DDV Gold Ltd
a 100% owned subsidiary of
Atlantic Gold

FOCUS REPORT
TOUQUOY GOLD PROJECT
MOOSE RIVER GOLD MINES, NOVA SCOTIA

Prepared For:
DDV Gold Limited

REPORT TEXT

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ABBREVIATIONS

ABA	Acid base accounting
ACCDC	Atlantic Canada Conservation Data Council
Ag	Silver
ARD	Acid rock drainage
As	Arsenic
ASL	Above seal level
ATP	Adenosine triphosphate
ATVs	All-terrain vehicles
BAM	Beta Air Monitor
BMPP	Best Management Practices Plan
BOD	Biochemical oxygen demand
Ca	Calcium
CCME	Canadian Council of Ministers of the Environment
Cd	Cadmium
CFIA	Canadian Food Inspection Agency
CIL	Carbon-in-leach
CLC	Citizens Liaison Committee
Cm	Centimetre
CMM	Confederacy of Mainland Mi'kmaq
CN	Cyanide
CN	Cyanide
CN_F	Free cyanide
CN_T	Total Cyanide
CN_{WAD}	Weak-acid dissociated Cyanide
Co	Cobalt
CO_2	Carbon dioxide
COSEWIC	Committee on the Status of Endangered Wildlife In Canada
CPAWS	Canadian Parks and Wilderness Society
CRA	Conestoga Rovers and Associates Ltd.
CRM	Cultural Resources Management
CSA	Canadian Safety Association
Cu	Copper

CWS	Canadian Wildlife Service
dB	Decibel
DbA	Decibel adjusted
DFO	Department of Fisheries and Oceans
Dm	Dispersion Modeling
DO	Dissolved Oxygen
EA	Environmental Assessment
EARD	Environmental Assessment Registration Document
EC	Environment Canada
EF	Emissions factor
EPA	Environmental Protection Agency
ERP	Emergency Response Procedure
ES	Emissions summary
EV	Exposure value
Fe	Iron
G	Gram
GF	General Foreman
GHG	Greenhouse gas
GIS	Geographic Information System
GLC	Ground Level concentration
Gov't	Government
H_2S	Hydrogen sulphide
Ha	Hectare
Hg	Mercury
Hr	Hour
HRM	Halifax Regional Municipality
HS& E	Health, Safety, & Environment
HUs	Hydrostratigraphic Units
Hwy	Highway
IA	Industrial Approval
ICMC	International Cyanide Management Code
ILE	Institution of Lighting Engineers
ISQG	Interim Sediment Quality Guideline
Kg	Kilograms
Km	Kilometres

Kph	Kilometres per hour
L	Litre
Leq	Equivalent sound level measured over a specific interval
LPG	Liquified petroleum gas
LUX	A photometric unit of illuminance or illumination equal to one lumen per square meter
M	million
MCE	Maximum credible earthquake
Mg	Magnesium
Mg	Milligrams
Mgmt	Management
Ml	Millilitre
MLA	Member of Legislative Assembly
Mm	Millimetres
MMER	Metal Mining Effluent Regulations
Mn	Manganese
Mo	Molybdenum
Mol	Mole
MSC	Meteorological Service of Canada
Mt	Metric tonnes
MVA	Motor vehicle accident
N_2O	Nitrogen dioxide
NAAQS	National Ambient Air Quality Sampling
NAG	Net Acid generating
NAPS	National Air Pollution Surveillance Network
NDP	The New Democratic Party of Canada
Ni	Nickel
NP	Neutralizing Potential
NPR	Neutralization Potential Ratio
NS	Nova Scotia
NSDAF	Nova Scotia Department of Agriculture and Fisheries
NSDNR	Nova Scotia Department of Natural Resources
NSEL	Nova Scotia Environment and Labour
NSM	Nova Scotia Museum of Natural History
NW	Northwest

O_3	Ozone
OMS	Operations, Maintenance, & Surveillance
Oz	Ounces
PCA	Peter Clifton & Associates
PEL	Probable Effects Level
Pers. comm.	Personal communication
PM	Particulate matter
PMF	Probable maximum flood
POR	Point of Reception
Ppb	Parts per billion
Ppm	Parts per million
Q & A	Question and answer
QA/QC	Quality assurance/quality control
ROM	Run-of-mine
SO_2	Sulphur dioxide
SSTL	Site specific target levels
Supt	Superintendent
T	Tonne
TMF	Tailings Management Facility
TOR	Terms Of Reference
Tpd	Tonnes per day
TSP	Total Suspended particulates
U	Uranium
UK	United Kingdom
USEPA	United States Environmental Protection Agency
VEC	Valued Ecological Component
VSC	Valued Socio-economic Component
WRSP	Waste Rock Stockpile
WS	White Sucker
WSC	Water Survey of Canada
YP	Yellow Perch
Zn	Zinc

