



Resource Analysis Report

Mineral and Energy Resource Analysis Report

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Executive Summary

The North Coast LRMP area has a century-long history of exploration and development; including underground (e.g. Dolly Varden) and open pit (e.g. Kitsault) mines, as well as the copper smelter at Anyox. The area continues to be highly prospective, with a high likelihood of continued activity since nearly one half of the gross land base is underlain by extreme metallic mineral potential. Most of this extreme metallic potential underlies general management where it is subject to regulation by numerous government agency statutes. Another twelve percent of the gross land base contributes significant moderate metallic mineral potential where exploration and development may occur. The majority of fair and low metallic potential also underlies general management. The most prospective areas are: the northern plan area of Anyox/Kitsault/Stewart, the Ecstall/Scotia valleys, plus the coastal islands.

Exploration and development for industrial minerals is likely. Ninety five percent of the land base is significantly prospective and most of this potential lies within general management.

Mineral tenures cover five percent of the gross land base. There are no tenures in community watersheds. Located within the general management area are nearly four fifths of the combined metallic mineral anomalies, showings and prospects. There is one industrial mineral producer (abrasives) located at Anyox. Half of the industrial mineral occurrences (showings) are located within the general management area as are seventeen percent (seven) of the more developed industrial mineral occurrences. The major number (91%) of industrial mineral exploration programs took place on general management lands.

Standardized to 1986 dollars, \$17,934,351 (Cdn) has been spent on exploration programs within the LRMP area. All exploration expenditures are not necessarily reported and only about 40% of the exploration activity is recorded and compiled by government.

Less than one percent of the gross land base is underlain by moderate gas potential. This occurs in a small crescent to the east of Kitsault. Almost all the moderate gas potential occurs within the general management area where if exploration or development were to occur it would be subject to standard provincial regulation.

As a component of the Base Case, a forward projection of current management would provide industry clarity of direction; stability to work from the known parameters of present codes and guidelines. The associated projection of no further protection would provide certainty that prospective areas could be assessed and remain open for the decades that are often needed to bring a deposit into development.

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1.0 Definitions

Metallic minerals are a class of substances that are generally solids, opaque, heavy, good conductors of electricity and have a characteristic metal-like lustre. Examples are gold, silver, copper and lead.

Industrial minerals are a class of rocks and minerals that are chemically inert (inactive) and are quarried or mined for a wide variety of commercial applications from manufacturing paper, glass, ceramics and paints to electrical and electronics products. They do not include aggregates (sand and gravel). Examples of commodities are: marble used for carving and decorative facings; granite and limestone supplying building stone; barite, a very heavy mineral used in drilling muds and paints; garnet, type and quality determining whether it is used as a gemstone or an abrasive; mica because of its insulating properties is found in electrical and electronic applications.

Aggregates include sand, gravel and fractured/blast rock. They are most often quarried, occasionally dredged. These materials form the basis for road building, road maintenance and in a cleaned/washed state are a constituent of cement. Quarried rock is often used as fill for construction sites or in road building.

2.0 Introduction

From an historical perspective the Ministry of Energy and Mines annual reports show that considerable exploration and small mine development occurred in the North Coast area during the 1900's through to the 1930's. Most of it was conducted and serviced from well-established centres that grew up at Stewart, Hyder, Alice Arm, Anyox and Fort Simpson. For instance the mining and smelting of copper at Anyox began in 1914 and continued to 1935. Depressed copper prices forced the closure of both the smelter and townsite. The plan area is richly endowed with both metallic and industrial mineral potential. During the past century numerous mineral deposits (32) have been mined in the North Coast plan area. Another 31 deposits have been developed and reserves delineated. With additional exploration of these properties, plus the right combination of economic conditions, commodity prices and infrastructure, development may well take place.

The North Coast plan area is underlain by all three major categories of rock types: igneous (solidified from a molten state), sedimentary (consolidated fragments of pre-existing rocks) and metamorphic (a pre-existing rock changed by heat and/or pressure to a new form). As a part of the western margin of North

America the plan area has a captivating geological history that spans hundreds of millions of years and includes: exotic terranes from further west/south that have been accreted or added to the coastal margin while denser rocks were forced downward, under the coast margin, melted and forced up again creating the coast granitic mountains. By their heat and pressure, as they rose, other rocks were metamorphosed. A more detailed outline of the geology can be found in Appendix 2 of the Current Conditions Report.

The subsurface resources analysed in this report are mineral values, metallic and industrial, as well as the on-shore gas values. The aggregate and geothermal potential are qualitatively discussed and a separate report for aggregates will be presented to the Table, at a later date. Details regarding the mineral and energy resource potential can be found in section 4.3 of the Current Conditions Report.

Two types of metallic mineral deposits are found within the granitic and metamorphic rocks of the coast margin: 1) copper-zinc-silver-gold, as found in the Ecstall/Scotia area and 2) gold in quartz veins such as at Surf Point mine on Porcher Island. The sedimentary and volcanic rocks of the Anyox/Kitsault/Stewart area host precious (gold and silver) as well as base (copper, lead, zinc, molybdenum) minerals. These deposits have been mined by both underground methods such as at the Dolly Varden to the north of Alice Arm and by open pit methods such as the molybdenum mining that took place in the same vicinity at Kitsault. This general area has one of the highest concentrations of metallic mineral deposits in the province and continues to be explored. Claim staking occurred after recent research determined that the geological setting, in the Anyox/Kitsault area, is similar to the very rich Eskay Creek silver-gold deposit.

The industrial mineral potential is also high. The only current mineral producer in the plan area is located at Anyox. The slag pile waste (a silica glass remaining from the copper processing) has weathered to sharply angular shards that can be used as an abrasive for sandblasting. During the operation of the copper smelter, local silica and limestone deposits were mined for use in the processing. More recently limestone has been used locally by the pulp and paper industry and a deposit on Aristazabal Island is currently under review for use of its high quality limestone as a filler in the manufacture of plastic, paint and paper. There are a number of different industrial mineral and dimension stone sites in the plan area. As demand and markets increase the area will merit more exploration and development due to the proximity to tidewater and thereby the attraction of less costlier transportation.

The North Coast plan area has a rich history (in several senses) of mineral endowment and utilization. The area continues to be highly prospective for metallic and industrial minerals; less so for on-shore natural gas potential. The following segments of the report explain the interaction with other resources.

3.0 Analysis components

Indicator	Measure	Rationale for indicator	Data for analysis	Age/reliability of data
3A) Metallic and B) Industrial Mineral Potential				
A) Areas of metallic mineral potential B) Areas of industrial mineral potential	A) & B) Metallic & industrial mineral classes: Extreme High Moderate Fair Low	A) & B) A measure is needed to give a relative ranking of the 795 provincial geological tracts. This allows differentiation of higher potential areas where it is more likely that deposits will be found.	Ministry of Energy and Mines databases including geological maps and historical data were used by experts to estimate future deposit potential, at several probability levels, for numerous metallic mineral deposit types (e.g. A) high grade gold veins, low grade copper-gold deposits B) gypsum, jade, marble, barite, talc, magnesite.	The metallic and industrial mineral potential assessments were completed in 1998 and the Queen Charlotte Islands added in 2000.
A) Qualifiers: 1) Mineral potential assessments are time sensitive. New mineral discoveries and deposit models can alter the assessments; changing economics, to a lesser extent, alter the assessments. 2) It is an estimate of future potential (current economic potential is assessed by other values such as mineral tenure and industry activity). 3) Rankings are restricted to BC and do not take into account the overall high mineral potential of BC compared to the rest of Canada. This is increased by having to declare one fifth of the province as low mineral potential. A4) Metallic mineral ranking is based on the gross in place value of potential commodities in each tract and does not take into account economic factors that would influence mineral development. This creates an overall bias ranking tracts with low grade, high tonnage deposit potential higher than tracts with high grade, low tonnage deposit potential because the contained mineral values are higher in the former, though substantially more difficult and costly to bring into production than the latter.				

