and Kutcho Creek. However, as mining activities lie within Andrea Creek, the main focus of the Application will be Andrea Creek, as it is the primary receiving water body for the mine. It is intended that the Project will maintain sufficient water quality and quantity in Andrea Creek and streams and wetlands lying downstream.

Stream baseline studies were conducted in the study area in 2007 and 2008. Water samples were analyzed for general physical variables, anions, nutrients, total cyanide, total organic carbon, and total and dissolved metals. Data for each site were compared to the Canadian Environmental Quality Guidelines (CEQG) and the BC Water Quality Guidelines (BC WQG), and the number of samples that exceed each guideline were calculated for each parameter.

Between February 2006 and November 2008 water quality samples were taken at 18 streams and wetlands close to the mine site and 11 streams and wetlands along the road route. At different sites, sampling frequencies varied from monthly or quarterly intervals, with weekly sampling during freshet for selected sites. Monthly sampling aimed to show the seasonal variations in water quality in response to stream flow (i.e., differences between freshet, summer and winter). Weekly samples were taken to constrain the variability in the data in response to changes in flow conditions and sediment content. Sampling for drinking water continued into 2010.

In general, streams of the region contained relatively low suspended sediment loadings, and showed moderate hardness, dissolved ions, nutrients, and conductivity. pH, aluminum, cadmium, chromium, copper, iron, silver and zinc exceeded CEQG and/or BC WQG at one or more sites; however, the Kutcho Project is in the pre-development stage and therefore any exceedances that occur are not related to disturbance but reflect current natural values prior to any mining activity. Andrea Creek-Adit and Sumac tributary had the highest frequency and number of variables exceeding guidelines. These sites drain from the Main deposit zone; therefore, they had the highest concentration of sulphate and many metals including copper, manganese, zinc, lead, and nickel. This would be expected for samples close to an ore body.

5.7 HYDROGEOLOGY

Fourteen groundwater monitoring wells were drilled during October 2006. Groundwater levels were measured and hydraulic tests on both bedrock and overburden were performed. Groundwater samples from the monitoring wells were analyzed for water quality. Eight new monitoring wells (at four different locations) were installed in 2007, two of which were down-gradient from Main deposit. Site location, testing, and installation of a water supply well for the plant site camp and a potable water supply well for the airstrip camp also took place.

In August 2008, five additional ground water monitoring wells were installed up gradient and down gradient from the Main deposit. Hydraulic conductivity tests and ground water level measurements were completed on those monitoring wells to characterize the physical groundwater flow regime in the Main deposit area. Groundwater sampling was performed twice (spring and winter) in 2008 to characterize and assess temporal variations in groundwater quality in the Main deposit area. Chemical analysis results indicate that the groundwater is characterized by near neutral pH and low dissolved solids. Nutrient concentrations are low in all wells while total organic carbon concentration in a number of the wells was above BC Drinking Water Standards.

Generally, groundwater flow directions are consistent with topography. Groundwater in the vicinity of the Sumac and Esso deposits flows north. Groundwater flow in the northern side of the site is directed southwest toward Andrea Creek.

5.8 AQUATIC RESOURCES

Aquatic resources include water quality, sediment quality, and the spatial distribution, taxonomic composition and abundance of plants and animals other than fish. This includes periphyton (streams), phytoplankton (lakes), benthic invertebrates (streams and lakes), and zooplankton (lakes). There were 16 streams and rivers that receive water from the proposed mine footprint (based on the 2007 version of the mine plan). Five streams in different watersheds spanning the proposed road route were also surveyed. Two wetlands within the Andrea Creek Watershed were sampled, along with three wetlands and three lakes situated along the proposed road route.

Studies of aquatic resources in streams and rivers that receive water from the proposed mine footprint were carried out during summers of 2006 and 2007. Studies were also conducted in streams, wetlands, and lakes situated along the proposed road alignment. Monthly and quarterly sampling of water quality has been conducted at sites throughout the mine site area and will continue through the construction, operation, closure, and post-closure phases of the Project.

Water quality was assessed four times from June to September in 2006 and 2007 on all five wetlands and three lakes. Waters at these sites were slightly alkaline and were of moderate hardness and conductivity, with generally low turbidity with some exceptions possibly related to storm events. Nitrogen and organic carbon were higher at several wetlands compared to the lakes, as is typical due to dilution of nutrient and organic inputs in larger water bodies. Phosphorus concentrations were less variable among sites. Cyanides exceeded BC WQG and CCME Guidelines only at Three Kettle Pond (RWL-3). Several metals exceeded water quality guidelines for the protection of aquatic life at one or more sites, including total aluminum, chromium, copper, iron, nickel, and zinc, similar to the variables that exceeded in stream sites. These exceedances reflect natural conditions, since the Project has not been initiated. Wolverine Lake (RWL-6) showed the highest concentrations of most of the metals, and WL-1 had very high copper and zinc concentrations, as expected since it is down-slope of the main deposit zone in Andrea Creek Watershed.

5.9 FISH AND FISH HABITAT

Fish and fish habitat baseline studies were conducted in 2006, 2007, and 2008.

The objectives of baseline studies conducted in 2006 and 2007 were to characterize fish communities and fish habitat in the Kutcho Project area and to meet the regulatory conditions of the MMER and Fisheries and Oceans Canada (DFO). Studies had five major components:

- Sampling of streams near the mine site in the Andrea Creek Watershed and downstream of the mine site in the Kutcho Creek Watershed
- Sampling of streams crossed by the access road
- Sampling of lakes and wetlands near the Project area
- Bull trout ecology studies using spawning surveys, radio-telemetry, and microsatellite DNA analyses
- Identification of fish habitat compensation concepts and potential sites.

Studies conducted in 2006 using gillnets, electrofishing, minnow traps, and angling found a fish community consisting mainly of bull trout (*Salvelinus confluentes*), rainbow trout (*Oncorhynchus mykiss*), mountain whitefish (*Prosopium williamsoni*), Arctic grayling (*Thymallus arcticus*), lake trout (*Salvelinus namaycush*), and longnose sucker (*Catostomus catostomus*).

Bull trout dominate the fish communities of streams in the proposed mine site and receiving environment, and accounted for half of all fish captured from streams, lakes, and wetlands within the Project area. Bull trout are blue-listed in BC, which means they are considered to be vulnerable to human activities and natural events. Genetic studies in 2006 and 2007 showed there were no Dolly Varden (*Salvelinus malma*) in the study area, as was reported in the 1980s. All chars in the area are apparently bull trout.

Extensive studies of fish and fish habitat continued during 2007. They were designed to provide the information necessary to develop fish habitat compensation plans and monitoring programs that satisfy regulatory requirements. The objectives of the studies were to:

- Radio-track bull trout movements in the Project area, focusing on locating spawning areas,
- Identify the degree of genetic relatedness of bull trout in upper and lower Andrea Creek and Kutcho Creek,
- Confirm the fish-bearing status of streams crossed by the proposed access road where previous studies did not find fish, and to assess streams along the new proposed access road,
- Assess stream crossing designs at planned road crossings where Fisheries and Oceans Canada authorizations for harmful alterations, disruptions, or destruction of fish habitat will be required,
- Collect detailed fish and fish habitat data in streams throughout the Andrea Creek Watershed and elsewhere to address regulatory agency information requirements,
- Collect additional baseline information on fish health and habitat quality at receiving environment sites, wetlands, and lakes within the Project area,
- Develop compensation concepts and collect preliminary information on potential compensation areas, and
- Collect biological data on fish at proposed Aquatic Effects Monitoring Program sites, including length, weight, age, sex, fecundity, and tissue metal concentrations.

Onsite fisheries-related work at the Kutcho Project in 2008 included detailed field surveys of potential fish habitat compensation areas along the road and in the mine site area, finalization of stream classifications at proposed road crossings, review of proposed Allnorth stream crossing designs for potential fish habitat impacts, radio telemetry to determine tagged fish presence on spawning areas, and stream surveys for locations of fish habitat compensation. Field work in 2009 was limited to a brief winter examination of potential fish habitat compensation areas along Sumac, Rusty, and Andrea Creeks to determine if overwintering conditions were suitable for construction of the fish habitat compensation concepts. In addition, 2009 was the final year (Year 3) of radio telemetry tracking of tagged bull trout during the peak spawning season in early September 2009 (Rescan 2010b).

5.10 SOILS

A soils inventory study was undertaken in 2006 to satisfy the baseline requirements of the Application. The study included an assessment of the soils within the mine site area, covering approximately 4,600 ha, and the proposed access road corridor. Slope analyses were also carried out.

The access road will be an upgrade of an existing road that is currently in poor condition and only seasonally accessible. There were 154 inspection sites in the mine site, 64 were located along the road corridor. The soils along the road corridor are developed on colluvial, morainal, glaciofluvial, fluvial, and organic deposits and the surface materials are mostly coarse textured along the road. As a result, many of the soils are classified as well-drained Orthic Humo-Ferric Podzols.

During 2007, additional soils mapping and sampling were conducted in the mine site area to achieve the level of intensity required for Terrestrial Ecosystem Mapping (TEM) for mine sites. Additional soils assessments were also carried out to inform development of the reclamation and closure plans for the mine site.

Surface materials identified in the areas were morainal (43%), colluvial (41%), glaciofluvial (7%), fluvial (5%), organic (3%), rock (<1%), and ice (<1%). The slopes in the site range from gentle/moderate to very strong, more commonly a moderate to strong slope was found.

Soils have been predominantly classified as Orthic Dystric Brunisols with little soil development. A small part is Orthic Sombric Brunisols, indicating they have an organically enriched surface horizon. Wet soils are mapped as Orthic Gleysols and Orthic Humic Gleysols.

Soil samples were collected for metal and fertility analyses at eight sites in 2006 and nine sites in 2007 at the proposed mine site area and 14 sites along the road corridor. Metal levels in the soil were compared with federal and provincial guidelines for soils. Five metals (chromium, copper, nickel, vanadium, and zinc) exceeded some of the guidelines in the samples from the proposed mine site and three metals (arsenic, chromium, and nickel) exceeded some of the guidelines. Higher chromium and nickel concentrations in the proposed mine site area and along the road may suggest that these metals have naturally high background levels in the soils of the Project area.

The proposed mine site is in a wide valley, with approximately 35% of the proposed mine site occurs on gentle to moderate slopes, 35% on strong slopes, and 20% on very strong slopes. Approximately 50% of the road corridor occurs on gentle to moderate slopes, with 25% on level to very gently sloping topography and 20% on strong slopes.

In 2011, Allnorth prepared an addendum to the 2007 soils baseline report. The 2011 report includes additional information on soils and overburden for the mine site, terrain information for the access road, and slope gradient for both the mine site and the access road (Allnorth 2011).

5.11 ECOSYSTEM MAPPING AND VEGETATION

Studies of the ecosystems and vegetation present in the Kutcho Project area were conducted during the summers of 2006 and 2007. Ecosystem maps to characterize the study area were developed using both Predictive Ecosystem Mapping (PEM) and TEM techniques. The PEM was used to describe a regional study area, which covered 304,250 ha. A combination of PEM and TEM was used to describe a local study area associated with the proposed road corridor and mine site. The local study area covers 27,683 ha, of which 23,100 ha (83%) is described by PEM and 4,584 ha (17%) is described by TEM.

Five Biogeoclimatic Ecosystem Classification (BEC) units are present within the regional study area. The Spruce Willow Birch Moist Cool subzone (SWBmk) is predominant, as are the Boreal Alpine Altai Fescue Undifferentiated subzones (BAFAun and BAFAunp). Mesic forests and treed ecosystems are most common at the regional level. The same BEC units are present within the local study area as well. The SWBmk is again most prevalent, followed next by the Boreal White and Black Spruce Dry Cool subzone - Stikine variant (BWBSdk1) and BAFAunp subzone. Mesic forests and treed ecosystems are also very common within the local study area.

Mapping resulted in the identification of 151 ecosystems (as a combination of BEC and ecosystem type), of which 16 are common to both methodologies. The majority of the ecosystems identified by both PEM and TEM are considered non-forested (e.g., are dominated by shrubs, herbs, or stunted trees) and have been tailored specifically for the Kutcho Project. Field surveys resulted in the assessment of 282 plots and the identification of 46 different ecosystems. The most common ecosystems surveyed in the field were drier grassland units and mesic forests.

No listed ecological communities tracked by the BC Conservation Data Centre (BC CDC) were identified while in the field. Additionally, no plants tracked by the BC CDC or the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) were identified during field surveys.

Ten plant species identified as being of cultural and/or traditional significance to members of First Nations groups of the area were identified from field plots surveyed during the ecosystem mapping and vegetation field studies conducted in 2006 and 2007. The majority are berry producing species (e.g., blueberries, crowberry, stoneberry) and are found throughout the study area. A total of 35 plant tissue samples from six different species were collected for metals analysis.

5.12 WILDLIFE

A comprehensive program of wildlife studies was initiated in 2006 and continued through 2007 (Table 5.12-1). Additional mountain ungulate surveys were performed during summer 2007 to enable a more comprehensive analysis of how mountain ungulate distribution varies between seasons and to help refine habitat suitability models. A bat detection survey of the mine site area was also conducted during summer 2007.