EXECUTIVE SUMMARY

Background

The Touquoy Gold Project entails the construction and operation of a relatively small open pit gold mine including a process plant and waste management facilities. Mining is expected to produce at least 9 Mt of ore containing 500,000 oz gold over a 5-7 year minelife. Construction will take one year and closure another two years. There may be potential to extend the project life although plans to do so are beyond the scope of this report.

The Project site is located at Moose River Gold Mines in Halifax County, approximately 115 km from Halifax. The total property area is approximately 400 ha of which 265 ha will be disturbed as a result of the development.

DDV Gold Limited, the project proponent, submitted an Environmental Assessment Registration Document (EARD) on March 15, 2007 As a result of the subsequent review, the Minister of Environment and Labour directed DDV Gold to prepare a Focus Report to provide additional details on certain specific aspects of the project. The nature of the Focus Report was detailed in the Terms of Reference (TOR) in a public letter to DDV Gold dated April 15, 2007.

The Focus Report Study Area (FRSA) as designated by the Minister encompasses an area of 54,337 ha in the general area of Moose River Gold Mines in Halifax County. Geographic boundaries extend north to Caribou Mines, south to the community of Lake Charlotte, west to Shaw Little Lake, and east to Snowshoe Lake.

The TOR specified that the proponent should examine the impact of the project on the surrounding area, in particular the downstream watershed, existing nearby wilderness areas, and undeveloped lands to the southwest. The physical, biological, ecological, and cultural aspects of the FRSA were to be described. The decisions underlying the project design were to be detailed and all measures employed to mitigate and monitor impacts were to be explained.

The Focus Report is not organized in the manner of a typical technical document in order to make the information it contains more accessible to the non-technical reader. There is traditional technical discussion of project design, the FRSA description, and potential project impacts in Sections 2, 3, and 4.

Section 5 provides a description of the public engagement process undertaken and is linked to Section 6 where stakeholder concerns are addressed. It is in Section 6 that the detailed explanation of impact mitigation measures can be found presented in a question and answer format. Here, over 250 questions identified as being of greatest importance to the majority of stakeholders, are addressed.

In Section 7 a complete listing of all the over 300 mitigation and monitoring measures designed into the Project can be found. Also in Section 7 is additional detailed discussion of wildlife mitigation, compensation, contingency, and reclamation. Section 8 provides conclusions.

Project Design

The Project design was developed based on a number of guiding principles. The most significant of these are (1) impacts can be limited to the property boundaries and (2) the mine can co-exist with the proposed adjacent wilderness area. The design process addresses technical and financial viability initially and then determines if the proposed plan is consistent with sound management of environmental and socio-economic impacts.

The project development scheme is dictated by the physical nature of the deposit in terms of size, location, geology, and metallurgy. The implications of these factors on the adopted development plan can be summarized as follows:

- The value of the deposit presents as near surface, widespread, disseminated gold mineralization directing that development will be dependent on low cost open pit mining methods

- Sufficient tonnage and grade exists to support relatively small scale, bulk mining extraction reinforcing the need to develop the orebody using surface mining methods

- Grade and style of mineralization is not concentrated enough to bear the capital and operating costs associated with underground development

- Flotation and direct cyanidation both offer similar recoveries

- Smelter penalties and transportation costs make it uneconomic to generate a flotation concentrate and ship it to a smelter for gold extraction

- A process plant milling 4,000-5,000 tpd employing gravity/CIL gold recovery would provide the best trade-off between throughput and capital cost

Based on the above, a relatively small open pit supplying a 4,000-5,000 tpd process plant employing gravity/CIL gold recovery is the most viable means of developing the property.

Once a technically feasible and economically attractive development plan has been identified, the design process assesses the impact on valued environmental components (VEC) on the Project site and in the surrounding area. For the Touquoy Gold Project, these elements were identified as:

- Aesthetics: Noise and Visual impact
- Air and Water Quality
- Recreational Value and Wilderness Experience
- Flora/ Fauna and associated Habitat
- Access and Community

The design process assesses the impact of the development on each of these elements in the context of (1) regulatory standards, (2) best practice, and (3) sustainability. Assessment of the environmental and socio-economic impacts for the various options available leads to the following conclusions:

- The most significant impact from the development of the open pit is the removal of the existing community, notwithstanding its declined state.