Indicator	Measure	Rationale for indicator	Data for analysis	Age/reliability of data
B) Qualifiers: 1) Much of the exploration for industrial minerals has occurred since the 1940s; therefore, there is a much smaller industry database available than for metallic minerals. 2) Estimation of the industrial mineral potential for British Columbia was completed by fewer experts than for the metallic mineral assessment. 3) Rankings are restricted to BC and do not take into account the overall high mineral potential of BC compared to the rest of Canada. This is increased by having to declare one fifth of the province as low mineral potential. 4) Rating of many industrial mineral deposit types, such as magnesite, barite and jade, is based on the gross in place value of the commodities and does not take into account economic factors influencing development of a deposit. For very abundant industrial mineral deposit types in BC, such as limestone, granite and dimension stone, future deposit potential was only estimated in areas that might reasonably be expected to see development of the resource within the foreseeable future.				
3C) Mineral Tenures				
Area covered by mineral tenures	Hectares of ground covered by mineral tenures. One claim unit (500x500m) covers 25 hectares.	The area covered gives an indication of the amount of industry interest in the mineralization thought to be in the general area, in relation to current or projected commodity prices.	Ministry of Energy and Mines mineral tenure database and BC Assets and Lands database for crown grants.	The mineral tenure database used for the LRMP contains only tenures that were in good standing as of April 1, 2001. Some recently staked tenures are missing from the map (Ecstall valley and Kitsault area), as they had not yet been digitised from the hard copy maps. Tenures that forfeited prior to February 2001 are not included, regardless of the level of work done on the property. The mineral tenure database is open to frequent and sometimes radical change when tenures forfeit or new tenures are staked.

Indicator	Measure	Rationale for indicator	Data for analysis	Age/reliability of data
3D) Metallic and E) Industrial Mineral Occurrences				
Metallic and industrial mineral sites	Number of metallic or industrial mineral sites of the following categories: Anomaly Showing Prospect Developed prospect Producer Past producer	Conggregations of occurrences or lone sites provide an indication of potential and the amount of industry interest in the mineral occurrence or mineralization thought to be in the general area, in relation to current or projected commodity prices.	Ministry of Energy and Mines MINFILE database. Each record includes extensive detail on location; mineralogy and alteration; geology and host rocks; assay data, reserves and production records plus further references and information on any given occurrence. Included as part of each record is a variable-length text description of the geology and setting of each occurrence.	The inventory was updated in March 2001. The MINFILE database is a record of known mineral occurrences in BC that is compiled from government sources (i.e. geological survey crews, regional geologists and assessment reports). The data is reliable, but incomplete. In particular, several occurrences noted in the ARIS database have not been incorporated into MINFILE, as well, private company files of mineral occurrences are not recorded. Site locations are generally accurate within 500 metres.

Indicator	Measure	Rationale for indicator	Data for analysis	Age/reliability of data
The number of anomalies gives an indication of potential mineralization in the area.				
Numbers of showings indicate mineralization that has been discovered but not worked on.				
Numbers of prospects indicate occurrences that have had limited amounts of work.				
Developed prospects usually have sufficient study to have delineated reserves and the number in an area gives an indication of amount of mineralization as well as industry interest.				
Producers are deposits that are thought to be economically feasible to develop and have successfully undergone an environmental and technical review process prior to commodity extraction. The number in an area gives an indication of amount of mineralization as well as industry interest.				
Numbers of past producers also indicate the amount of mineralization in an area and the level of industry interest. Mining may have ceased but reserves remain until economic conditions warrant continued extraction.				
3F) ARIS				
Sites of mineral exploration activity	Number of sites	Provides an indication of amount of industry interest in the area and in potential type and size of deposit.	The ARIS database is collected and maintained by the Ministry of Energy and Mines. It is only a partial record of mineral exploration work in BC.	The ARIS inventory for the North Coast plan area was updated in March 2001.
Qualifiers: 1) ARIS is incomplete for work before 1947. Prior to that date reports were not filed for assessment. 2) Assessment reports are confidential for one year after filing; consequently, the database does not contain reports that were received in 2000. 3) Significant amounts of exploration work and expenditures are not submitted as assessment work because the work was conducted on a regional scale and could not be applied to a specific mineral property, or has not been filed in order to maintain confidentiality of valuable data. Provincially, it has been estimated that ARIS only captures 40% of all exploration work done; a study of data for Ft. St. James district estimated that ARIS captured only 31% of mineral exploration work in the area.				
Exploration expenditures	Dollars spent, standardized to 1986 (CDN).	An estimate of the industry exploration expenditure.	The expenditure figure for an exploration report is a requirement of ARIS.	As noted above ARIS captures only about 40% of the exploration activity; hence the expenditures are subject to the same limitations as noted above.

Indicator	Measure	Rationale for indicator	Data for analysis	Age/reliability of data
3G) Gas Potential				
Area of natural gas potential	Natural gas classes: >100,000 m ³ /ha 40,001 -100,000 m ³ /ha 20,001 -40,000 m ³ /ha 10,001 -20,000 m ³ /ha 1 -10,000 m ³ /ha	A measure is needed to give a relative ranking of the sedimentary bedrock prospective for gas potential.	Studies both published and unpublished of the Geological Survey of Canada's Institute of Sedimentary and Petroleum Geology were used to divide the sedimentary bedrock into tracts or polygons that were ranked by a statistical program.	Oil and Gas Potential mapping, was completed in September 1994. The inventory information is a generalized view of resource potential distribution. These resource assessments are based on expert geologic evaluations

3H) Aggregate

Ministry of Energy and Mines staff undertook a surficial geology study of the plan area reported as: Ministry of Energy and Mines Open File 2001-14. Aerial photography and past reports were used to create a reconnaissance scale aggregate potential map. There were no ground-truthing assessments undertaken.