Table 5.12-1 Summary of Wildlife Baseline Studies

Species/Group	Survey Type	Study Area	Date
Breeding songbirds	Variable radius point counts	Local	June 2006
Tree and cliff nesting raptors	Stand watches	Local	June 2006
Waterfowl and riverine pairs	Aerial spring migration survey	Local	May 2006
	Summer breeding survey	Local	July 2006
	Brood survey	Local	July 2006
Moose	Winter aerial survey	Regional	February/March 2007
Mountain Ungulates	Winter aerial survey	Regional	February/April 2007
	Summer aerial survey	Regional	July/August 2006 Summer 2007
Wolverine and Fisher	Snow track survey	Local	March 2007
	Fur harvest database: 1985 - 2003	Regional	Winter 2007
Bats	Ultrasonic detection	Local	Summer 2007
Habitat Suitability Mapping: - grizzly bear - moose - mountain goat - Stone's sheep - mountain caribou - American marten - hoary marmot - western toad	In conjunction with Terrestrial Ecosystem Mapping and Predictive Ecosystem Mapping Development of the wildlife habitat ratings adhered to the Resource Information Standards Committee standards (RIC, 1999)	Regional	2006 and 2007

The results of these studies were reported in a series of six baseline reports that were issued in October 2007:

- Kutcho Project Avian Baseline Report (Rescan 2007a)
- Kutcho Project Moose Baseline Report (Rescan 2007b)
- Kutcho Project Mountain Ungulate Studies Baseline Report (Rescan 2007c)
- Kutcho Project Furbearer Baseline Report (Rescan 2007d)
- Kutcho Project Wildlife Habitat Suitability Baseline Report (Rescan 2007e)
- Kutcho Project Bat Inventory Baseline Report (Rescan 2007f)

Avian surveys were conducted in 2006, primarily within the local study area. The methods used included aerial surveys for waterfowl and raptor nests, stand watches and call play-backs for raptors, and variable range point counts for songbirds. A total of 17 waterfowl, 14 raptor, and 60 songbird species were detected.

The mine site appears to support very little habitat for waterfowl, but the wetlands and lakes along the access corridor support large numbers of migrating waterfowl and provide important breeding habitat. Breeding was confirmed for seven waterfowl and three raptor species. A total of five provincially blue-listed avian species of conservation concern within the study area: short-eared owl (*Asio flammeus*), barn swallow (*Hirundo rustica*), red-necked phalarope (*Phalaropus lobatus*), rusty blackbird (*Euphagus carolinus*), and surf scoter (*Melanitta perspicillata*).

An aerial survey of moose (*Alces alces*) conducted in winter 2007 counted a total of 184 moose with densities within the 22 surveyed study units ranging from 0.0 to 2.57 moose/km². The majority of moose observations were at lower elevations and in areas of flatter topography. Hence, the mine site is too high in elevation to support late winter moose habitat.

Aerial surveys were conducted in the summers of 2006 and 2007 and winter of 2007 for three species of mountain ungulate: mountain goat (*Oreamnos americanus*), Stone's sheep (*Ovis dalli stonei*), and mountain caribou (*Rangifer tarandus caribou*). Mountain caribou appeared to be the most abundant ungulate in the Project area. A total of 210 individuals were observed during the winter survey, and 59 and 531 individuals were observed during the summer surveys in 2006 and 2007, respectively. During the winter, caribou were associated with high elevation windswept areas. During the summer 2006 inventory, there were 57 observations of mountain caribou near the proposed mine site. Caribou are a candidate for monitoring during Project operations due to the numbers observed and their proximity to the proposed development.

Thirty-one mountain goats were observed, mainly north of Andrea Creek during the winter survey, while one and 19 individuals were observed during the summer surveys of 2006 and 2007, respectively. A total of 202 Stone's sheep were observed during the winter survey and four

and 180 individuals during the two summer surveys. The majority of observations were north of Andrea Creek and west of McBride River. Both sheep and goat selected high elevation and steep slopes during the winter, which means they are distributed in areas unlikely to be disturbed by the Project.

Snowmobile track surveys conducted in the winter of 2007 confirmed fisher and wolverine presence in the regional study area. Data from the BC Fur Harvest Database also indicated the presence of these species in the area. The greatest abundance and diversity of furbearer species was associated with lower elevation forested habitat where six other furbearer species were also observed.

Two nights of bat surveys were conducted in 2007. No bats were detected despite suitable habitat being available.

Habitat suitability modelling was conducted in 2008 (Rescan 2008). In total, nine species were chosen for modelling. These species were selected based on the Dease-Liard Sustainable Resource Management Plan (BC MNRO 2004), on input from regulatory agencies, and from consultation with stakeholders and First Nations. The habitat suitability mapping was refined using the results obtained from the baseline field studies.

Wildlife habitat suitability mapping was completed following procedures outlined in the BC Wildlife Habitat Rating Standards. Species accounts were developed for each focal species and wildlife habitat ratings were completed for each mapped ecosystem unit. Rating interpretations were based on the ecosystem mapping for the Project, as well the fieldwork. The habitat suitability mapping was refined using the results obtained from the 2007 field studies (Table 5.12-2).

Table 5.12-2 Summary of Habitat Suitability Mapping of 9 Species in the Kutcho Regional Study Area

Species	Life Requisite	Season	Total Area (ha)					Nil
			High	Moderately High	Moderate	Low	Very Low	
Grizzly Bear	Feeding	Spring	1,454	4,891	7,255	18,632	1,481	14
		Early Summer	20,137	85,843	87,197	32,165	73,889	4,985
		Mid-Summer	0	20,520	138,680	45,837	94,195	4,984
		Late Summer	0	24,493	66,665	84,568	123,505	4,985
		Fall	4,043	20,383	71,467	79,551	123,788	4,985
Mountain Goat	Living	Winter	14,779	15,441	12,152	10,243	243,041	8,559
		Summer	24,433	5,787	20,097	2,299	243,041	8,559
Stone's Sheep	Living	Winter	27,671	10,789	16,323	8,018	232,856	8,559
		Summer	24,517	13,943	20,422	3,919	232,856	8,559
Moose	Living	Early Winter	34,342	32,356	1,287	178,867	52,380	4,985
		Late Winter	6,385	33,259	2,654	27,445	34,770	199,704
Caribou	Living	Early Winter	18,350	-	94,832	-	10,916	8,814
		Late Winter	71,490	28,136	35,451	130,262	10	5,132
	Breeding	Summer	28,773	13,116	7,715	15,986	2	238,624
American Marten	Living	Winter	23,329	-	89,853	5,367	-	185,668
Hoary Marmot	Living	Growing	8,111	-	12,308	9,299	-	274,498
Western Toad	Living	Growing	-	-	270,094	-	-	34,121
Short-eared Owl	Living	Growing	113,634	-	36,821	121,873	-	31,888
	Breeding	Summer	104,776	-	70,642	17,488	-	11,311

5.13 WETLANDS

A wetland ecosystem survey was undertaken in August 2006 within the local study area. Hydrology surveys and aquatic biological samples were collected at selected wetlands and used in conjunction with available socio-economic and land use information to identify wetland functions and values.

Additional wetland-specific data were collected as part of the 2007 vegetation and hydrology field programs. The work repeated hydrological surveys of the wetlands surveyed in 2006, and further characterized identified wetlands in the mine site area.

A total of 2,677 ha of wetlands comprising representing 10% of the local study area have been identified and mapped. Approximately 65% of the wetlands were mapped in the access corridor and 35% in the mine site area. A total of 22 wetland ecosystems were identified. The majority of the wetland classes identified were fens and alpine seepage sites.

6. SOCIO-ECONOMIC SETTING

6.1 BACKGROUND

Baseline socio-economic and cultural studies were conducted in consultation with the both the Tahltan and Kaska Dena Nations, as well as individual communities and relevant government and planning organizations (Rescan 2008b). The study area for the socio-economic baseline study is presented in Figure 6.1-1. Allnorth is currently preparing an updated socio-economic baseline report which will reflect the more recent socio-economic conditions within the study area. The following summarizes the results of the 2007/2008 study.

Data were collected through desk-based research and field interviews on population and demographics, governance, economy and employment, education, health, social issues, culture and community services, and infrastructure.

The six primary communities of study are Tahltan Nation (Iskut, Dease Lake, Telegraph Creek), Kaska Nation (Good Hope Lake, Lower Post), and Stewart (proposed terminus of hauling activities). Smithers and Terrace are secondary study communities. Through the socio-economic study, sources of uncertainty can be categorized into: limited existing statistical information; data has been rounded, aggregated and/or masked; and/or there may be some overlap of data between communities.



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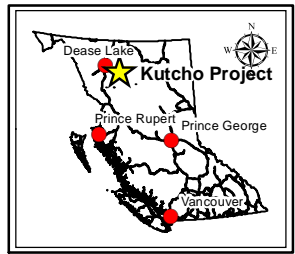
KUTCHO PROJECT
Figure 6.1-1
Socio-Economic
Study Area

50k Mapsheets: 104G,H,I,J
 Date: 4/12/2011
 Projection: UTM9N, NAD83
 Scale: 1:5,000,000
 Path: C:\10-VA-0146\11GIS\Kutch-3302-007.mxd
 Drawn By: TK
 Checked By: KB
 Revision #:

Legend

★ Project Location	— Proposed Access Road
● Study Community	— Highway
○ Non-Study Community	— Watercourse
▲ Open Mine Site	— Kaska Dene Traditional Territory
▲ Closed Mine Site	— Tahltan Traditional Territory
▲ Proposed Project	▭ Provincial Boundary
	▭ NW BC Regional District
	▭ Lake

Note: Traditional Territory Boundaries are approximate.



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6.2 REGIONAL OVERVIEW

Northwestern BC exhibits a larger dependence on primary resource industries, including mining, forestry, and fishing, than the rest of the province. The region is defined by a number of small, predominantly First Nations communities, which are generally scattered along the north-south corridor of Highway 37. The larger centres of Smithers and Terrace, located along the east-west corridor of Highway 16, provide services and supplies to much of the region.

The region is further characterized by its remoteness. Communities are dispersed and transportation and communication options are limited. In general, the population of north-western BC has been in decline in recent years, particularly in the smaller and more remote settlements.

First Nations account for a relatively high proportion of the regional population. Much of the area is included in the traditional territory of the Tahltan Nation, with the Kaska traditional territory to the north. The Project is located within an area of overlap between the traditional territories of the Tahltan and Kaska Nations.

The regional mining industry currently constitutes a significant source of employment for the Highway 37 communities, supplying an estimated 30% of jobs and also employs a significant number of residents from Smithers and Terrace. At present, two mines are currently in operations in the region: Huckleberry and Kemess. However, these mines are all expected to close within the next few years, resulting in the loss of a significant source of employment.

Mineral exploration activity in the region is significant, resulting from the current upward trend of global mineral markets. Aside from the Kutcho Project, proposed future developments in the area include Galore Creek (permitted), Red Chris (permitted), Mount Klappan (pre-application), Schaft Creek (pre-application), and Kerr-Sulphurets-Mitchell (pre-application).

6.3 TAHLTAN NATION

The Tahltan traditional territory covers approximately 93,500 km² in northwestern BC. The Tahltan Nation is comprised of the Tahltan Band (based in Telegraph Creek and Dease Lake) and the Iskut First Nation (based in Iskut). Issues of joint interest for the Tahltan Nation are represented by the elected Tahltan Central Council, which is a registered society under the BC Society Act. Recent increase of mineral development and exploration activity in the region has increased the need for communication between mining companies and the Tahltan. The document, titled "Out of Respect", is a guide for future resource development in the Tahltan territory (Tahltan 2004). Tahltan Resource Development Policy expresses the goals of the Tahltan Nation regarding resource development.

The total Tahltan population is estimated to be approximately 5,000 persons (Tahltan First Nation and IISD 2004), although the number of registered band members in 2005 was 2,189

(INAC 2006). Of the estimated 1,300 people who live within the Tahltan traditional territory, approximately 1,000 are Tahltan.

The Tahltan Nation is not currently involved in the BC Treaty Commission process. The provincial government is presently working with the Tahltan Central Council on the development of a consultation and accommodation agreement regarding forestry, mining, and oil and gas development in the region.

The Tahltan have developed a mining policy, the purpose of which is not to forbid mining activities in the Tahltan territory, but to identify expectations and requirements of proponents and the Crown. Goals include self-determination, economic self-sufficiency, environmental stewardship, and healthy communities. These goals require Tahltan involvement in the planning, management, and decision-making process regarding resources within the Tahltan territory, as well as the fair distribution of all benefits, impacts and risks (TCC 2007). Concerns outlined in the mining policy include the implications that mining projects may have for Tahltan traditional rights, title, and interests, as well as related social, cultural and environmental impacts. Potential infringement considers a number of characteristics, including the footprint, size, nature, and scope of a project; as well as the capacity required by the Tahltan Central Council for proper engagement (TCC 2007).