- The selected waste rock storage pile (WRSP2) location avoids impact to fish habitat and facilitates effective management of site runoff, albeit at a higher operating cost than the alternative

- The P3 plant location (P3) best addresses safety issues with regard to the proximity of the facility to the open pit and offers site specific opportunities to minimize disturbance and manage runoff, albeit at higher capital cost

- The TMF3 tailings facility location is superior to the alternatives as it presents no risk to Moose River, Square Lake, and the public road while avoiding destruction of fish habitat on site

- Given the proposed operating plan and design standards, discharge to Scraggy lake does not present an undue risk for downstream impact nor diminish the value of the adjacent lands

- The final facility layout is not the lowest cost but represents the design which best mitigates environmental impacts for the chosen development scheme

Study Area Description

The TOR required a detailed description of the Valued Ecosystem Components (VECs) within the Touquoy Gold Project site and the greater FRSA. To meet this requirement the Focus Report characterizes flora and fauna/rare species and species-at-risk, aquatic resources, atmospheric conditions, surface waters and wetlands within the FRSA. Ambient light and noise levels, ecological value, and recreational value were also addressed in the course of examining the area.

An updated review of the Atlantic Canada Conservation Data Centre (ACCDC) database of uncommon to rare species was undertaken for flora and fauna in the FRSA. One red-listed species and seven yellow-listed species of Plants of Special Status may be expected to occur within the FRSA, though none has been identified within the actual Project site.

Two red-listed and seven yellow-listed lichen species are known from the Project site. These are all cyano-lichens. Most of these occur in more than one location on the site. The rare boreal felt lichen has never been reported on the site. It is likely that the nine listed species also occur in the general area, outside the boundaries of the Project site.

An area of elevated moose density lies within the FRSA. Moose presence on the project site has been established by pellet surveys but sightings are few. The project site itself is considered

non-critical moose habitat. The development is not expected to affect moose wintering, calving or travel throughout the region.

No rare birds have been identified on the project site although the Northern Goshawk may inhabit the area. The FRSA provides vast tracts of alternative habitat in the event these species do live in the area planned for development. The Wood Turtle is the only red-listed herpetile which occurs within the FRSA but no suitable habitat exists on the Project site itself. Six red-listed and six yellow-listed odonates also occur in the FRSA. Again, however, the site lacks suitable habitat.

Fish surveys were conducted in Scraggy and Square Lakes. The surveys indicated no resident salmonids. Fish collected were limited to suckers, bullhead, and perch. The lake waters in the region are characterized by high acidity in the winter and high temperature and low oxygen in the summer. Tissues samples of fish were analyzed for mercury and levels found to be in almost all cases below Health Canada guidelines.

Baseline atmospheric and meteorological studies were performed. The FRSA is characterized by moderate rainfall and temperatures and air quality typical of non-industrialized rural areas. The nearest sensitive receptors subject to the effects on air quality of site activities were 3 km (seasonal) and 5 km (permanent) distant.

Wetlands in the FRSA were reviewed and classified. Wetlands types present include bogs, fens, swamps, marshes, and shallow water wetlands. All tolled these comprise less than 10% of the FRSA total area. The Project site area is comprised of about 5% wetlands.

The FRSA is centered on the Fish River watershed which includes Square Lake, Scraggy Lake, the Fish River, and Lake Charlotte. Total contained water volume is on the order of 200 M m^3 with average annual flows of 1 m^3/s from Scraggy Lake. A hydrologic model for the FRSA was created using Weather Service Canada data calibrated against three years of site data measurements and Environment Canada data from the discontinued monitoring site at Crawford Falls on the Musquodoboit River. Ground water flows are predominantly near surface due to thin soils and impermeable, near-surface bedrock.

Acoustic studies of the area were performed. Ambient noise levels were found to be about 40 dBA. Ambient light levels at night were not measurable, even within the existing community.

The FRSA was subject to a literature review to establish the ecological make-up of the region. Of the four ecodistricts represented, three, the Eastern Drumlins, Eastern Granite Uplands and Eastern Interior ecodistricts are the most significant. The Project site and the FRSA share similar proportions of forest cover (70%), wetlands (10%), lakes and rivers (10%), and cleared areas (10%). The Project site has somewhat more cleared land and less wetlands, however.