4.0 Analysis methods

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
4A) Metallic Mineral Potential 4B) Industrial Mineral Potential		Metallic and industrial mineral classes	Despite the hidden nature of subsurface resources, it is possible to identify areas where there is greater probability of finding economic deposits and hence of possible mine development.	Areas of extreme, high, moderate and fair potential have the greater probability of discoveries and mine development. However, it must be kept in mind that due to the hidden nature of the resource and evolving theories of mineralization, discoveries are made in classes outside these four categories.
How much of each 1) metallic and 2) industrial mineral class underlies: the timber harvesting land-base, TFL 25 and the visual quality classes of preservation, retention or partial retention (P/R/PR)?	GIS area stats	Amount of hectares A)metallic , B) industrial mineral classes underlying the timber harvesting land-base, TFL 25 and visual quality classes.	There is no appreciable impact from either metallic or industrial mineral exploration or development activity on the timber harvesting land-base TFL 25 visual quality classes	Mineral exploration sites are generally confined to small, site-specific areas, often 5 hectares or less. Mineral development sites can influence 50 to 500 hectares, depending on deposit type and mining method. Outside of protected areas, the Mining Rights Amendment Act guarantees road access for mineral exploration and mine development. Neither the site sizes or road access should significantly impact forestry

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
				values or the visual quality classes. The environmental assessment or mine development approval process can consider and act on visual sensitivity information, including that associated with roads.
How much of each metallic and industrial mineral class underlies privately held land settlement or urban areas?	GIS area stats	Amount (hectares) metallic and industrial mineral classes underlying private land, settlement or urban areas.	Mineral exploration and development activity would be negotiated with private land-holders.	Explorers or developers would negotiate to determine activity. Prospecting or preliminary exploration activity can be done with minimal to no disturbance to a site; more advanced exploration does create localized disturbance that is remediated by regulation.
How much of each metallic and industrial mineral class underlies existing protected areas?	GIS area stats	Amount (hectares) of metallic and industrial mineral classes underlying existing protected areas	Mineral exploration and development is not allowed within protected areas. This results in a loss of all potential development in these areas. It is assumed for projections of the Base Case, in the absence of land planning, that no further protection would occur.	Exploration and development, within protected areas, is prohibited by law. The Base Case creates a projection of current practices.

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
How much of each metallic and industrial mineral class underlies areas within community watersheds?	GIS area stats	Amount (hectares) of metallic and industrial mineral classes underlying community watersheds	Mineral exploration and development are allowed within community watersheds. Disturbance is strictly regulated.	Water quality preservation and prevention of potential erosion require prior planning as regulated in the Mineral Exploration Code.
How much of each metallic and industrial mineral class underlies areas of general management?	GIS area stats	Amount (hectares) of metallic and industrial mineral classes underlying general management	Mineral exploration and development are accepted activities.	Exploration and development activities are regulated by both the Mineral Exploration and the Health, Safety and Mine Reclamation Codes.
4C) Mineral Tenures				
How many claim units (25 ha/unit) underlie: timber harvesting land-base TFL 25 the visual quality classes of preservation, retention or partial retention (P/R/PR)?	GIS area stats	Number of claim units underlying the timber harvesting land-base, TFL 25 or the visual quality classes of preservation, retention or partial retention?	There is no appreciable impact from placing mineral tenures on the timber harvesting land-base, TFL 25 or the visual quality classes of preservation, retention or partial retention?	Mineral tenures are marked in the field by tagged corner and side claim posts. When timber harvesting, maintaining these claim posts would be the only impact on forestry values.

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
How many claim units (25 ha/unit) underlie privately held land, settlement or urban areas?	GIS area stats	Number of claim units underlying private land, settlement or urban areas.	There is no appreciable physical impact from placing mineral tenures on private land.	Mineral tenures are marked in the field by tagged corner and side claim posts.
How many claim units (25 ha/unit) underlie existing protected areas?	GIS area stats	Number of claim units underlying existing protected areas	Mineral tenures are not allowed within protected areas.	Claim staking within protected areas, is prohibited by law.
How many claim units (25 ha/unit) underlie areas within community watersheds?	GIS area stats	Number of claim units underlying community watersheds	There is no physical impact from placing mineral tenures in community watersheds.	Mineral tenures are marked in the field by tagged corner and side claim posts.
How many claim units (25 ha/unit) underlie areas of general management?	GIS area stats	Number of claim units underlying general management	There is no physical or visual impact from placing mineral tenures on the land base.	Mineral tenures are marked in the field by tagged corner and side claim posts.

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
4D) Metallic 4E) Industrial Mineral Occurrences				
How many and of what category of metallic and industrial mineral occurrences underlie: the timber harvesting land-base TFL 25 visual quality classes of preservation, retention or partial retention (P/R/PR)?	GIS area stats	Number and type of metallic and industrial mineral occurrences underlying the timber harvesting land-base, TFL 25 or the visual quality classes of preservation, retention or partial retention?	There is no impact from mineral occurrences on the timber harvesting land-base, TFL 25 or the visual quality classes of preservation, retention or partial retention?	Mineral occurrence sites are small, site-specific locations (often much less than a hectare).
How many and of what category of metallic and industrial mineral occurrences underlie privately	GIS area stats	Number and type of metallic and industrial mineral occurrences underlying private land, settlement or	Mineral occurrences on private land can be subject to increased potential for conflict.	Negotiation and other measures to reduce potential conflict can increase the cost and time required before beginning exploration and thereby reduce the certainty

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
held land, settlement or urban areas?		urban areas		for potential exploration or development
How many and of what category of metallic and industrial mineral occurrences underlie existing protected areas?	GIS area stats	Number and type of metallic and industrial mineral occurrences underlying existing protected areas	Mineral tenures, exploration or development are not allowed within protected areas. This results in a loss of assessment or any potential development of mineralized sites.	Within protected areas exploration and development are prohibited by law.
How many and of what category of metallic and industrial mineral occurrences underlie community watersheds?	GIS area stats	Number and type of metallic and industrial mineral occurrences underlying community watersheds	Mineral occurrences can be natural sites where there is higher than normal background levels of toxic metals or low pH values in associated water. Mineral occurrences within community watersheds can be subject to increased potential for conflict.	Geochemistry and water analysis studies would provide a baseline before designating community watersheds. Negotiation and other measures to reduce potential conflict can increase the cost and time required before beginning exploration and thereby reduce the certainty for potential exploration or development.
4F) ARIS				
How many exploration programs have been undertaken on areas of:	GIS area stats	Number of ARIS reports and associated expenditures on areas of:	Groupings of mineral activity or where there have been large dollar expenditures may be sites where development will	Significant expenditures, plus lone sites or congregations of activity, where there has been development to the point of mineral reserve calculations;

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
<p>timber harvesting land-base</p> <p>TFL 25</p> <p>the visual quality classes of preservation, retention or partial retention (P/R/RP)?</p> <p>What are the associated dollar expenditures?</p>		<p>timber harvesting land-base</p> <p>TFL 25</p> <p>the visual quality classes of preservation, retention or partial retention?</p>	<p>take place. Development may mean timber harvesting of the site with reforestation delayed for several decades. Some types of mining reclamation may preclude reforestation.</p>	<p>these locales give indications of a high likelihood of mine development under the right economic conditions.</p> <p>Timber harvesting of a mine site could encompass 50 to 500 hectares. Reclamation of parts of these sites where, for example , water percolation is to be prevented would preclude reforestation, possibly indefinitely.</p>
<p>How many exploration programs have been undertaken on privately held land, settlement or urban areas?</p> <p>What are the associated dollar expenditures?</p>	GIS area stats	<p>Number of ARIS reports and associated expenditures on private land, settlement or urban areas</p>	<p>Groupings of mineral activity or where there have been large dollar expenditures, these may be sites where development might take place.</p>	<p>Significant expenditures, plus lone sites or congregations of activity, where there has been development to the point of mineral reserve calculations; these give indications of a high likelihood of mine development being proposed when economic conditions are suitable.</p>
<p>How many exploration programs have been undertaken within currently existing protected areas?</p> <p>What are the associated dollar expenditures?</p>	GIS area stats	<p>Number of ARIS reports and associated expenditures overlying currently existing protected areas</p>	<p>Records of past exploration activity may indicate areas of mineralization or sites with known reserves which have subsequently become part of protected areas where no further assessment or development is allowed.</p>	<p>ARIS reports will show the amount activity and associated expenditures.</p>