6.4 KASKA DENA NATION

The traditional territory of the Kaska Dena Nation covers approximately 240,000 km², including approximately 10% of BC, 25% of the Yukon, and adjacent areas of the Northwest Territories (NWT) (KDC 2003).

In BC, the Kaska Dena Nation is represented by the Kaska Dena Council, which includes the Dease River First Nation, based in Good Hope Lake; the Lower Post (or Daylu Dena) First Nation, based in Lower Post; and the Kwadacha Band, based in Fort Ware. The Kaska Dena Council entered into the BC Treaty Process in January 1994, and is currently at the fourth stage of the six-stage process.

The mining industry is a significant factor in the Kaska economy and employment, reflecting the important role of resource development in northern BC and the Yukon. In "Working Together for Mutual Benefit" (KDC 2003), the Kaska Dena Council identifies how proponents can further their relationship and interaction with the Kaska Dena for mutual benefit. This framework is based on a commitment to communication, capacity building, and consultation.

6.5 PRIMARY STUDY COMMUNITIES

Study communities were identified based on their proximity to the proposed Project; their likelihood as a source of employment and/or services; and consideration of First Nations interests. Primary study communities include Dease Lake, Telegraph Creek, Iskut, Good Hope

Lake, Lower Post, and Stewart. A number of common issues are evident among the study communities named, including:

- Declining populations (with the exception of Iskut)
- Relatively low rates of employment
- Relatively low levels of education and skills development
- Lack of educational options within the northwest
- Increasing capacity needs for the provision of health, social, utilities, and emergency services
- A lack of facilities and services for organized recreation and entertainment
- Lack of elder-care facilities
- Social and mental health issues often associated with isolation and boredom, including depression, substance abuse, and anti-social behaviour
- Concerns regarding the lasting benefits of finite resource projects, including mines.

6.6 SECONDARY STUDY COMMUNITIES

Smithers and Terrace were identified as secondary study communities due to their roles as the primary service centres for the north-western BC region. Employment is also expected to be drawn from these communities; employees and supplies may be flown to the mine site from Smithers.

Smithers and Terrace have significantly larger populations than the primary study communities, at 5,217 and 11,320, respectively. Populations have been generally declining since the mid-1990s. As larger communities, they have more diversified economies than the primary communities, although resource industries (including mining) are still significant economic drivers.

Other settlements along Highway 37, including Tatogga Lake, Bob Quinn Lake, Bell II, and Meziadin Junction, are also included as secondary study communities due to their location along the proposed haul route from the mine site to port facilities in Stewart. These settlements do not have significant populations, and are mainly service stops for tourism and/or resource industries.

6.7 ECONOMIC ANALYSIS

In order to assess the economic effects of the Project, an input-output model was generated by BC Stats from Project information provided by KCC. The previous model results were based on the November 2007 Project Description. This modelling will be updated to reflect the revised Project design. The model will be run for each of the construction and operation phases.

The input-output model will provide estimates of economic output, direct/indirect/induced labour requirements, income, Gross Domestic Product, and tax revenues associated with the Project. These estimates will be used to determine the extent of economic impacts within the socio-economic effects assessment.

6.8 LAND AND RESOURCE USE

Baseline information on land and resource use was gathered through desk-based and field research in 2006 and 2007 (Rescan 2008c). The land and resource use baseline study is currently being updated by Allnorth to reflect any changes in land use patterns or tenure holders since 2006 and 2007 research was conducted. This section summarizes the land use baseline study from 2006/2007.

The study included a review of relevant management plans, as well as local, regional, and provincial government publications. Land uses were identified by various methods, including using the provincial Integrated Land and Resource Registry and consulting local industry, government agencies, and First Nations. Interviews were also conducted by telephone and in person with potentially affected trappers, guide outfitters, recreational users and nearby jade mining operations.

Findings from the baseline indicate that the Project study area is a popular moose hunting area among resident and Aboriginal hunters, a favourite destination for snowmobilers, a prime fishing area for both subsistence and sport fishermen, and a singular location for mining high-quality jade.

Traditional and current uses by the Tahltan and Kaska Dena include hunting, trapping, fishing, plant and berry harvesting, trail riding, gold prospecting, snowmobiling, jade mining, and guide outfitting.

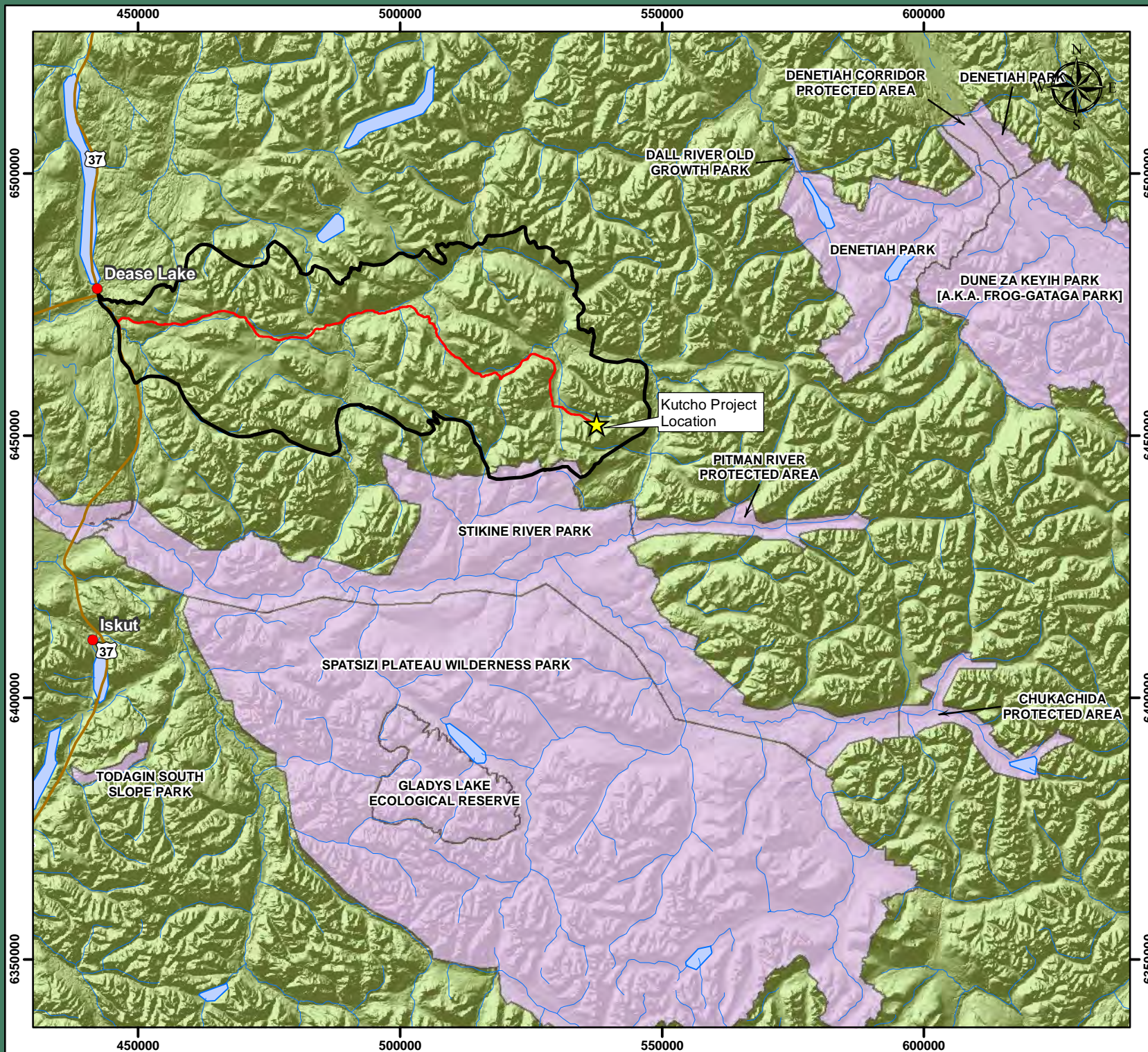
The Cassiar Iskut-Stikine Land and Resource Management Plan overlaps with 25 km of the Project's access route from Highway 37. The remaining portion of the access route and the proposed mine site are included in the Dease-Liard Sustainable Resource Management Plan.

The Project study area lies in the vicinity of two provincial parks and a wilderness reserve that attract many backcountry recreational enthusiasts. The Stikine River Provincial Park, 10 km south, is closest to the study area, followed by the Spatsizi Plateau Wilderness Park and the Gladys Lake Ecological Reserve, both farther south (Figure 6.8-1).

Four guide outfitter licences overlap with the Project study area, and nine registered trap-lines overlap the study area (two primary and seven secondary trapline owners). Trapping occurs during the winter months when titleholders are permitted to lay trap boxes for marten, weasel, beaver, mink, lynx, wolverine, and wolf.

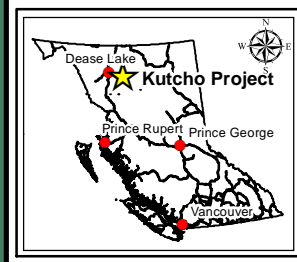
Minimal agriculture and livestock production is practiced in the Kutcho Project study site. Harsh winters, low quality soils, short growing seasons, and long distances to markets make agriculture and range fiscally unappealing prospects.

**Kutcho Project
 Figure 6.8-1
 Provincial Parks &
 Protected Areas**



Legend

- Project Location
- Community Location
- Proposed Access Road
- Highway
- Stream
- Lake
- Park, Ecological Reserve & Protected Areas
- Regional Study Area



50K Mapsheets: 104G,H,I,J
 Date: 3/30/2011
 Projection: UTM9N, NAD83
 Scale: 1:1,000,000
 Path: C:\10-VA-0146\11GIS\Kutch-3302-006.mxd
 Drawn By: TK
 Checked By: KB
 Revision #:



7. HERITAGE SETTING

Archaeological field work (along the proposed access road and within the mine site footprint) was carried out in 2006, 2007, and 2008. In 2009, an Archaeological Impact Assessment was carried out in accordance with Heritage Conservation Act Permit 2006-253 issued by the Archaeology Branch, Ministry of Tourism, Sports and the Arts (Rescan 2009).

The objectives of the Archaeological Impact Assessment were to: 1) identify and evaluate any archaeological sites located within and adjacent to the potential impact zone of the proposed developments; 2) identify and assess possible impacts of the proposed developments on any identified archaeological sites; 3) provide recommendations regarding the need and appropriate scope of further archaeological studies prior to the initiation of any proposed developments; and 4) recommend viable alternatives for managing adverse impacts.

Special effort was made to address archaeological issues identified as significant by First Nations in the region. These issues included ancient continental movement of obsidian from present-day Mt. Edziza; cairns or rock piles; identification of tephra layers; examination of rock cliff or cave shelters for sites; ice patch archaeology; climate change; and Tanzilla Village.

During the 2006 to 2008 field seasons, a total of 1,828 shovel tests were conducted. Eleven pre-contact archaeological sites were recorded, and two historic sites and five Topographic Survey of Canada cairns were located.

In addition, an Archaeological Chance Find Procedure has been developed and implemented for the current exploration phase of the Project.

8. HUMAN HEALTH SETTING

A country foods baseline assessment was conducted in 2006 and 2007. The country foods evaluated were moose (*Acles acles*), Woodland caribou (*Rangifer taranduscaribou*), snowshoe hare (*Lepus americanus*), grouse (*Phasianidae*), caribou weed (*Artemesia tilesii*), and crowberry (*Empetrum nigrum*). These species are consumed by the country foods harvesters and are located within the Project area.

The baseline assessment evaluated metals in country foods. Metals were the focus because the Project is a base metals mine and base metals also occur naturally in environmental media such as soil, water, and plant and animal tissue. Eight metals were evaluated: aluminum, arsenic, chromium, copper, lead, nickel, vanadium, and zinc. Moose and vegetation tissue sampling was conducted in 2006 and 2007, and fish tissue sampling was conducted in 2007.

The results of this assessment indicate no unacceptable risks to human receptors (toddlers or adults) from the consumption of moose, caribou, grouse, snowshoe hare, caribou weed, and crowberry. Based on the measured and predicted levels of metals in these foods, the amounts currently consumed by country foods harvesters are within the recommended maximum weekly intakes.

9. TRADITIONAL ECOLOGICAL KNOWLEDGE

An inventory and description of both Tahltan and Kaska Dena Traditional Use (TU) and Traditional Ecological Knowledge (TEK) as related to the Project study area was conducted to inform socio-economic and biophysical reporting requirements.

A mixed methods approach, including desk-based and field research, was used to collect TU/TEK from both Tahltan and Kaska Dena Elders and knowledge holders from December 2006 to November 2007.

Three TU/TEK sources provided the basis of the TU/TEK report:

- Primary and secondary ethnographic sources
- TEK databases, including the Kime Tahltan Knowledge Database held by the Tahltan Central Council and the Dene Kayeh Institute Traditional Knowledge Database
- Tahltan TU workshop held in Dease Lake in February 2007.

Tahltan community researchers conducted follow-up interviews during the summer 2007 to ensure that knowledge holders who could not attend the workshop were included.