The recreational value of the FRSA was assessed through existing literature, websites, interviews with area users, and field studies. It was found that the FRSA contains valued existing parks and wilderness areas and present abundant, though not unique, recreational opportunities. The predominant recreational uses of the area are fishing, canoeing, and hunting. Usage is of low intensity due to the inaccessible nature of the terrain.

A comprehensive soil sampling program was conducted over the entire Project site. Analyses show high levels of aluminum and arsenic, exceeding CCME guidelines but typical of the region. An investigation conducted to determine the extent of historic mine tailings within the project area identified three separate areas that show anomalous levels of arsenic and mercury.

Adverse Effects and Environmental Impacts

Background light levels were below detection at the Project site. Predicted light levels are all below applicable guidelines. Talking into account that the surrounding forest will inhibit light migration, sensitive receptors in the FRSA will not be negatively affected.

The worst case facility sound level measurement for a 1 hour period was estimated for each receptor to be 35-42 dBA or about equal to ambient. Occasional equipment activity on the tailings dam would remain below the NSEL daytime sound level criteria for a receptor at the north end of Scraggy Lake. In relative terms, the predicted noise levels in and around the Project site will not be louder than a moderate gust of wind blowing through the trees at 40 ft

The proposed blast design for the site utilizes a maximum of 206.8 kg/delay and the concussion air blast noise is predicted to be 122 dB at the nearest sensitive receptor. This is the equivalent of a car door slamming and of similar duration. Predicted ground vibrations are also expected to be below the NSEL criteria of 12.5 mm/s and will not negatively effect the environment. Blasting was also determined not to have impact on fish habitat or fish spawning based on DFO guidelines.

The maximum ground level concentrations for each air contaminant at each of the sensitive receptors are predicted to be well below the established limits. Greenhouse gas emissions are estimated at 8,100 tpa which places the site at a level equal to 0.05% of all mining GHG emissions in Canada. The main source of sulphur dioxide is vehicle exhaust. Emissions will not be sufficient to affect sensitive lichens on or off the project site.

Visual impact analysis determined that the top of the waste rock stockpile would be visible from 2% of the FRSA at final height. This would be dependent on circumstances including forest cover, atmospheric conditions, and disposition of the observer. Also at final height, glimpses of the top of the tailings dam may be visible from Scraggy Lake but again this would depend on conditions.

Start up of the mill could reduce the volume of Square Lake by 6% in the driest month but it would recover in the succeeding month. Also, collection of runoff during construction of the tailings dam indicates that, depending on weather, it may not be necessary to withdraw any water from Square Lake for start-up. Dewatering of the open pit is not expected to affect the Moose River although water levels will be monitored during operations. Groundwater systems are near surface and local in nature. There is no indication that activities at site will impact the quality of water in wells on the Eastern Shore 20-25 km distant.

The quality of treated tailings effluent and its impact on downstream water quality was modeled. Treated tailings water will exceed all MMER requirements for discharge. Discharge

to an engineered wetland will ensure that upon mixing in Scraggy Lake, lake water contaminant loading will not exceed CCME guidelines for the protection of aquatic life. Even prior to treatment, aged tailings effluent quality exceeds MMER standards for most parameters.

A management plan was developed that determined that on-site containment in the tailings facility was the best option for disposal of historic tailings encountered during development. A risk assessment process was recommended to determine whether to dispose of or leave in place historic tailings in the mine area which need not be removed.

Public Engagement

A broadened program of public engagement was undertaken in support of Focus Report activities. Over 30 community, government, industry, and regulatory organizations were met in over 50 separate meetings. In addition, the proponent held two additional open house information sessions on the Eastern Shore and in the Musquodoboit Valley bringing the total since 2004 to five and attended four public meetings hosted by Eastern Shore Forest Watch. In all, the proponent met with and answered questions with over two hundred interested members of the general public.

Answers to stakeholder concerns raised during the public engagement process are provided in detail in Section 6 in a question and answer format covering 24 separate topics. In addition, the public engagement process provided the proponent with valuable feedback that was used to enhance the project design. In all, 25 significant changes to the project design were made to address the concerns of the neighbouring communities and other stakeholders.

Independent polling conducted on the Eastern Shore and affected areas of the Musquodoboit Valley and Guysborough county indicated that 67% of residents were aware of the project and that 66% were in favour of the development in some shape or form.