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
How many exploration programs have been undertaken within : community watersheds or areas of general management? Dollar expenditures?	GIS area stats	Number of ARIS reports and associated expenditures overlying community watersheds	Groupings of mineral activity or where there has been large dollar expenditures, these may be sites where development might take place.	Significant expenditures, plus lone sites or congregations of activity, where there has been development to the point of mineral reserve calculations; these give indications of a high likelihood of mine development under the right economic conditions.
4G) Gas Potential				
How much and what class of gas potential underlies: the timber harvesting land-base; TFL 25; visual quality classes of preservation, retention or partial retention (P/R/PR)?	GIS area stats	Number of hectares of gas potential underlying the timber harvesting land-base, TFL 25 and the visual quality classes of preservation, retention or partial retention?	There would be no impact from exploration or development activity on the timber harvesting land-base, TFL 25 and the visual quality classes of preservation, retention or partial retention..	Gas development and production is site specific and transmission of potential product may well follow existing roads.
How much and what class of gas potential underlies privately held land, settlement or urban	GIS area stats	Number of hectares of gas potential underlying private land, settlement or	Exploration and development activity would be negotiated with the private land-holder.	Explorers or developers would negotiate to determine activity. Prospecting or preliminary exploration activity can be done with

Analysis questions	Type of analysis (e.g., GIS area stats)	Indicators	Assumptions	Rationale for assumptions
areas?		urban areas		minimal disturbance to a site; more advanced exploration does create localized disturbance that is re-mediated by regulation.
How much and what class of gas potential underlies existing protected areas?	GIS area stats	Number of hectares of gas potential underlying existing protected areas	Exploration and development is not allowed within protected areas. This results in a loss of all potential development in these areas.	Within protected areas exploration and development is prohibited by law.
How much and what class of gas potential underlies areas within community watersheds?	GIS area stats	Number of hectares of gas potential underlying community watersheds	Exploration and development are allowed within community watersheds. Disturbance is strictly regulated.	Water quality preservation and prevention of potential erosion require prior planning as indicated in the guidelines which regulate the activity.
How much and what class of gas potential underlies areas of general management?	GIS area stats	Number of hectares of gas potential underlying general management	Exploration and development are accepted and regulated activities.	These activities are regulated by statutes.

4H) Aggregate

A separate report is to be delivered to the Table. Section 5-(H) includes qualitative statements regarding the implications of overlap between aggregate potential and other resource values.

5.0 Analysis Results

5A) Metallic Mineral Potential

Category	Current management zone	% Overlap	Comments
Extreme (E)	Gross land base	E 44.5	
High (not present)		M 12.3	
Moderate (M)		F 7.9	
Fair (F)		L 35.3	
Low (L)			
	General management	E 90.5 M 63.4 F 89.1 L 80.2	For most of the metallic categories, a very high proportion underlies general management. This is attractive to industry since activity can be planned to meet the established provincial standards agreed to by industry, environmental groups and government (Mineral Exploration Code).

5B) Industrial Mineral Potential

Category	Current management zone	% Overlap	Comments
Extreme (not present)	Gross land base	H 9.7 M 24.6 F 60.3 L 5.4	The plan area is attractive for industrial mineral exploration and development. Ninety five percent of the land base is significantly prospective for finding deposits.
High (H)			
Moderate (M)			
Fair (F)			
Low (L)			
	General management	H 97.6 M 83.3 F 80.4 L 91.7	A very high percentage of all the categories underlie general management where established standards for activities make planning more straightforward and thereby more attractive.

5C) Mineral Tenures

Claim unit	Current management zone	% Overlap	Comments
25 ha/claim	Gross land base	5.3	Only a small percentage of the land base is overlain by mineral tenures.

5D) Metallic Mineral Occurrences

Category	Current management zone	# of occurrences overlap	Comments
Anomaly (A) Showing (S) Prospect (P) Developed prospect (Dev) Producer (Prod) Past producer (PP)	Gross land base (total occurrences)	237	The planning area has a high number of metallic mineral occurrences, reflective of the very prospective potential of the area.

	General management	S 68 (71%) Dev 19 PP 14	Untested showings comprise almost three quarters of the occurrences located within the general management zone, where established standards for activities make planning more straightforward and thereby more attractive. All but eight of the developed prospects and past producers lie within general management.
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5E) Industrial Mineral Occurrences

Category	Current management zone	# of occurrences overlap	Comments
Showing (S)	Gross land base	42	The planning area has a number of industrial mineral occurrences, reflective of the very prospective potential of the area.
Prospect (P)	(total occurrences)		
Developed prospect (Dev)			
Producer (Prod)			
Past producer (PP)			
	General management	S 21 (50%) Dev 3 PP 4	Untested showings comprise almost one half of the occurrences located within the general management zone, where established standards for activities make planning more straightforward and thereby more attractive. Seven developed prospects and past producers lie within general management.

5F) ARIS

Category	Current management zone	# report site overlaps	Comments
Exploration sites	Gross land base (total occurrences)	318	A significant number of reports have been filed even though it is estimated that on a provincial average only 40% of exploration activity is reported. Nearly all of the activity has been reported from general management areas.
	General management	289 (91%)	
Expenditures	Gross land base (total expenditures)	\$17,934,351	Close to ninety percent of the expenditures, (again likely only a fraction of the actual total) has occurred on general management areas.
	General management	\$15,778,689	

5G) Gas Potential

Within the plan area there is potential for finding land-based natural gas, not likely oil. However, the possibility for gas is poor since the prospective area is very small (12,940 hectares, near Kitsault) and is of moderate potential. The area represents less than one percent of the land base.

5H) Aggregate

The surficial geology study shows high potential for aggregate deposits occurring in the Ecstall and Kitsault river valleys and at the head of Observatory Inlet. It is unclear what type of material and what size of deposits may be present; field studies would be needed. A report is to be presented to the Table.

6.0 Uncertainty and Risk

With regard to uncertainty, in addressing the interaction of mineral and energy values with other resources it needs to be kept in mind how subsurface values differ from some of the other resources. There is the obvious fact that minerals and energy are hidden values; compounding this fact is that the discovery and development of these subsurface resources is not predictable. For example, at a particular point in time exploration may occur and a reserve of ore be delineated. If commodity prices are not conducive to development the property could then see little activity until economic conditions improved or infrastructure changes provided development incentives. In some instances these circumstances could take place within several years, for instance a new road; in other cases a decade or longer span of time may occur, as an example the price of molybdenum has remained low for over a decade. Additional elements of complexity appear when research or a mineral discovery focuses attention, respectively, on a new model of ore deposition or on a relatively unexplored area.