The key findings of the report indicate that the Project study area was and, to some extent, continues to be well travelled and frequently used by both the Kaska Dena and the Tahltan. The level and quality of use is reflected in the extensive ecological knowledge that the Kaska Dena and Tahltan hold about the Project study area. A Tahltan Knowledge Agreement was developed to allow for transfer of information between the Tahltan Central Council and KCC. The Kaska Dena Council also signed a Traditional Knowledge Agreement with KCC. All work has and will continue to abide by the terms and conditions laid out in the agreement.

The TEK data gathered was collated, digitized, and reviewed for the TU/TEK report. KCC and their consultants are currently working with the Kaska and Tahltan First Nations to incorporate any additional TU/TEK data that may have become available since the TU/TEK report was prepared in 2007. The final report will be distributed to relevant biophysical disciplines for inclusion in their scoping, baseline data collection, effects assessments (e.g., determining significance of effects), cumulative impacts, and monitoring plans. Any TU sites identified during the TEK studies will also be assessed in the land use effects assessment.

10. POTENTIAL PROJECT EFFECTS

Sufficient baseline data collection and preliminary mine design has been completed to allow the preparation of a preliminary list of the potential effects of the proposed Project on the environmental economic, social, heritage, and health components and some of the proposed mitigation measures. The list will be modified as a result of the environmental assessment process.

10.1 PHYSICAL AND BIOLOGICAL ENVIRONMENTS

10.1.1 Air Quality

Potential impacts of the project on air quality include elevated production of airborne particulates, sulphur dioxide, nitrogen oxide, fugitive dust, and greenhouse gasses. The monitoring results to date indicate the seasonal presence of a temperature inversion at the mine site, which could inhibit mixing and dilution of air contaminants. Air quality modelling is currently being conducted to predict the potential impacts of mine activities on air quality. Air quality will be monitored during all mine phases as part of an Air Quality Monitoring Program. Table 10.1-1 summarizes the anticipated pollutant sources and potential mitigation measures.

Table 10.1-1 Air Emissions and Fugitive Dust Mitigation/Management

Source of Air Emission or Fugitive Dust	Mitigation/Management Measures
Diesel exhaust	Regular vehicle/equipment maintenance program High efficiency diesel engines Enforce speed limits Ambient particulate monitoring
Fugitive dust from road traffic	Enforce speed limits Ambient particulate monitoring Road watering Control mud and dirt at paved entrance Dust-fall monitoring

10.1.2 Groundwater Quantity

Potential Project-related impacts to groundwater may include alteration of flow pathways, volumes and groundwater quantity. A groundwater model is currently being developed that will predict groundwater flows in the Andrea Creek basin and the potential impacts of mine design and mine activities on those flows. Monitoring wells were drilled in 2006, 2007, and 2008 to allow quarterly sampling of groundwater quality that will allow before-after comparison.

10.1.3 Groundwater Quality

The principal Project-related activities that may affect groundwater quality within the Project area are seepage from the starter pit, groundwater flow through underground mine workings, and seepage from the paste tailings storage facility and water management pond.

It is expected that seepage from the starter pit and paste tailings management facility could impact shallow groundwater only. The paste tailings management facility will be lined to minimize seepage. In addition, the starter pit is shallow (around 20 m below surface) and available data indicates that the base of the pit lies above the groundwater table.

The backfill to the underground mine will be waste rock and tailings paste fill (tailings mixed with cement). As part of the Application, information will be gathered from other mines where similar backfilling procedures have been used and there will be an assessment of groundwater flow rates through the workings. Groundwater monitoring will continue during operations and through the closure period to ensure that poor quality water (if present) is not able to reach groundwater discharge zones near Andrea Creek. Mitigation strategies such as the installation of a line of boreholes downstream of the underground workings at closure are also possible, if monitoring shows the need for additional mitigation.

Groundwater may be used as a drinking water source for the Project. Groundwater quality in the drinking well will be treated and monitored throughout its period of use.

10.1.4 Surface Water Quantity

The Project is expected to have a limited impact on surface water quantities in the receiving environment downstream of the mine (Andrea Creek). The footprint of the mine is small compared to size of the Andrea Creek watershed and surface runoff from the mine will be discharged to Andrea Creek after treatment. In addition, there are no water retention structures proposed on Andrea Creek or any of its major tributaries. Surface diversion channels will maintain connectivity between streams in the headwaters of Andrea Creek with the main channel.

Surface runoff from within the mine site area will be captured and directed to a water collection pond. Water will be recycled and used in the process plant. However, excess water will be directed to an effluent treatment plant where it will be treated and then discharged to Andrea Creek. This will impact the timing of discharges to Andrea Creek and there may be changes in quantity as groundwater de-watered from underground workings will be added to the water collection pond and runoff from disturbed areas within the site would be expected to be greater than under baseline conditions.

A mine site water-balance model will be developed that will be used to assess impacts of the Project on stream flows in Andrea Creek and downstream. The model will consider impacts on annual runoff, monthly average flows, peak flow hydrographs, and low flows.

Hydrological monitoring of Andrea Creek, Kutcho Creek, and selected other streams will continue through operations.

At closure, the starter pit and paste tailings storage facility will be re-vegetated. Once water quality is good enough to allow surface runoff to be discharged to the receiving environment without treatment, all surface water retention infrastructure will be removed.

The impact of road construction on surface runoff rates and any impacts on surface runoff pathways will be assessed and mitigated by way of drains and ditches along the length of the road. Stream crossings will be constructed to pass appropriate design flows.

10.1.5 Surface Water Quality

All surface run-off from the mine site, including pit dewatering and underground dewatering, will be directed to the water collection pond and then to the process plant. Water that is not recycled and used in the process plant will be directed to the treatment plant where it will be treated and then discharged to the receiving environment.

Domestic waste water will be treated in a sewage treatment plant before discharge to the receiving environment.

The potential impacts of the production of ARD from the mine site and its release into the receiving environment are the reduction in pH of the receiving environment and the increase in metal concentrations due to leaching of metals. Both would be deleterious for aquatic life.

A ML/ARD research program for the Project has been underway since 2006. Its objectives are to assess the potential magnitude of any impact and to determine mitigation strategies. Since the Main deposit is a massive sulphide ore body, ARD is known to be a critical consideration in mine design. The mine design proposes that contaminated surface run-off from the mine site will be conveyed to the water collection pond by a network of ditches and berms and then delivered to an effluent treatment plant. A water quality model is currently being designed to predict the quality of the water that will be collected from each component of the mine site (temporary waste rock piles, tailings storage facility, process plant, etc.) and delivered to the effluent treatment plant. Dilution modeling will be used to predict the concentration of key water quality parameters in the receiving environment downstream of the discharge from the effluent treatment plant. Water quality will continue to be measured in the receiving environment throughout the mine life as part of an Aquatic Effects Monitoring program (AEMP).

A Reclamation and Closure Plan will be developed in collaboration with regulators and communities for the long-term management of the rock and tailings materials upon completion of the Project. Mitigation of potential ML/ARD from the tailings during closure will likely involve re-vegetation.

The closure scenario for all rock materials will be such that the surface and groundwater quality will meet regulatory requirements and environmental standards as set out in the Closure Plan.

Potential Project-related activities that may have adverse effects on water quality in the local receiving environment include the following:

- Dust-generating activities (e.g., construction and road) that may increase total suspended solids (TSS)
- Spills during fuel transport and handling, resulting in elevated concentrations of hydrocarbons.

Potential mitigation measures for these activities include:

- Dust generation from roads may be mitigated by road watering or by using a dust suppressant.
- Sediment control structures will be used during construction according to best management practices.
- ANFO will be stored in an enclosed building, and spillage around the storage and loading area will be minimized with an explosives management plan. Run-off from around the storage and loading area will be directed away from surface waters towards the water collection pond. Best management practices will be used for the handling and use of explosives to minimize excessive residue and nitrogen loading.
- Runoff from all mine infrastructure on the mine site will be collected and eventually directed to the effluent treatment plant. As concentrate is the final product of the mine, procedures will be implemented to ensure containment of concentrate during storage, handling and transport to prevent the production of fugitive dust.
- Appropriate secondary containment measures will be implemented at fuel storage and handling areas to contain any hydrocarbon leakage. Spill management plans will be developed and implemented.

Environmental monitoring will be conducted during mine construction to ensure compliance with all authorizations and to ensure the functioning of drainage and sediment control structures. The timing of any in-stream works will comply with applicable guidance and regulations. Best management practices for sediment and erosion control and spill prevention will be used to minimize the introduction of suspended solids and/or contaminants into the

water. Environmental monitors will be engaged throughout the construction period to ensure that local water resources are protected.

10.1.6 Fish and Aquatic Habitat

The mitigation measures already described for receiving water quality (see Section 10.1.5) will help minimize the potential effects to aquatic life by minimizing changes to water and sediment. Sediment quality and the abundance and diversity of benthic invertebrates, periphyton, phytoplankton, and zooplankton will be monitored throughout the mine life as part of the Aquatic Effects Monitoring Program. Any direct effects resulting from potential removal or alteration of habitat will be mitigated through a fish habitat compensation program (see below).

The principal potential impacts of the Project on fish and fish habitat will be the following:

- Reductions in the abundance, health, and sustainability of the resident population of bull trout that lives in the upper Andrea Creek
- Reductions in the quality of the bull trout spawning site in Kutcho Creek adjacent to the airstrip
- Alteration, disruption, and destruction of fish habitat during construction
- Impact on fish populations by recreational fishermen.

These potential impacts will be mitigated by the following:

- Not placing any mine infrastructure in natural water bodies except at stream crossings along the access road
- Treating all mine effluent to acceptable discharge standards before releasing it to the receiving environment
- Using a minimum 100 m-wide leave strip along stream banks in the vicinity of mine site infrastructure to protect fish habitat and riparian zones with the exception of the stream crossings along the access road. This will exceed the 30 m-wide set back as specified by DFO's Land Development Guidelines for Protection of Aquatic Habitat (Chillibeck et al., 1992).
- Monitoring fish population densities, body sizes and tissue metal concentrations throughout the life of the mine as part of the Aquatic Effects Monitoring Program
- Implementing a No Net Loss Plan to compensate any loss of fish habitat
- Forbidding all fishing by mine employees and contractors.

The current mine plan has been designed to minimize the harmful alteration, disruption or destruction of fish habitat. A paste tailings storage facility has been designed to avoid placing a conventional flooded impoundment on the mainstem of Andrea Creek. KCC recognizes that

significant due diligence is required with respect to water quality and will treat all mine site impacted water sufficient to attain BC water quality criteria in the receiving environment.

Discussions with DFO about fish habitat compensation were initiated in 2008, based on the previous mine plan. KCC will re-engage with DFO regarding the new mine plan in 2011. Through these discussions, it will be determined if a habitat compensation plan for the mine site and access road is still required. If required, conceptual compensation options will be submitted to DFO for review in mid-2011, and a detailed compensation plan will be developed in collaboration with the DFO and the BC Ministry of the Environment during the permitting process.

The relevant DFO Regional Operational Statements are likely to include those related to clear span bridges, bridge maintenance, and culvert maintenance.

10.1.7 Soils and Surficial Materials

Potential impacts to soil quality include the following:

- Covering or removal of soils by building roads, waste rock piles, and other facilities
- Erosion of soils at stream crossings
- Deposition of dust on soil surfaces from vehicle traffic
- Elevation of soil metal concentrations as a result of storage, transport, and handling of metal concentrates
- Hydrocarbon contamination of soils spills.

To mitigate the effects of covering or removal of soils, soils will be salvaged from the mine site during construction (where feasible) and stockpiled for reclamation purposes. Soil erosion will be minimized by avoiding vegetation removal, where possible, and (for short-term purposes) by using straw bales and erosion cloth along stream banks to minimize sediment entering water bodies and affecting fish habitat and water quality. Stream banks that are subject to long-term erosion may be armoured with rip-rap. Riparian areas lost to that armoring would have to be compensated for as part of the No Net Loss Plan.

Soil metal and hydrocarbon contamination will be minimized by ensuring that vehicles are properly maintained, that maintenance is carried out at designated locations that are properly designed with liners and berms, and by cleaning spills in a timely manner. All fuel storage facilities will have secondary containment, strategically placed spill kits and absorbent matting. Hydrocarbon contaminated soil will be stored in marked bins or in a contained area (landfarm) until it is treated on-site or shipped off-site for treatment and disposal.

10.1.8 Ecosystems and Vegetation

The potential Project-related effects to vegetation and ecosystems are the loss of rare plant species and communities from mine activities, metal contamination, and the introduction of nuisance species.

Minimizing the size of the Project footprint is the most effective mitigation strategy for ecosystems and vegetation. Surveys have not identified any rare plant species or communities on the mine site. Policies for control of metal contamination and of introduced species will be part of the Vegetation Management Plan. Monitoring metal concentrations in plant tissue will be part of the environmental effects monitoring program of the Kutcho Project.

10.1.9 Wetlands

Potential Project-effects impacts to wetlands include loss of wetlands and alteration of wetland function (i.e., hydrological, biogeochemical, and ecological). The best strategy to minimize the effects on wetlands is to avoid placing infrastructure in wetlands and to use the smallest feasible mine footprint. Other potential impacts and mitigation for wetlands would be similar to those listed for vegetation.

10.1.10 Wildlife and Wildlife Habitat

Potential effects on wildlife related to the Project may include habitat loss; disturbance of wildlife habitat by noise, dust and light; direct mortality due to vehicle collisions; indirect mortality due to wildlife attracted to food on the mine site; and overharvest.

Limiting the size of the Project footprint is the most effective mitigation strategy for loss of wildlife habitat. Noise at the mine site will be continuous and localized, while noise along the access road will be intermittent. Most animals will avoid the Project area, while some may become habituated to human presence and activity. Conservative speed limits on the access road will reduce accidents, and animal crossing areas along the road will be marked. A program will be instituted requiring all mine staff and contractors to report animal carcasses. Policies to reduce wildlife attraction will be followed (e.g., proper waste control). A strict No Hunting Policy will be implemented for mine employees and contractors and use of the access road will be restricted to reduce traffic. A Wildlife Effects Monitoring Program will be developed to evaluate the effectiveness of these mitigation measures.

10.1.10.1 Species at Risk

BC Ministry of Environment requirements for reviewing mining projects include the consideration of potential effects to endangered species. Federally, endangered species are identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and fall under Schedule 1 of the *Species at Risk Act* (SARA). Provincially, the BC CDC identifies species

that are Red (Endangered/Threatened) or Blue (Vulnerable). COSEWIC also designates species as:

- *Threatened*: A species likely to become endangered if limiting factors are not reversed
- *Special Concern*: A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events
- *Not at Risk*: A species that has been evaluated and found to be not at risk
- *Data Deficient*: A species for which there is insufficient scientific information to support status designation

A search of the BC CDC was conducted in January 2011 to identify all SAR with the potential to occur in the regional study area. The results of this search are shown in Table 10.1-2, with asterisks preceding the scientific name indicating that the “potentially occurring” species was confirmed as present in the regional study area or local study area during subsequent inventory efforts.

Table 10.1-2 Species of Provincial or Federal Conservation Concern With Ranges That Potentially Overlap the Project Study Area, Along With Their Conservation Status (BC CDC 2011)

Scientific Name	English Name	COSEWIC Designation ^a	BC Status
Mammals			
* <i>Gulo gulo luscus</i>	Wolverine, luscus subspecies	SC (May 2003)	Blue
* <i>Martes pennanti</i>	Fisher	Not Assessed	Blue
* <i>Myotis keenii</i>	Keen’s myotis	DD (Nov 2003)	Red
* <i>Ursus arctos</i>	Grizzly bear	SC (May 2002)	Blue
* <i>Rangifer tarandus pop. 15</i>	Caribou (northern mountain population)	T/SC (May 2002)	Blue
Birds			
* <i>Asio flammeus</i>	Short-eared Owl	SC (Mar 2008)	Blue
<i>Contopus cooperi</i>	Olive-sided Flycatcher	T (Nov 2007)	Blue
* <i>Phalaropus lobatus</i>	Red-necked phalarope	Not Assessed	Blue
* <i>Euphagus carolinus</i>	Rusty blackbird	SC (Apr 2006)	Blue
* <i>Hirundo rustica</i>	Barn swallow	Not Assessed	Blue
* <i>Melanitta perspicillata</i>	Surf scoter	Not Assessed	Blue
Amphibians and Reptiles			
<i>Anaxyrus boreas</i>	Western toad	SC(2002)	Yellow

^a DD = Data Deficient; SC = Special Concern; T = Threatened

No listed ecological communities, tracked by the BC CDC, have been identified in the regional study area or local study area. In addition, no plants tracked by the BC CDC or the COSEWIC were identified during field surveys (BC CDC 2011).

10.2 ECONOMIC ENVIRONMENT

Potential Project-related effects to the economic environment will include:

- Creation of employment and income opportunities during construction and operation;
- Loss of employment and income opportunities at mine closure; and
- Creation of training, skills development, and work experience opportunities.

KCC will work with local communities with respect to the provision of business and training opportunities.

10.3 SOCIAL ENVIRONMENT

10.3.1 Social

Potential Project-related effects to the social environment will include:

- Changes in demographic characteristics of primary and secondary communities;
- Changes in quality of life and health due to changes in income, work schedules, and social roles; and
- Pressure on community infrastructure and services due to changing population demands.

Company policies will include equal opportunity, anti-discrimination, and health and safety measures to promote well-being. Examples include employee codes of conduct; zero tolerance for drug and alcohol use on the mine site; and ongoing education in areas such as financial skills, communicable diseases, family planning and parenting, cultural practices, and language.

Culturally appropriate counselling services may be sponsored on-site and in communities. Project shift rotations and flexibility around traditional activities, especially harvesting, may be developed with local guidance.

10.3.2 Land Use

Potential effects on the use of lands and resources include:

- Changes to the quality of recreation activities (e.g., hunting, fishing, snowmobiling) due to factors such as blasting and increased vehicular traffic;

- Changes in traditional subsistence activities, including hunting, fishing, and gathering of berries and plants, due to changes in access and loss of habitat; and
- Contamination of country food sources.

KCC will follow recognized best practice standards for control of noise, dust, water quality, and other undesirable effects arising from the mine and traffic. The local use of land and resources will be a factor considered in the final mine design.

10.4 HERITAGE ENVIRONMENT

The potential impact to archaeological and culturally significant sites is the loss of recorded and unrecorded artifacts and archaeological or culturally significant sites as a result of mine activities.

Archaeological surveys in 2007 and 2008 identified a number of artifacts and sites within the mine footprint, along the access road and in the potential borrow pit areas of the road. They will be protected by avoiding those sites or by salvaging them where that is not possible. A Chance Find Procedure has been developed to assist construction teams in avoiding the loss of unrecorded artifacts and sites.

10.5 HUMAN HEALTH AND COMMUNITY ENVIRONMENT

Studies will be conducted to determine Project effects on social, health, and community issues. Data will be collected from a range of stakeholders, including First Nations; community administrators; public health, social services, and infrastructure providers; educational institutions; and business representatives.

Potential effects will be evaluated, including community health, air quality, noise, water quality, and healthy living.

11. FIRST NATIONS ENGAGEMENT AND STAKEHOLDER CONSULTATION

11.1 OVERVIEW

KCC acknowledges its responsibility to engage in consultation with First Nations, regulatory agencies and potentially affected and interested stakeholders in the EA review process. WKM commenced consultation activities in 2005 and continued until late 2007 when the Project was acquired by KCC. Consultation continued into early 2008; however, in late 2008 the Project was put on hold and there was limited contact with Project stakeholders between 2009 and 2010. KCC has a comprehensive record that documents consultation and communications activities and efforts by WKM, KCC, and their consultants to contact and/or consult with all First Nations, government, stakeholder groups, special interest groups and residents to date.

Information materials used during consultation (e.g., newspaper notices, corporate newsletters, comment forms, posters, information handouts, power point presentations, maps) and a copy of the consultation record will be included as an appendix in the Application.

The key components in the consultation program are as follows:

- Meaningful consultation with First Nations, public, government, and other relevant stakeholders
- Information distribution and access to information
- Community meetings and engagement
- Consultation and communication tracking
- Issue identification and tracking
- Issue resolution
- Integration of consultation outcomes into the Application

11.2 FIRST NATIONS ENGAGEMENT AND CONSULTATION

The Tahltan Nation and the Kaska Dena Nation are identified as the First Nations groups potentially affected by the Project. Both Tahltan and Kaska Dena asserted territories overlap with the proposed Project site and access road. KCC has engaged Tahltan and Kaska leadership and communities in discussions about the proposed Project, including the potential positive and adverse effects of the Project and ways to address, enhance, or mitigate effects, as necessary.

11.2.1 Tahltan Nation

Three Tahltan communities have been consulted to date: Iskut, Telegraph Creek, and Dease Lake (note that Dease Lake has both First Nations and non-Aboriginal residents).

KCC has engaged with the Tahltan Central Council (TCC), the Tahltan and Iskut Bands, the Tahltan Heritage and Resources Environmental Assessment Team (THREAT), and respective communities on the following occasions to date:

- July 27, 2005, Dease Lake, TCC and Bands: Introduction to the proposed Kutcho Project
- August 22, 2006, Dease Lake, TCC: Information-sharing meeting
- November 14, 2006, Iskut: Community Open House - Project Update, EA requirements and process
- November 15, 2006, Telegraph Creek: Community Open House - Project Update, EA requirements and process
- January 31, 2007, TCC: Project Overview
- March 12, 2007, Dease Lake, THREAT: Discussions on the proposed socio-cultural research
- April 20, 2007, TCC: Provided Kutcho Project update, discussed EA process and business opportunities
- May 17, 2007, Smithers, THREAT: Reviewed working relationship with WKM, proposed 2007 program, upcoming community meetings in Tahltan territory
- June 18, 2007, Dease Lake: Community Open House - Project Update, Employment Opportunities Handout, Presentation on EA process and discipline baseline studies
- June 19, 2007, Iskut: Community Open House - Project Update, Employment Opportunities Handout, Presentation on EA process and discipline baseline studies
- April 16, 2008, TCC: Overview of project changes, discussion around road de-linking from the EA. Issues were raised about employment and access.
- October 13, 2010, Dease Lake, TCC: Update on Kutcho Project re-design based on PEA and anticipated PFS
- March 30, 2011, Smithers, THREAT: Update on re-design of Kutcho Project and discussion of TK/TU and socio-economic studies.

11.2.2 Kaska Dena Nation

Two Kaska communities have been consulted: Good Hope Lake and Lower Post. KCC has met with the Kaska Dena leadership including the Kaska Dena Council (KDC), Daylu Dena Council, and Dease River First Nation and communities on the following occasions to date:

- November 15, 2006, Lower Post, KDC: Discussion of proposed TK research, potential impacts

- November 16, 2006, Good Hope Lake: Community Open House - Project Update, environmental assessment (EA) requirements and process
- November 17, 2006, Lower Post: Community Open House - Project Update, environmental assessment (EA) requirements and process
- June 26, 2007, Good Hope Lake: Community Open House - Project Update, Employment Opportunities Handout, Presentation on EA process and discipline baseline studies
- June 27, 2007, Lower Post: Community Open House - Project Update, Employment Opportunities Handout, Presentation on EA process and discipline baseline studies
- July 18, 2007, Whitehorse, Kaska General Assembly,: Project overview and discussion of TK protocols
- October 1, 2007, Lower Post, Daylu Dena Council,: Project overview and discussion of potential impacts and benefits
- February 23, 2011, Good Hope Lake: Community meeting - Update on Kutcho Project re-design based on PEA and anticipated PFS
- February 24, 2011, Lower Post: Community meeting House - Update on Kutcho Project re-design based on PEA and anticipated PFS
- April 19, 2011, Vancouver: Discussion of upcoming plans for Kutcho Project.

In addition to formal meetings, regular phone, letter, and email contact were and continue to be maintained with each First Nation. KCC will continue to consult with the Tahltan Nation and Kaska Dena Nation throughout the environmental assessment process.

11.2.3 Agreements and Protocols

Several agreements were signed in 2007 with both the Tahltan Nation and Kaska Dena Nation related to communications, economic opportunity, environmental assessment participation, and traditional knowledge studies. KCC has expressed its intention to work collaboratively with the both the Tahltan Nation and Kaska Dena Nation towards updated agreements in 2011.

11.3 FEDERAL, PROVINCIAL, AND REGIONAL GOVERNMENT CONSULTATION

11.3.1 Federal Government

KCC met with the Canadian Environmental Assessment (CEA) Agency and other federal agencies including DFO, Natural Resources Canada, Environment Canada, Health Canada, and Transport Canada on 10 occasions between 2006 and 2007. Communications also occurred via numerous email and phone calls.

A preliminary meeting with the CEA Agency was held in March 2011 to re-introduce the Project. It is anticipated that ongoing consultation will also include the following federal government ministries:

- Natural Resources Canada
- Environment Canada
- Department of Fisheries and Oceans Canada
- Transport Canada

11.3.2 Working Group

It is anticipated that the EAO will re-establish a formal Environmental Assessment working group for the Project with potentially affected First Nation groups, and relevant provincial, federal, and local government representatives. The objective of the working group will be to provide guidance to KCC regarding data acquisition objectives, ways to avoid potential project effects, and strategies to mitigate any effects that cannot be avoided. The EAO may also decide to re-establish issue-specific subcommittees to the working group to allow for in-depth discussions about and consideration of access, fish, and ML/ARD effects of the Project. Since 2005, nine general and issue-specific EAO working group meetings were held, including participants from regional, provincial, and federal government agencies and ministries.

KCC will consult with the newly formed working group throughout the environmental assessment process.

11.3.3 Provincial Government

Beyond participation in the EAO working group meetings, there were 14 individual provincial ministry meetings held with the EAO, Ministry of Forests and Range (MOFR), Ministry of Aboriginal Relations and Reconciliation, Ministry of Mines and Petroleum Resources, and Ministry of Transportation from 2005 to 2007. The main issues discussed during these meetings were permitting, baseline requirements, and process overview. WKM also had contact with the Ministry of Environment via email and phone to discuss issues of wildlife, access, fish permits, air quality, and trap-lines.