The provincial mineral potential and energy assessments were undertaken to assist planning. Information databases, expert opinion and a statistical methodology were used in the case of the mineral potential assessment to rank the 795 provincial geological tracts. A similar process was used for the energy assessment. This ranking allows comparison between various resources and enables an approximation of where the most valued subsurface resources are likely to be encountered. The ranking is not an absolute. It is a best estimate of where it is most likely that new mineral or energy deposits will be discovered or known deposits developed. The examples of uncertainties discussed above need to be kept in mind when using the analyses.

Neither the mineral nor energy potential assessments are definitive. Both express potential in terms of probabilities. There is risk in relying solely on the potential. As an example, a previous assessment placed the Eskay Creek mine within moderate potential. Had the mineral potential of this area been discounted in favour of protection perhaps this world -class ore body might not have been located. In a similar manner relying solely on the location of known mineral occurrences cannot always be a predictable method by which to locate highly restrictive management or protection zones. The Golden Bear mine within scarcely more than a decade went from discovery of a mineral occurrence, through development and mining, by underground, open pit and heap leach processing, into the current reclamation phase.

To eliminate, as much as possible, the risk of forgoing significant mineral and energy values it is advisable to use all of the indicators that formed the basis of this analysis. Collectively they reduce, but in no way come close to eliminating the risk of forgoing a valuable resource.

7.0 Conclusion

The North Coast LRMP area has a century-long history of exploration and development. During the past decade exploration activity throughout the province has been minimal. A combination of factors accompanied this drop in activity: a significant drop in metal prices, particularly gold; the cessation of flow-through share funding; uncertainty on the land-base both from landuse planning and treaty negotiation. The price of gold has risen, somewhat, over the past year. Landuse uncertainties remain. It is difficult to predict whether activity within the North Coast will increase. A boost may come from a recent (1999) provincial Geological Survey Branch mapping project and report that indicates the geological setting of the Anyox and Kitsault area is similar to that of Eskay Creek mine area. A number of new claims have been staked in this area since the data cut-off for this analysis. The Ecstall River valley has also been the locale of recent staking, post data cut-off.

The North Coast area continues to be highly prospective, with a high likelihood of continued activity, at some point, since nearly one half of the gross land base is underlain by extreme metallic mineral potential. Most of this extreme metallic potential underlies general management where it is subject to regulation by numerous government agency statutes including the Mineral Exploration Code and Mines Act. Another twelve percent of the gross land base contributes significant moderate metallic mineral potential where exploration and development may occur. The majority of fair and low metallic potential also underlies general management. The most prospective areas are: the northern plan area of Anyox/Kitsault/Stewart, the Ecstall/Scotia valleys, plus the coastal islands.

There is only one current mineral producer; an industrial mineral operation barging abrasives from the slag pile at Anyox. The slag is a silica rich waste from the old smelter. Weathering of the slag has produced fragments that are useful for sandblasting. Continued exploration and development for industrial minerals is likely. Ninety five percent of the land base is significantly prospective and most of this potential lies within general management. The timing for this potential development is an unkown. Development of industrial minerals is subject to the same types of difficulties as metallic minerals plus the added complexity of developing a market for the product. Industrial minerals are often used in manufacturing processes where the buyer needs the assurance that his processing can rely on a continuous, long term, generally high volume product with low unit cost and consistently high quality. Transportation costs and proximity to market can weigh heavily in the economic viability. The North Coast area has the potential to supply a quality product. When this development might occur will be a function of commodity demand, price and ability to transport the product to the market, cheaply. There is an added edge of being coastal and close to less costly transporation.

Mineral tenures cover five percent of the gross land base. A mine is a very high value use of relatively small areas. Timber harvesting is generally completed before mining and a typical underground minesite would occupy less than fifty hectares; an open pit operation may encompass approximately five hundred hectares. After a decade or two of production much of this land base can be reclaimed to another productive state.

There are no tenures in community watersheds, if activity occurs in this zone it is regulated by specific guidelines of the Mineral Exploration Code. Located within the general management area are nearly four fifths of the combined metallic mineral anomalies, showings and prospects. Half of the industrial mineral occurrences (showings) are located within the general management area as are seventeen percent (seven) of the more developed

industrial mineral occurrences. The major number (91%) of industrial mineral exploration programs took place on general management lands. It is attractive for industry to work within the general management zonation. The regulation of activity is a known (Mineral Exploration Code) and it is therefore much easier to attract the high risk capital needed for most exploration ventures. Additional constraints in permits and the labels given to landuse zones have created uncertainty for investors. Exploration activity is high risk. Adding the additional uncertainty of potential expropriation has added to the drop in activity in this province.

Standardized to 1986 dollars, \$17,934,351 (Cdn) has been spent on exploration programs within the LRMP area. All exploration expenditures are not necessarily reported and only about 40% of the exploration activity is recorded and compiled by government. These figures relate only to exploration and what has been recorded since 1947. There have been immense sums of money generated within this plan area from past operating mines, let alone the smelter at Anyox. The potential is high for this to occur again.

Less than one percent of the gross land base is underlain by moderate gas potential. This occurs in a small crescent to the east of Kitsault. Almost all the moderate gas potential occurs within general management where if exploration or development were to occur it would be subject to standard provincial regulation. With such a small area of potential it is unlikely to see exploration unless activity occurs in the much larger Bowser Basin on the immediate eastern boundary.

As a component of the Base Case, a forward projection of current management would give industry clarity of direction and the stability to work from the known parameters of present codes and guidelines. The associated projection of no further protection would provide certainty that prospective areas could be assessed and remain open for the decades that are often needed to bring a deposit into development.

8.0 References

- 1) **GIS Area Statistics**, Ministry of Sustainable Resource Management, Skeena Region, 2002.
- 2) **Current Conditions Report: North Coast Land and Resource Management Plan**, G. Tamblyn and H. Horn, Prince Rupert Interagency Management Committee, March 2001.
- 3) **Ministry of Energy and Mines:**
 - **Bedrock geology mapping**; completed by the Geological Survey Branch
 - **Metallic mineral potential assessment**, 1998/2000

- **Industrial mineral potential assessment**, 1998/2000
- **MINFILE**, March 2001 update
- **ARIS**, March 2001 update
- **Mineral Tenures**, March 2001 update
- **Aggregate Potential Map and Report**, Open File 2001-14
- **Oil and Gas potential mapping**, 1994