A preliminary meeting with the BC EAO was held in March 2011 to re-introduce the Project, and correspondence has continued through email and telephone discussions since that time to receive direction. It is anticipated that ongoing consultation will also include the following provincial government agencies:

- Ministry of Energy, Mines, and Petroleum Resource
- Ministry of Aboriginal Relations and Reconciliation
- Ministry of Forests and Range

- Ministry of Environment
 - Environmental Protection Division
 - Environmental Stewardship Division
 - Water Stewardship Division
- Ministry of Transportation and Infrastructure
- Ministry of Community, Sport, and Cultural Development
- Ministry of Natural Resource Operations, Integrated Land Management Bureau

11.3.4 Local and Regional Government

KCC held several meetings in 2007 with local and regional government parties to discuss and understand their issues and concerns, including highway traffic volumes and safety and zoning. KCC will maintain regular contact via meetings, phone and email communications with local and regional government representatives, including the Regional District of Kitimat Stikine (RDKS) throughout the environmental assessment process.

11.4 COMMUNITY ENGAGEMENT AND CONSULTATION

11.4.1 Introduction

KCC's consultation program has adhered to the guidelines derived from the Environmental Assessment Act, the Act's Public Consultation Policy Regulation (2002); the Provincial Policy for Consultation with First Nations (2002); and the Supplementary Guide to Proponents: BC Environmental Assessment Process.

Consultation with First Nations is required to ensure aboriginal interests are considered and attempts are made to address and/or accommodate First Nations issues and concerns. The Provincial Policy for Consultation with First Nations (2002) is followed to fulfill this requirement.

The Public Consultation Policy Regulation (2002) is used with respect to public consultation. This sets out guidelines related to the proponent's consultation program, public notice, public comment periods and documents to be available through the BC EAO's Project Information Centre (e-PIC).

11.4.2 Summary of Community Consultation

Two rounds of community consultation meetings, which included an open house and formal presentation, took place in November 2006 and June 2007. These meetings took place in Dease Lake, Iskut, Telegraph Good Hope Lake and Lower Post, Smithers, Terrace, and Stewart.

Information materials were developed and distributed throughout each of the consultation communities in the form of corporate newsletters, newspaper notices, radio Public Service Announcements, posters, and emails.

Information distribution and access to information included the following activities:

- Public notice of any consultation event and/or public review period and/or Application submission (which must be given a minimum of 7 days prior to the event or review period start date)
- The objective, time, place, and time limits (if applicable) (to be made explicit on public notices)
- Public notice must be placed in an "official" newspaper advertisement, open letters, or any other means that are relevant to the project-specific communities and are satisfactory to the EAO executive director. This includes radio, posters, newsletters, cable TV, or the Internet.
- The size and placement of the ad must be easily accessible and legible in the newspaper. All consultation event information must be made accessible to the public through the EAO's Project Information Centre (e-PIC).

KCC has engaged potentially affected communities through a series of open house meetings to provide information on the project, obtain feedback, as well as answer any questions regarding development plans. Open house meetings in First Nation communities are described in Section 11.2.

The following open houses were held in non-Aboriginal communities, including Smithers, Stewart, and Terrace in 2006 and 2007:

- November 6, 2006, Smithers: Project Update, EA requirements and process
- November 7, 2006, Stewart: Project Update, EA requirements and process
- November 8, 2006, Terrace: Project Update, EA requirements and process

It is anticipated that these communities will be re-engaged for consultation during the environmental assessment review process.

11.4.3 Other Stakeholder Consultation

The proposed Project also potentially affects several tenure holders and interest groups, including guide outfitters, trappers, snowmobile club, commercial recreation, and Highway 37 users. In 2006-2007, individuals, groups, and companies associated with these interests were contacted and invited to participate in the land and resource use baseline study. WKM also discussed issues, values, and concerns directly with these stakeholders to address and respond

to them. In particular, between 2006 and 2007, discussions were held with the Stewart Highway 37 Users group, Terrace Chamber of Commerce, as well as Keith Connors and Devlin Oestrich (guide outfitters). The concerns raised by guide outfitters related to overlap of exploration and guiding activities. Maps were reviewed with the guide outfitters to determine the exact location of hunting camps and hunting areas and timing in order to minimize effects on guide outfitting operations.

KCC will continue to consult with the identified stakeholders throughout the environmental assessment process.

11.4.4 Common Concerns

The following concerns were common across the various consultation efforts to date:

- **Access road** –Who will control the access road? How will access be controlled? How will access be reclaimed after the project is closed?
- **Reagents in the process plant** – Their control and management and their potential environmental impacts.
- **Wildlife** – Traffic fatalities, increased hunting pressure and overall conservation.
- **Loss of livelihood** – Effect of mine construction and operation on guide outfitter and their clients.
- **Water quality** – Effect of mine activities on the aquatic environment; protection, treatment and monitoring.
- **Reclamation** – Will there be progressive reclamation? Is there an effective closure and reclamation plan? What will the mine site look like after closure?
- **ML/ARD** – Is ML/ARD a concern? How will the proponent control and mitigate this concern?
- **Tailings** – technology, closure performance.
- **Jobs, training, and business opportunities** – What is available for local residents and businesses?
- **TEK** – Will Traditional Ecological Knowledge be integrated into the Application for an Environmental Assessment Certificate?
- **Power generation** – On-site diesel generators or connection to the provincial electricity grid?
- **Mine schedule** – The negative impacts of the conventional two week in/two week out duty roster on local families.

- **Aboriginal language and culture** – Will it be affected by the Kutcho Project?
- **Truck traffic on Highway 37** – How much will it increase during mine construction and operation?

A number of these concerns may have been addressed or minimized by the re-design of the Project. KCC's responses to these concerns will be incorporated into the ongoing and future consultation with Project stakeholders. They will also be recorded in the relevant consultation sections of the EAC Application.

12. PROPOSED DEVELOPMENT SCHEDULE

12.1 PERMITTING PROCESS

The proposed development schedule for the Project was created under the assumption that a harmonized federal and provincial Environmental Assessment (EA) review will be required and completed. The Project does meet the thresholds of the Reviewable Projects Regulation under the BC EAO and the likely requirement for one or more federal permits are expected to trigger review by the CEA Agency.

KCC is currently initiating First Nation and public consultation in the pre-Application stage of the Project.

Baseline environmental studies and exploration drilling, condemnation drilling, preliminary engineering and site surveys will continue throughout the pre-Application stage. A preliminary breakdown of anticipated permitting related activities is provided in Table 12.1-1.

Table 12.1-1 Preliminary Schedule of Permitting Related Activities

Milestone	Date
Prefeasibility Study Complete	February 2011
Re-Initiate Discussions with BC EAO and CEA Agency	March 2011
Continuation of Baseline Environmental Studies	March 2011
Project Description Submission	May 2011
AIR Submission	September 2011
Public Open House and AIR Comment Period	October 2011
Completion of Baseline Studies and Baseline Reports	September 2011
Submission of Application/CSR Document	March 2012
Acceptance of Application for Review	April 2012
Public Open House and Application/CSR Comment Period	May 2012
EA Certificate Decision	November 2012
Federal Decision	January 2013
Permitting Completed	April 2013

12.2 CONSTRUCTION

Upon receipt of the Environmental Assessment Certificate, Federal Decision, Concurrent Permits and any other required permitting, construction will be initiated in the second quarter of 2013. It is estimated that a period of one year will be required for construction prior to commencement of milling ore from the starter pit. Construction of the underground workings will continue while

the starter pit is being mined. Full production from the Main deposit will be achieved in Year 2 and full production from the Esso deposit will be achieved in Year 3.

12.3 OPERATIONS

The anticipated operational phase of the Project is 12 years, which is contingent on material changes that could arise during the continued exploration work, process refinement, or throughput modifications.

12.4 DECOMISSIONING

Timing and duration of closure and reclamation activities will be determined when the detailed reclamation plan is submitted as part of the BC Mines Act permit application.

13. REGULATORY APPROVAL PROCESS

13.1 ENVIRONMENTAL ASSESSMENT PROCESS

The Kutcho Project is subject to the *British Columbia Environmental Assessment Act* and the *Canadian Environmental Assessment Act*.

The environmental assessment process for the Project commenced with the submission of a Project Description Report to the BC EAO in July 2005. The Project was initiated into the BC Environmental Assessment process through the issuance of a Section 10 order on July 29, 2005. Pursuant to the Canada-British Columbia Agreement for Environmental Assessment Cooperation (CEAA 2004), the provincial and federal processes are expected to be integrated into a harmonized review, with the BC EAO taking the lead. On December 24, 2007, the Canadian Environmental Assessment Agency (CEA Agency) announced that the Project would be subject to a Comprehensive Study. This decision and process review was based on the PFS design concept of a larger facility and 100% open pit mining scenario.

The development approach set out in this report will likely lead to a reassessment of the regulatory process for the Kutcho Project. In addition, both of the provincial and federal assessment processes related to mine permitting have changed since the Project was initiated. However, both levels of government have moved towards a faster and more streamlined process.

13.2 BC AUTHORIZATIONS, LICENCES, AND PERMITS

In addition to approval under BC EAO and the CEA Agency, KCC will require a number of other provincial and federal authorizations, licences, and permits to operate the Project.

Table 13.2-1 presents a preliminary list of the BC authorizations, licences, and permits that will be required for the Kutcho Project. The permit requirements will be reviewed and updated as the Project advances through the environmental assessment and permitting process.

Table 13.2-1 Projected BC Authorizations, Licences, and Permits for the Kutcho Project

BC Government Permits and Licences	Enabling Legislation
Environmental Assessment Certificate	BC Environmental Assessment Act
Permit Approving Work System & Reclamation Program (Mine Site – Initial Development)	Mines Act
Amendment to Permit Approving Work System and Reclamation Program (Pre-production)	Mines Act
Amendment to Permit Approving Work System and Reclamation Program (Bonding)	Mines Act
Amendment to Permit Approving Work System and Reclamation Program (Mine Plan - Production)	Mines Act
Permit Approving Work System and Reclamation Program (Gravel Pit/Wash Plant/Rock Borrow Pit)	Mines Act
Chief Inspector's Permit	Mines Act
Notice of Work	Mines Act
Water Licence – Notice of Intention (Application)	Water Act
Water Licence – Storage and Diversion	Water Act
Water Licence – Use	Water Act
Water Licence – Construction of fences, screens and fish or game guards across streams for conservation	Water Act
Water Licence – Alteration of Stream or Channel	Water Act
Authority to Make a Change In and About a Stream – Notification	Water Act / Water Regulation
Authority to Make a Change In and About a Stream – Approval to Make a Change	Water Act / Water Regulation
Authority to Make a Change In and About a Stream – Terms and Conditions of Habitat Officer	Water Act / Water Regulation
Occupant Licence to Cut – Access Road	Forest Act
Occupant Licence to Cut – Mine Site/Tailings Impoundment	Forest Act
Occupant Licence to Cut – Gravel Pits	Forest Act
Occupant Licence to Cut – Borrow Areas	Forest Act
Road use Permit (existing Forest Service Road)	Forest Act
Special Use Permit – Access Road	Provincial Forest Use Regulation
Licence of Occupation – Staging Areas	Land Act
Licence of Occupation – Pump House/Water Discharge Line	Land Act
Licence of Occupation – Borrow/Gravel Pits	Land Act
Surface Lease – Mine site Facilities	Land Act
Waste Management Permit – Effluent (Sediment, Tailings and Sewage)	Environmental Management Act
Waste Management Permit – Air (Crushers, Ventilation, Dust)	Environmental Management Act
Waste Management Permit – Refuse	Environmental Management Act
Special Waste Generator Permit (Waste Oil)	Environmental Management Act (Special Waste Regulations)
Sewage Registration	Environmental Management Act
Camp Operation Permits (Drinking Water, Sewage Disposal, Sanitation and Food Handling)	Health Act / Environmental Management Act
Waterworks Permit	Drinking Water Protection Act
Fuel Storage Approval	Fire Services Act
Food Service Permits	Health Act
Highway Access Permit	Highway Act

13.3 FEDERAL AUTHORIZATIONS, LICENCES, AND PERMITS

Table 13.3-1 presents a preliminary list of the required federal authorizations, licences and permits required by KCC to operate the Project.

The Project will be subject the Metal Mining Effluent Regulations. The regulations require KCC to achieve the specified effluent discharge standards, to implement a comprehensive Environmental Effects Monitoring program, and to provide compensation for the harmful alteration of fish habitat.

Table 13.3-1 Projected Federal Authorizations, Licences, and Permits for the Kutcho Project

Federal Government Approvals and Licenses	Enabling Legislation
CEAA Approval	Canadian Environmental Assessment Act
Metal Mining Effluent Regulations (MMER)	Fisheries Act Environment Canada)
Fish Habitat Compensation Agreement	Fisheries Act
Section 35(2) Authorization for harmful alteration, disruption or destruction of fish habitat	Fisheries Act
Navigable Water: Stream Crossings Authorization	Navigable Waters Protection Act
Dangerous Occurrence Report	Transportation of Dangerous Goods Regulations
Explosives Magazine Licence	Explosives Act
Radio Licences	Radio Communications Act
Radioisotope Licence (Nuclear Density Gauges/X-ray Analyzer)	Atomic Energy Control Act

It is noted that there is no proposed or anticipated federal funding associated with the Project.