9.0 Appendix

Appendix 1 - Detailed Analysis Results

	Current mgmt zone	# of hectares overlap	% overlap	Implications
A) Metallic Mineral Potential				
1 Extreme metallic mineral potential	Gross Land Base 1,668,376 ha	741,530	44.5	Within the LRMP area there is a high likelihood of mineral exploration and development since nearly one half of the gross land base is underlain by extreme metallic mineral potential.
*The numbers for the THLB are as a portion (ha) or percentage of the total operable plus marginal THLB overlying extreme mineral potential within the gross land base.	*THLB/TFL 25 $(103,127 + 19,637 = 122,764)$ ha	45,593 / 0	6.2/ 0.0	A small percentage of the THLB is underlain by extreme metallic mineral potential. As per the assumptions there would be not be any impact to timber values. TFL 25 is not underlain by any extreme mineral potential.
For TFL 25 and all the other categories, the numbers are as a portion (ha) or percentage of the extreme metallic mineral potential	Private land	3,960	0.5	When there is exploration within this category there is a small amount of overlap where negotiations would be needed between the land holder and explorationists or developers..
	Protected areas	4,669	0.6	A small amount of very high mineral potential has been precluded from assessment or development.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
component of the gross land base (741,530 ha). *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	Visuals (P/PR/R)	0.0 / 35,751 / 25,740	0.0 / 4.8 / 3.5	A small percentage of each of partial retention and retention are underlain by extreme metallic mineral potential. As per the assumptions, if there were to be exploration on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	0.0	0.0	There is no overlap with extreme potential.
	General management	671,201	90.5	Most of the extreme metallic potential underlies general management where it is subject to regulation by the Mineral Exploration Code.
2 High metallic mineral potential	Not applicable	None in LRMP	None in LRMP	Not applicable
3 Moderate metallic mineral potential *The numbers for the THLB are as a portion (ha) or percentage of the total operable plus marginal THLB overlying moderate mineral potential within the gross land base. For TFL 25 and all the other categories, the numbers are as a portion (ha) or percentage of the moderate metallic mineral potential component of the gross	Gross land base 1,668,376 ha	205,063	12.3	Another one eighth of the gross land base contributes significant metallic mineral potential and there is a high likelihood that exploration and development may occur within this area.
	*THLB/TFL 25 *(17,956 + 3,307 =21,263) ha	21,263 / 36,733	17.3 / 17.9	Just under one fifth of each of the THLB and TFL 25 are underlain by moderate metallic mineral potential. As per the assumptions there would be no impact to timber values.
	Private land	4,051	2.0	When there is exploration within this category there is a small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Settlement	4,221	2.1	When there is exploration within this category there is a small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
land base (205,063 ha). *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	Protected areas	364	0.2	A very small amount of moderate metallic mineral potential has been precluded from assessment or development.
	Visuals (P/PR/R)	740 / 18,865 / 9207	0.4 / 9.2 / 4.5	A small percentage of preservation and retention and nearly ten percent of partial retention are underlain by moderate metallic mineral potential. As per the assumptions, if there were to be exploration on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	847	0.4	There is a very small overlap. Water quality preservation and prevention of potential erosion require prior planning as indicated in the Mineral Exploration Code.
	General management	130,034	63.4	Most of the moderate metallic potential lies in general management where it is subject to regulation by the Mineral Exploration Code.
4 Fair metallic mineral potential *The numbers for the THLB are as a portion (ha) or percentage of the total operable plus marginal THLB overlying fair metallic potential within the gross land base. For TFL 25 and all the	Gross land base 1,668,376 ha	132,278	7.9	Eight percent of the gross land base contributes fair metallic mineral potential where exploration and development could occur.
	*THLB/TFL 25 *(11,968+ 1,798 =13,763) ha	13,763 / 0.0	10.4/ 0.0	Just over ten percent of the THLB is underlain by fair metallic mineral potential. As per the assumptions there would be no impact to timber values.
	Private	439	0.3	When there is exploration within this category there is a small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
other categories, the numbers are as a portion (ha) or percentage of the fair metallic potential component of the gross land base (132,278 ha). *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	Settlement	493	0.4	When there is exploration within this category there is a small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Protected areas	2,998	2.3	A small amount of fair metallic mineral potential has been precluded from assessment or development.
	Visuals (P/PR/R)	2,626 / 1,085 / 3,088	2.0 / 0.8 / 2.3	A small percentage of each category is underlain by fair metallic mineral potential. As per the assumptions, if there were to be exploration on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	3,748	2.8	There is a small overlap. Water quality preservation and prevention of potential erosion require prior planning as indicated in the Mineral Exploration Code.
	General management	117,801	89.1	Most of the fair metallic potential lies in general management where it is subject to regulation by the Mineral Exploration Code.
5 Low metallic mineral potential *The numbers for the THLB are as a portion (ha) or percentage of the total operable plus marginal THLB overlying low mineral potential within the gross land base. For TFL 25 and all the other categories, the	Gross land base 1,668,376 ha	589,505	35.3	There is a lesser likelihood of exploration and development in a little over one third of the LRMP land base where it is underlain by low metallic mineral potential.
	*THLB / TFL 25 *(37,206 + 4,939 = 42,145)	42,145 / 24,465	7.2 / 4.2	Just over seven percent of the THLB and four percent of TFL 25 are underlain by low metallic mineral potential. As per the assumptions there would be no impact to timber values.
	Private land	1309	0.2	If there is exploration within this category there is a small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
<p>numbers are as a portion (ha) or percentage of the low metallic mineral potential component of the gross land base (589,505ha).</p> <p>*The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.</p>	Settlement	141	0.0	If there is exploration within this category there is a small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Protected areas	44,355	7.5	A small amount of low metallic mineral potential has been precluded from assessment or development.
	Visuals (P/PR/R)	356 / 12,069 / 32,205	0.1 / 2.0 / 5.5	A small percentage of each category is underlain by low metallic mineral potential. As per the assumptions, if there were to be exploration on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	1,845	0.3	There is a very small overlap. Water quality preservation and prevention of potential erosion require prior planning as indicated in the Mineral Exploration Code.
	General management	472,761	80.2	Most of the low metallic potential lies in general management where it is subject to regulation by the Mineral Exploration Code.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
B) Industrial Mineral Potential				
1 Extreme industrial mineral potential	Not applicable	None in LRMP	None in LRMP	Not applicable
2 High industrial mineral potential	Gross land base 1,645,490 ha	159,714	9.7	A good probability of exploration and development for industrial minerals occurs on ten percent of the gross land base. This is centered on the outer islands, Banks south through Aristazabal.
<p>*The numbers for the THLB are as a portion (ha) or percentage of the total operable plus marginal THLB overlying high industrial mineral potential within the gross land base.</p> <p>For TFL 25 and all the other categories, the numbers are as a portion (ha) or percentage of the high industrial mineral potential component of the gross land base (159,714 ha)</p> <p>*The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.</p>	*THLB / TFL 25 *(1,299 + 1,188 = 2,487 ha)	2487 / 0.0	2.0 / 0.0	Just under two percent of the THLB is underlain by high industrial mineral potential. As per the assumptions there would be no impact to timber values.
	Private land	105	0.1	When there is exploration within this category there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Settlement	0.0	0.0	No overlap occurs.
	Protected areas	3,655	2.3	A small amount of high industrial mineral potential has been precluded from assessment or development.
	Visuals (P/PR/R)	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There is no overlap.
	Community watersheds	0.0	0.0	There is no overlap.
	General management	155,954	97.6	Nearly all of the high industrial mineral potential occurs within general management where it is subject to regulation by the Mineral Exploration Code.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
3 Moderate industrial mineral potential	Gross land base 1,645,490 ha	404,905	24.6	One quarter of the gross land base has significant potential for industrial mineral exploration and development.
*The numbers for the THLB are as a portion (ha) or percentage of the total operable plus marginal THLB overlying moderate industrial mineral potential within the gross land base. For TFL 25 and all the other categories, the numbers are as a portion (ha) or percentage of the moderate industrial mineral potential component of the gross land base (404,905 ha)	*THLB/TFL 25 *(25,168 + 2,779 = 27,947 ha)	27,947 / 26,655	6.9 / 6.6	Just under seven percent of the THLB and over six percent of TFL 25 are underlain by moderate industrial mineral potential. As per the assumptions there would be no impact to timber values.
	Private land	4,836	1.2	When there is exploration within this category there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Settlement	4,392	1.1	When there is exploration within this category there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Protected areas	364	0.1	A very small amount of moderate industrial mineral potential has been precluded from assessment or development.
	Visuals (P/PR/R)	740 / 17,935 /11,930	0.2 / 4.4 / 2.9	A small percentage of each category is underlain by moderate industrial mineral potential. As per the assumptions, if there were to be exploration on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	847	0.2	There is a very small overlap. Water quality preservation and prevention of potential erosion require prior planning as indicated in the Mineral Exploration Code.
	General management	337,206	83.3	Most of the moderate industrial mineral potential lies in general management where it is subject to regulation by the Mineral Exploration Code.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
4 Fair industrial mineral potential	Gross land base 1,645,490 ha	992,341	60.3	Nearly two thirds of the gross land base has fair potential for industrial mineral exploration and development.
*The numbers for the THLB are as a portion (ha) or percentage of the total operable plus marginal THLB overlying fair industrial mineral potential within the gross land base.	*THLB/TFL 25 *(69,443 + 15,094 = 84,537 ha)	84,537 / 34,543	8.5 / 3.5	Eight percent of the THLB and three percent of TFL 25 are underlain by fair industrial mineral potential. As per the assumptions there would be no impact to timber values.
For TFL 25 and all the other categories, the numbers are as a portion (ha) or percentage of the fair industrial mineral potential component of the gross land base (992,341ha)	Private land	4,676	0.5	When there is exploration within this category there is a small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
*The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.)	Settlement	674	0.1	When there is exploration within this category there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Protected areas	45,681	4.6	A small amount of fair industrial mineral potential has been precluded from assessment or development.
	Visuals (P/PR/R)	2982/ 49,757/50,381	0.3 / 5.0 / 5.1	Five percent or less, of each category, is underlain by fair industrial mineral potential. As per the assumptions, if there were to be exploration on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	5,593	0.6	There is a very small overlap. Water quality preservation and prevention of potential erosion require prior planning as indicated in the Mineral Exploration Code.
	General management	798,053	80.4	Most of the fair industrial mineral potential lies in general management where it is subject to regulation by the Mineral Exploration Code.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
5 Low industrial mineral potential *The numbers for the THLB are as a portion (ha) or percentage of the total operable plus marginal THLB overlying moderate industrial mineral potential within the gross land base. For TFL 25 and all the other categories, the numbers are as a portion (ha) or percentage of the moderate industrial mineral potential component of the gross land base (404,905 ha) *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	Gross land base 1,645,490 ha	88,530	5.4	There is only five percent of the land base for which the potential is low to find industrial minerals.
	*THLB/TFL 25 *(6,483 + 571 = 7,054 ha)	7,054 / 0.0	7.9 / 0.0	Eight percent of the THLB is underlain by low industrial mineral potential. As per the assumptions there would be no impact to timber values.
	Private land	37	~0.0	If there is exploration within this category there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Settlement	0.0	0.0	There is no overlap.
	Protected areas	2,685	3.0	A small amount of low industrial mineral potential has been precluded from assessment or development.
	Visuals (P/PR/R)	0.0 / 14 / 4621	0.0 / 0.0 / 5.2	Five percent or less, of each category, is underlain by low industrial mineral potential. As per the assumptions, if there were to be exploration on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	0.0	0.0	There is no overlap
	General management	81,173	91.7	Most of the low industrial mineral potential lies in general management where it is subject to regulation by the Mineral Exploration Code.
C) Mineral Tenures (25 ha / claim unit)	Gross land base 1,668,376 ha	89,144 (~3,565 claim units)	5.3	Five percent of the gross land base is covered by mineral tenures.
*The THLB is to be excluded from totalling the numbers and percentages	*THLB & TFL 25 *(229,354 ha total operable and marginal	6,227 / 0.0	2.7 / 0.0	Just under three percent of the operable and marginal THLB is overlain by mineral claims. As per the assumptions there would be no impact to

	Current mgmt zone	# of hectares overlap	% overlap	Implications
since it is included within each of the other categories as a component of each.	THLB)			timber values.
	Private land (10,187 ha total)	890	~0.0	Much less than one percent of privately held land is overlain by mineral tenures. If exploration occurs, there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Settlement (5,261 ha total)	2	~0.0	Much less than one percent of settlement lands is overlain by mineral tenures. If exploration occurs, there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Protected areas (52,796 ha total)	0.0	0.0	Mineral tenures are not allowed in protected areas.
	Visuals (P/PR/R) (3,778/69,437/71,752)	0.0 / 1,914 / 2,706	0.0 / 2.8 / 3.8	Just under three and four percent of partial retention and retention, respectively, are underlain by mineral tenures. As per the assumptions, if there were to be exploration on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	0.0	0.0	There are no tenures in community watersheds.
	General Management (1,406,686 ha total)	83,633	6.0	Six percent of the general management area is overlain by mineral tenures where activity is subject to regulation by the Mineral Exploration Code.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
D) Metallic mineral occurrences	237 (total occurrences)	# of occurrences overlap	% total occurrences	Implications
Anomaly/Showing/Prospect	Gross land base 1,687,696 ha	237 total	100	
The numbers are as a portion or percentage of the total number of metallic mineral occurrences within the gross land base (1,687,696 ha).	THLB	0.0 / 25 / 4	0.0 / 10.5 / 1.7	Twelve percent of the metallic mineral showings and prospects underlie the THLB. As per the assumptions there would be no impact to timber values.
*The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	TFL 25	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There are no occurrences.
	Private land	0.0 / 1 / 1	0.0 / 0.4 / 0.4	Two occurrences underlie private land. If exploration occurs negotiations would be needed between the land holder and explorationists or developers.
	Settlement	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There are no occurrences.
	Protected areas	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There are no occurrences.
	Visuals (P/PR/R)			
	Anomaly	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	
	Showing	0.0 / 11 / 0.0	0.0 / 4.6 / 0.0	
	Prospect	0.0 / 0.0 / 1	0.0 / 0.0 / 0.4	
	Community watersheds	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There are no occurrences.
	General management			
	Anomaly	1	0.4	Nearly four fifths of the metallic mineral anomalies/showings/prospects are located within the general management area management where activity is subject to regulation by the Mineral Exploration Code.
	Showing	168	70.9	
	Prospect	17	7.2	

	Current mgmt zone	# of hectares overlap	% overlap	Implications	
		# of occurrences overlap	% overlap	Implications	
Developed Prospect / Past Producer The numbers are as a portion or percentage of the total number of metallic mineral occurrences within the gross land base (1,687,696 ha). *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	Gross land base 1,687,696 ha	237 total			
	THLB	2 / 2	0.8 / 0.8	Two developed prospects and two past producers underlie the THLB. As per the assumptions there would be no impact to timber values.	
	TFL 25 Private land Settlement Protected areas Community watersheds	0.0 / 0.0 0.0 / 1 0.0 / 0.0 0.0 / 0.0 0.0 / 0.0	0.0 / 0.0 0.0 / 0.4 0.0 / 0.0 0.0 / 0.0 0.0 / 0.0	There are no occurrences, except one on private land where negotiations would be needed between the land holder and explorationists or developers if activity was to occur.	
	Visuals (P/PR/R) Developed prospect Past producer		0.0 / 0.0 / 0.0 0.0 / 3 / 0.0	0.0 / 0.0 / 0.0 0.0 / 1.3 / 0.0	Three past producers occur within partial retention areas. As per the assumptions, if exploration were to re-occur on these small areas the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	General management	19 / 14	8.0 / 5.9	Nineteen developed occurrences and fourteen past producers are located in the general management area where activity is subject to regulation by the Mineral Exploration Code.	