13.4 NAVIGABLE WATERS

The Project access road will extend 120 km from the Kutcho mine site to Highway 37 near Dease Lake. The majority of the roadway will follow the alignment of an existing trail that is currently used by other resource and recreational users. Many segments of the existing trail are in poor condition due to lack of adequate drainage management and stream crossing structures. For the final roadway design, segments of the existing trail will be completely reconstructed and upgraded. Other segments of the roadway will require new road construction where the roadway has been realigned to avoid environmentally sensitive areas or other constraints.

Transport Canada (2006) defines navigable waters as any inland or coastal waters that floating vessels of any description can navigate for the purpose of transportation, commerce, or recreation. The public right to navigate Canadian waterways is protected by the *Navigable Waters Protection Act* (1985). This Act states that any works to be built or placed in, on, over, under, through, or across navigable water have to be approved via the Navigable Waters Protection Program (Transport Canada 2006) by the Navigable Waters Protection Division (NWPD) of Transport Canada.

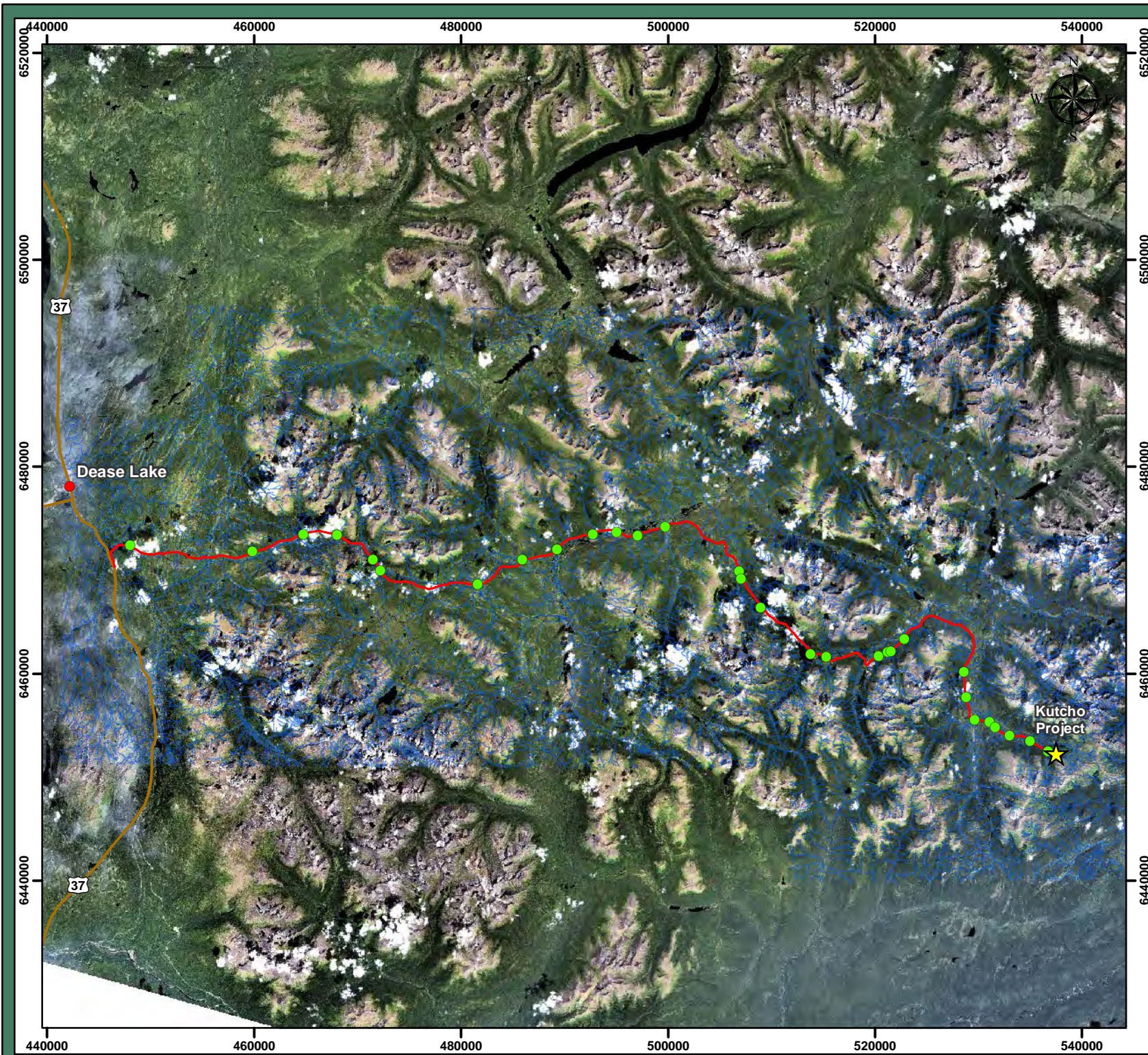
A number of potentially navigable watercourses will be crossed by the Project's proposed access road. Stream crossings also will occur within the proposed mine site, none of which, are likely to be considered navigable. Transport Canada requires information on watercourse crossings to assist in its determination of navigability pursuant to the *Navigable Waters Protection Act*. A full assessment is required by the Canadian Environmental Assessment Agency (CEA Agency) through Section 5.1 of the *Waters Protection Act*.

A Preliminary Report on Stream Crossings for Transport Canada Navigable Waters Assessment was written in September 2006. The preliminary report provided information on 15 stream crossings of the proposed Project access road, eight of which were considered to be potentially navigable. However, the number and identity of the road crossings was subject to change and dependent on the final road design.

In 2010 the proposed road alignment was altered by KCC. An updated Report on Stream Crossings for Transport Canada Navigable Waters Assessment is currently being prepared by Allnorth which will reflect the changes in the road alignment. The preliminary results indicate a total of 31 potential navigable crossings along the proposed access route (Figure 13.4-1). The draft report will be issued to Transport Canada, upon its completion.

Further work is required to determine exact locations of small stream crossings using standard culvert designs. Crossing locations may still be subject to change as engineering work on road design progresses. The CEA Agency, as well as the other regulatory agencies involved, will be kept up to date on any proposed changes to the access road alignment.

Conventional bridge construction methods will be used. Bridges will be designed with a minimum of 1.5 m clearance between the lowest structural member and the Q100 (100-year return period discharge) level. Greater clearance will be provided for the Turnagain River crossing, which is the crossing most likely to experience motorized water-borne traffic.

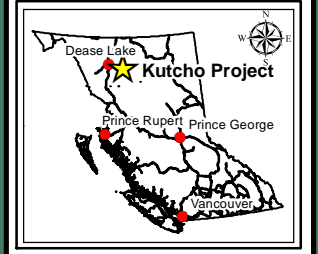


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Kutcho Project
Figure 13.4-1
Potential Navigable
Water Crossings

Legend

- Project Location
- Community Location
- Potentially Navigable
- Proposed Access Road
- Highway
- Stream



50k Mapsheets: 104G,H,I,J
 Date: 5/5/2011
 Projection: UTM9N, NAD83
 Scale: 1:500,000
 Path: C:\10-VA-0146\11GIS\Kutch-3302-009.mxd
 Drawn By: TK
 Checked By: KB
 Revision #: 1

13.5 HARMONIZED REVIEW PROCESS

Since the Project will likely trigger both provincial and federal review processes, it is expected to be subject to a harmonized review led by the BC EAO.

14. REFERENCES

- Allnorth. 2011. *Kutcho Project Surficial Material and Soil Baseline Report Addendum 2011 (Addendum to the Rescan Environmental Services Ltd. Kutcho Project Geology, Surficial Materials, and Soil Baseline Report)*. Prepared for Kutcho Copper Corporation by Allnorth Consultants Limited.
- BC CDC. 2011. *BC Species and Ecosystems Explorer*. [online database] Victoria (BC); BC Ministry of Environment. Available at: <http://a100.gov.bc.ca/pub/eswp/> (accessed 22 September 2011).
- BC MNRO. 2000. *Cassiar Iskut-Stikine Land and Resource Management Plan*. BC Ministry of Natural Resource Operations. October 2000. Available at: <http://www.ilmb.gov.bc.ca/slrp/lrmp/smithers/cassiar/index.html> (Accessed 24 May 2011).
- BC MNRO. 2004. *Dease-Liard Sustainable Resource Management Plan (SRMP)*. BC Ministry of Natural Resource Operations. November 2004. Available at: <http://ilmbwww.gov.bc.ca/slrp/srmp/north/dease-liard/index.html> (Accessed 24 May 2011).
- BC Research. 1979a. *Kutcho Creek Preliminary Environmental Data Report. Volumes I and II*. Prepared for Esso Minerals Ltd. by BC Research.
- BC Research. 1979b. *Acid Production Potential on Two Kutcho Creek Samples*. Prepared for Esso Minerals Ltd. by BC Research.
- Bridge, DA. 1984. *1983 Progress Report on the Kutcho Creek Property*. Prepared for Esso Minerals Canada Ltd.
- CEAA. 2004. *Canada-British Columbia Agreement for Environmental Assessment Cooperation*. <http://www.ceaa.gc.ca/default.asp?lang=En&n=EA76AACC-1> (Accessed 24 May 2011).
- Chillibeck, B, Chislett, G, Norris, G. 1992. *Land Development Guidelines for Protection of Aquatic Habitat*. Fisheries and Oceans Canada and BC Ministry of Environment, Lands and Parks.
- Gabrielse, H. 1978. *Geology of NTS Map Sheet 1041 (Cry Lake)*. Geological Survey of Canada, Open File number 610.
- Golder. 1984. *Geotechnical Investigations for Kutcho Creek*. Prepared for Sumac Mines Ltd. by Golder Associates Ltd. Report number 842-1092. November 1984.
- Golder. 1985. *Aggregate Search and Assessment for Kutcho Creek Project, Dease Lake, BC*. Prepared for Sumac Mines Ltd. by Golder Associates Ltd.
- Holbek, PM. 1985. *1984 Exploration Report on the Kutcho Creek Project*. Prepared for Esso Minerals Canada Ltd.
- INAC. 2006. *Registered Indian Population by Sex and Residence, 2005*. Indian and Northern Affairs Canada, First Nations and Northern Statistics Section, Government of Canada. TCC. 2007. *Tahltan Mining Policy (Draft #9)*. January 2007.

JDS Energy & Mining Inc. 2011. *Kutcho Copper Project Prefeasibility Study*. Prepared for Kutcho Copper Corporation. 15 February 2011.

KDC. 2003. *Kaska Dena Council*. Available at: <http://www.kaskadenacouncil.com/> (accessed 24 May 2011).

LGL. 1980. *Kutcho Creek Project Stage II: Environmental Baseline Studies, Fall 1979, Surface Hydrology, Water Quality and Aquatic Flora and Fauna*. Prepared for Esso Minerals Canada by LGL Ltd.

Norecol. 1986. *Kutcho Creek Project: Copper-Zinc-Silver-Gold Deposits, Stage II Report, Environmental Assessment*. Prepared for Sumac Mines Ltd. and Esso Minerals Canada by Norecol Environmental Consultants Ltd.

Northwest. 1979. *Kutcho Creek Project, Surface Water Hydrology*. Prepared for Esso Minerals Canada by Northwest Hydraulic Consultants Ltd.

Remington, D. 1990. *Environmental Assessment for the Kutcho Creek Property*. Prepared for Homestake Canada Ltd. by D. Remington Environmental Consulting. May 1980.

Rescan. 1989. *Kutcho Creek Project: Acid Generation Testwork Phase I, Final Report*. Prepared for Sumac Mines Ltd. and Homestake Mineral Development Company by Rescan Environmental Services Ltd.

Rescan. 2007a. *Kutcho Project Avian Baseline Report*. Prepared for Western Keltic Mines Inc. by Rescan Environmental Services Ltd. October 2007.

Rescan. 2007b. *Kutcho Project Moose Studies Baseline Report*. Prepared for Western Keltic Mines Inc. by Rescan Environmental Services Ltd. October 2007.

Rescan. 2007c. *Kutcho Project Mountain Ungulate Studies Baseline Report*. Prepared for Western Keltic Mines Inc. by Rescan Environmental Services Ltd. October 2007.

Rescan. 2007d. *Kutcho Project Furbearer Baseline Report*. Prepared by for Western Keltic Mines Inc. Rescan Environmental Services Ltd. October 2007.

Rescan. 2007e. *Kutcho Project Wildlife Habitat Suitability Baseline Report*. Prepared for Western Keltic Mines Inc. by Rescan Environmental Services Ltd. October 2007.

Rescan. 2007f. *Kutcho Project Bat Inventory Baseline Report*. Prepared for Western Keltic Mines Inc. by Rescan Environmental Services Ltd. October 2007.