	Current mgmt zone	# of hectares overlap	% overlap	Implications
Producer	N/A	None in LRMP	None in LRMP	N/A
		# of occurrences overlap	% overlap	Implications
E) Industrial mineral occurrences				
Showing/Prospect	Gross land base 1,687,696 ha	42	100	
The numbers are as a portion or percentage of the total number of metallic mineral occurrences within the gross land base (1,687,696 ha). *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	*THLB	*4 / 0.0	*9.5 / 0.0	Four of the industrial mineral showings underlie the THLB. One showing underlies TFL 25. As per the assumptions there would be no impact to timber values.
	TFL 25	1 / 0.0	2.4 / 0.0	
	Private land	1 / 0.0	2.4 / 0.0	One showing underlies each of private land and settlement lands. If exploration occurs negotiations would be needed between the land holder and explorationists or developers.
	Settlement	1 / 0.0	2.4 / 0.0	
	Protected areas	2 / 0.0	4.8 / 0.0	Two showings occur within protected areas. These are precluded from assessment or development.
	Visuals (P/PR/R)			
Showing	0.0 / 3 / 4	0.0 / 7.1 / 9.5	Three and four showings underlie partial retention and retention, respectively. As per the assumptions, if there were to be exploration on these occurrences the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.	
	Prospect	0.0 / 0.0 / 0.0		

	Current mgmt zone	# of hectares overlap	% overlap	Implications
Current mgmt zone	# of occurrences overlap	% overlap	Implications	
	Community watersheds	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There are no occurrences.
	General management Showing/ Prospect	21/ 0	50/ 0	Half of the industrial mineral occurrences (showings) are located within the general management area where activity is subject to regulation by the Mineral Exploration Code.
Current mgmt zone	# of occurrences overlap	% overlap	Implications	
Developed Prospect / Producer / Past Producer The numbers are as a portion or percentage of the total number of industrial mineral occurrences within the gross land base (1,687,696 ha). *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	*THLB	0.0 / 0.0 /*2	0.0 / 0.0 /*4.8	Two past producers underlie the THLB. As per the assumptions there would be no impact to timber values.
	TFL 25	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	
	Private land Settlement	0.0 / 1/ 0.0 0.0 / 0.0 / 0.0	0.0 / 2.4 / 0.0 0.0 / 0.0 / 0.0	One producer underlies private land. If exploration occurs negotiations would be needed between land holder and explorationist.
	Protected areas	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There are no occurrences.
	Visuals (P/PR/R)			One past producer underlies partial retention. As per the assumptions, if exploration were to re-occur on this occurrence the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Developed	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	
	Producer	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	
	Past producer	0.0 / 1 / 0.0	0.0 / 2.4 / 0.0	
	Community watersheds	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There are no occurrences.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
	Current mgmt zone	# of occurrences overlap	% overlap	Implications
	General management			Seven percent of the more developed industrial mineral occurrences are located within the general management area where activity is subject to regulation by the Mineral Exploration Code.
	Developed prospect	3	7.0	
	Producer	0.0	0.0	
	Past producer	4	9.5	
F) ARIS	(318 total reports)			Please note it is estimated that only about 40% of exploration activity is compiled by ARIS.
Mineral exploration site reports The numbers are as a portion or percentage of the total number of assessment programs undertaken on the gross land base (1,687,696 ha). *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	*THLB	*27	*8.5	Twenty-seven projects were carried out on the THLB. As per the assumptions there would be no impact to timber values.
	TFL 25	0.0	0.0	There have been no reports filed.
	Private land	4	1.3	Six sites were on private or settlement lands. If exploration occurs again negotiations would be needed between the land holder and explorationists and developers.
	Settlement	2	0.6	
	Protected areas	0.0	0.0	There have been no reports filed.
	Visuals (P/PR/R)	0 / 17 / 6	0.0 / 5.4 / 1.9	Twenty-three programs were within visual quality areas. If exploration were to re-occur on this occurrence the effects would be negligible due to the site specific nature of the activity. Possible effects from larger scale development activities would be dealt with by federal &/or provincial major project review processes.
	Community watersheds	0.0	0.0	There have been no reports filed.

	Current mgmt zone	# of hectares overlap	% overlap	Implications
	General management	289	90.9	The major number of exploration programs (91%) have been carried out on general management lands where activity is subject to regulation by the Mineral Exploration Code.
	Current mgmt zone	Expenditure (\$ Cdn)	% of total	Implications
Exploration expenditures	TFL 25	0.0	0.0	Standardized to 1986 dollars, \$17,934,351 (Cdn) has been spent on exploration programs within the LRMP area.
	Private land	220,257	1.2	All exploration expenditures are not necessarily reported. Please note that only about 40% of exploration activity is compiled in ARIS. (Assuming 30% more for expenditures would bring the total to approximately \$25M.)
	Settlement	5,747	~0.0	
	Protected areas	0.0	0.0	
	Visuals (P/PR/R)	0/1,524,463/405,195	0.0/8.4/2.5	
	Community watersheds	0.0	0.0	
	General management	15,778,689	88.0	
	Total	17,934,351		

	Current mgmt zone	# of hectares overlap	% overlap	Implications
G) Gas Potential No categories except: Moderate potential	Gross land base 1,668,376 ha	12,940	0.8	Less than one percent of the gross land base is underlain by moderate gas potential. This occurs in the Kitsault area.
Moderate 10,001 to 20,000 m3/ha *The THLB is to be excluded from totalling the numbers and percentages since it is included within each of the other categories as a component of each.	*THLB/TFL 25 *(229,354 ha total operable and marginal THLB)	1019 / 0.0	0.4 / 0.0	Slightly less than one half percent of the THLB is underlain by moderate gas potential. As per the assumptions there would be no impact to timber values.
	Private land (10,087 ha)	154	1.2	Just over one percent of the moderate gas potential underlies private land. If exploration occurs, there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Settlement	3	~0.0	A minuscule amount of moderate gas potential underlies settlement lands. If exploration occurs, there is a very small amount of overlap where negotiations would be needed between the land holder and explorationists or developers.
	Protected areas	0.0	0.0	There is no potential within protected areas.
	Visuals (P/PR/R)	0.0 / 0.0 / 0.0	0.0 / 0.0 / 0.0	There is no potential within visual quality areas.
	Community watersheds	0.0	0.0	No potential occurs within a community watershed.
	General management	12,783	98.8	Almost all the moderate gas potential occurs within the general management area. If exploration or development were to occur it would be subject to provincial guidelines.