Rescan. 2008a. *Kutcho Project Meteorology and Air Quality Baseline Report*. Prepared for Kutcho Copper Corporation. by Rescan Environmental Services Ltd. November 2008.

Rescan. 2008b. *Kutcho Project Socio-Economic/Cultural Baseline Studies Report*. Prepared for Kutcho Copper Corp. by Rescan Environmental Services Ltd. May 2008.

Rescan. 2008c. *Kutcho Project Land and Resource Use Baseline*. Prepared for Kutcho Copper Corp. by Rescan Environmental Services Ltd. May 2008.

Rescan. 2009. *Archaeological Impact Assessment Final Report, 2009*. Heritage Conservation Act Permit 2006-253. Prepared for Kutcho Copper Corp. by Rescan Environmental Services Ltd.

Rescan 2010a. *Kutcho Project: 2009 Meteorology Baseline Report*. Prepared for Capstone Mining Corp. by Rescan Environmental Services Ltd. September 2010.

Rescan. 2010b. *Kutcho Project Bull Trout Radio-Telemetry Study, 2009*. Prepared for Capstone Mining Corporation by Rescan Environmental Services Ltd. September 2010.

RTEC. 2010. *Kutcho Project: 2009 Meteorology Baseline Report*. Prepared for Capstone Mining Corp. by Rescan Tahltan Environmental Consultants (RTEC).

RTEC. 2010. Kutcho Project. 2008 Water Quality Data Report. Report by for Capstone Mining Corp. Rescan Tahltan Environmental Consultants (RTEC) September 2010.

Tahltan First Nation and IISD. 2004. *Out of Respect: The Tahltan, Mining and the Seven Questions to Sustainability*. Report of the Tahltan Mining Symposium, International Institute for Sustainable Development. April 4 to 6, 2003.

TCC. 2007. Tahltan Mining Policy (Draft #9). January 2007.

Thorstad, LE. 1983. The Upper Triassic Kutcho Formation, Cassiar Mountains, North Central British Columbia. MSc thesis, University of British Columbia.

Urban Systems Ltd. 1986. *Kutcho Creek Project Stage II Report Volume II – Socio-Economic Assessment*. Prepared for Sumac Mines Ltd. and Esso Minerals Canada by Urban Systems Ltd. March 1986.

URS. 2003. Water Sampling 2003 Kutcho Creek, North Central British Columbia. Prepared for Western Keltic Mines Inc. by URS.

Webb. 1979. *Kutcho Creek Project: Stage I Environmental Report*. Prepared for Esso Minerals Canada by R. Webb Environmental Services Ltd. June 1979.

Webb. 1980. *Ungulate Surveys, Kutcho Creek Region, North-Central British Columbia*. Prepared for Esso Minerals Canada by R. Webb Environmental Services Ltd. July 1980.

15. APPENDIX

Appendix A Kutcho Project – Projected Highway Usage

APPENDIX A

KUTCHO PROJECT – PROJECTED HIGHWAY USAGE



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MEMORANDUM

TO: BC Environmental Assessment Office, Canadian Environmental Assessment Agency

FROM: Kutcho Copper Corp.

DATE: September 22, 2011

Re: Kutcho Project – Projected Highway Usage

Background

On July 28, 2011, Kutcho Copper Corp. (KCC) met with representatives from the British Columbia Environmental Assessment Office (EAO) and the Canadian Environmental Assessment Agency (CEA Agency) to discuss the requirements of the Kutcho Project environmental assessment review process based on the information provided in the Project Description. The proposed Kutcho Project (the Project) is located approximately 100 km east of Dease Lake, BC. The Project is a proposed 2,500 tonnes per day operation with on-site infrastructure supporting open pit and underground development and off-site infrastructure including an existing airstrip and a proposed 120 km access road that will link the mine site to Highway 37. Zinc and copper concentrates will be produced and are proposed for truck transport to the existing port facilities in Stewart, BC.

The discussion identified a requirement for KCC to provide additional information on the projected highway usage along the Highway 37/37A transportation corridor. This memo presents the projected highway usage based on the information available at this time and applicable experience from other mining projects.

Projected Highway Usage

Truck transportation is proposed to support concentrate haulage and the delivery of supplies including Liquefied Natural Gas (LNG), diesel, mill/mine consumables, miscellaneous materials and construction supplies and materials. At this time, concentrate haulage, LNG and diesel supply transportation requirements can be projected with a reasonable level of confidence based on the anticipated production rate and fuel storage facilities. For reference in the following discussion, the proposed Project Mine Plan includes 18 months for construction beginning in Year -1 and a twelve year operations phase (Years 1-12). Meziadin Junction can be used as a geographical reference point as truck traffic will have to pass through this junction traveling loaded and unloaded.



Concentrate Haulage

As part of proposed operations, zinc and copper concentrates produced onsite will be hauled by truck from the mine site to the existing port facilities in Stewart. The approximate total distance is 510 km and is distributed as follows:

- 120 km west from the mine site to the junction of the proposed access road and Highway 37;
- Southbound approximately 325 km on Highway 37 to Meziadin Junction; then
- Westbound 65 km on Highway 37A to Stewart.

It is anticipated that the Project will utilize a nine axle vehicle combination similar to the model currently used by the Wolverine Mine shown in the photos below. These trucks have been permitted to haul up to 50 tonnes (T) under a Bulk Haul Agreement with the Ministry of Transportation. The unit consists of a truck with a 5 axle trailer and has up to three load carrying boxes with side gates that are unloaded using a side tipping table. While traveling empty, to the point of loading, the trailer is in the “Piggy Back” position. This increases weight on the truck drive axels, increasing traction and reducing the overall vehicle length. Upon arriving at the point of loading, the trailer is offloaded from the tractor using a custom built gantry crane. The crane lifts the trailer off the truck and repositions the boxes for receiving concentrate. Once loaded, the haul unit performs as any other tractor trailer combination. Concentrate trucking services will operate on a 24 hour, 7 day a week basis; this schedule has the advantage of reducing the number of trucks required during day time hours.





As illustrated by Table 1, the number of haul trucks required, based on a 50 T model can be projected based on the proposed Mine Plan. Trucks per day are based on an 80% truck availability rate to account for preventative maintenance and mechanical breakdowns. In addition, estimates anticipate that there will be 335 operating days a year to transport concentrate to the port to account for adverse conditions such as avalanche control, poor weather and road maintenance closures.

Table 1: Estimate of Concentrate Haul Trucks Required Based on Proposed Mine Plan

	Production Year											
	1	2	3	4	5	6	7	8	9	10	11	12
Annual Total Concentrate Produced (T)	75,364	88,580	93,416	111,051	133,493	116,516	106,087	86,307	92,582	93,261	81,335	35,802
Total Concentrate Per day (T)	281.21	330.52	348.57	414.37	498.11	434.76	395.85	322.04	345.46	347.99	303.49	133.59
Approximate Trucks per day (50 T)*	6	7	7	8	10	9	8	7	7	7	6	3

*Trucking Estimates are rounded to the nearest whole number

Over the mine life, the average trucks per day will be 7 concentrate trucks. Based on concentrate haulage operating 24 hours a day, the average return trip haulage cycle is anticipated to be 22.5 hours. Each concentrate haulage truck will make two passes on Highway 37/37A in a 24 hour period; one pass traveling northbound and one pass traveling southbound. Depending on the year, the average number of trucks per 24 hour period on Highway 37/37A will vary.



Liquefied Natural Gas

LNG has been identified as the most feasible and cost effective power option for the Project. As outlined in the Kutcho Project Prefeasibility Study (February 2011), at this time it is anticipated that LNG would be supplied from Terasen Gas Inc's facilities located in the lower mainland area of British Columbia. The LNG would then be delivered to the mine site in cryogenic tanks by truck with tractors powered with diesel fuel. The LNG trucks are expected to be B-train configurations in order to provide for the most efficient transportation of the LNG fuel. Approximately three (3) B-trains would be able to provide the LNG delivery with one truck on site, one leaving site and one enroute. There is potential for variation in LNG supplier or transport logistics during the life of the Project including the following:

- The potential for supply of natural gas from a small scale LNG production facility located in Fort Nelson BC with the LNG being trucked to the mine site; and
- The potential opportunity for LNG supply also exists with the planned natural gas export terminal in northern British Columbia Apache Canada Ltd. and EOG Resources Canada Inc. have agreed to pay \$50-million to purchase the remaining 50 per cent of Pacific Trail, a proposed \$1.2-billion natural gas pipeline, from its developer, Pacific Northern Gas Ltd. The 463-kilometre pipeline would deliver gas from northeastern B.C. to Kitimat, where it could be compressed and then transported to the Kutcho Mine site.

LNG transportation options including barging from the lower mainland to Stewart, Prince Rupert or Kitimat were examined and found not to be cost effective versus the trucking options.

During construction (Year -1), LNG requirements are estimated at 2 per day, taking into consideration that the LNG storage facility is being built. LNG requirements are anticipated to remain steady at 3 trucks per day during operations (Years 1-12).

Diesel

Diesel requirements are anticipated at approximately 1.25 trucks per week during construction and through operations. Diesel may be sourced from Terrace or Smithers BC.

Mill Consumables and Miscellaneous Supplies

Transport requirements for mill consumables may include 7 trucks per week for items such as grinding media, reagents and maintenance parts. Transport requirements for mine consumables may include 1 truck per week for explosives, 1 truck per week for cement, 1.75 trucks per week for ground support materials (resin, rock bolts, rebar, screen) and 3 trucks per week for miscellaneous supplies (food, camp supplies, cable etc.) The source of these supplies will vary; however, it is assumed that Smithers will be a geographical point for supplies, materials and construction equipment.



Table 2: Summary of Diesel, Consumables and Miscellaneous Supplies

Item	Trucks Per Week
Diesel	1.25
Mill Consumables	7
Explosives	1
Cement	1
Ground Support	1.75
Miscellaneous Supplies	3
Total	15

Therefore trucking requirements for diesel, mill consumables and miscellaneous supplies are projected at 15 trucks per week (Table 2) or approximately 2 trucks per day during the operations phase. During the construction phase, there may be some variation in the supply requirements, but the trucking requirements for consumables, diesel and miscellaneous supplies are still projected at 2 trucks per day. It is assumed that one truck will be traveling to site and one truck will be traveling to its origin at any one time.

Personnel

It is anticipated that personnel from the Cassiar region will be bussed to the site from Dease Lake on a bi-weekly schedule and that the remainder of personnel from broader locations will be flown to site on the same schedule.

Construction Materials and Supplies

During construction and mine development, transport requirement for construction materials may include 4 trucks per day. Goods such as building supplies, mill equipment, cable, piping, and construction equipment will be transported from various different locations throughout BC and out of province to the mine site. It is assumed that two trucks will be traveling to site and two trucks will be traveling back to their origin at any one time.

Summary

Tables 3 and 4 summarize the projected logistics and highway usage per day during the construction and operations phases which accounts for transport of construction materials, concentrate, fuel (LNG / diesel) and supplies (consumables / miscellaneous).

Table 4 represents the total number of trucks projected per day (24 hour period) and therefore the total number of return trips per day from origin to destination. During the construction phase it is anticipated that there will be an average of 8 trucks on the road at any one time during the day; and an average of 12 trucks on the road at any one time during operations.

Meziadin Junction can be used as a point of reference for much of the supplies and concentrate which will pass along the Highway 37/37A corridor. It is assumed that the total trucks per day will pass through Meziadin Junction twice in one day; once going northbound and once going southbound. Therefore, the total passes through Meziadin Junction each day will be the total projected trucks per day multiplied by 2 for any given year.



Table 3: Summary of Transport Logistics

Items	Estimated Size/Capacity	Truck Sizes	Projected Origin / Destination	Potential Highway Route
Construction Materials & Supplies	TBD	Class 8	Various – Mine site	HWY 1, BC-97N, BC-16N, HWY 37
Concentrate	50 T	Class 8	Mine site – Stewart	HWY 37/HWY 37A
LNG	32,000 L	Class 8	Vancouver – Mine site	HWY 1, BC-97N, BC-16N, HWY 37
Diesel /Consumables/Miscellaneous	TBD	Class 8	Terrace/Smithers/Williams Lake – Mine site	HWY 37, BC-97N, BC-16N

Table 4: Summary of Transport Requirements by Project Phase

Items*	Construction	Operations											
	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Construction Materials & Supplies	4	--	--	--	--	--	--	--	--	--	--	--	--
Concentrate	--	6	7	7	8	10	9	8	7	7	7	6	3
LNG	2	3	3	3	3	3	3	3	3	3	3	3	3
Diesel/Consumables/Miscellaneous	2	2	2	2	2	2	2	2	2	2	2	2	2
Total Trucks Per day	8	11	12	12	13	15	14	13	12	12	12	11	8

* May be subject to seasonal variation, production rates or variance in supply chain logistics



References

JDS Energy & Mining Inc, February 15, 2011. *Kutcho Copper Project Prefeasibility Study British Columbia*. Prepared for Kutcho Copper Corporation. <http://capstonemining.com/s/Kutcho.asp>