The proponent felt that the public engagement process was highly beneficial for all parties involved. The biggest challenge facing mine development in Nova Scotia appears to be the belief that mining and environmental protection are mutually exclusive. The proponent recognizes the need to demonstrate that well-managed, environmentally responsible mine development can occur without adversely effecting nearby wilderness areas.

Answers to Stakeholder Concerns

The Focus Report answers over 250 questions posed during the public engagement process. The majority of these relate to the project benefits, the safety of the tailings facility, and water treatment.

The mine will draw 90% of the required employees from the Eastern Shore and Musquodoboit Valley. Training will be provided and wages commensurate with industry standards will be paid. More than $200 M will be spent in capital and operating costs over the project life with a significant portion finding its way into the Nova Scotia economy. As legislated, a royalty will be paid on all gold produced and taxes will be payable after the project investment is recovered.

The tailings facility is designed with four barriers to contain a release of tailings into downstream areas in the highly unlikely event of a dam failure. The dams themselves are designed to withstand a magnitude 8 earthquake, a standard more than 1,000x higher than that used for building and bridge construction in Nova Scotia. An earthquake of this magnitude has never occurred in Nova Scotia.

The dams have a clay core to inhibit seepage and are cemented into bedrock to prevent leaking. The tailings facility is sited in an area of low permeability bedrock to further prevent seepage. Any seepage which does occur will be collected and pumped back into the facility.

The tailings impoundment is designed to contain the inflow from the 1/200 year storm. In addition, the dams will be raised one year ahead of schedule so that at any given time there is a minimum surge capacity of 3x the maximum probable flood or 7x the inflow from the 1/200 year storm.

The effects of a tailings dam failure were simulated. To do so, the study had to ignore the spillways and three of the four dams to generate a significant result. A maximum of 10% of the contained tailings volume could be expected to be released. The water in the tailings pond would already be at discharge quality at the time of release therefore minimum impact would be expected once initial mixing occurred in Scraggy Lake. Emergency response procedures and contingency plans have been developed for tailings facility.

Acid rock drainage is not anticipated to be an issue at the Project site. The host rock contains excess neutralizing potential. Static and kinetic testing has repeatedly shown that neutral and alkaline terminal pHs can be expected. The existing mini-pit on the property sunk into the ore zone 18 years previously has a pH of 6.6-7.9 and hosts a fish population.

The plant design will employ an SO2/Air cyanide destruction process to treat tailings prior to storage in the tailings impoundment. The process will drop CN_{WAD} from 170 ppm to 3 ppm. The cyanide concentration in the tailings water will further diminish to less than 1 ppm during its 30-60 day retention time in the tailings pond prior to recycle or treatment and discharge.

Effluent treatment will remove the dissolved arsenic and metals from the tailings effluent prior to discharge. Laboratory testing shows that dissolved arsenic concentration can be expected to be more than 80x below the MMER limit. Waste from the effluent treatment process will be stored in a purpose-built containment cell at the north end of the tailings facility. The cell will be clay-lined and earthquake resistant.

Treated effluent quality will exceed all MMER standards. However, despite the effectiveness of effluent treatment, DDV Gold's self-imposed goal of achieving zero impact on downstream water quality requires that additional measures be taken. As such, treated water will be discharged to an engineered wetland than will remove residual contaminants, mostly in the form of suspended solids, before flowing into Scraggy Lake.

Water purification through a wetland is a highly effective and proven form of treatment recommended for the treatment of industrial wastes by Environment Canada. Water quality

modeling indicates that the proposed series of treatment processes will preserve the downstream water quality and prevent harm to aquatic life.

Mitigation and Monitoring

The impact mitigation philosophy behind the Project plan is based on a complementary system of measures employing design, operating procedures, and monitoring supported by contingency plans in the event of a system breakdown. The Focus Report details over 300 mitigation and monitoring measures employed in the Project to protect the environment and address socio-economic issues.

Monitoring will include measurements of water, air, and soil quality as well as the effects of noise, light, and dust generated by the Project. The tailings facility will be a focus of monitoring activity that will ensure that the containment dams are operating within design parameters and that water treatment is effective. Lastly, environmental effects monitoring as prescribed by MMER will confirm that no risk exists to the downstream watershed.

Wildlife will be largely unaffected by the development. A Moose Management Plan will be implemented to provide information and assist in the recovery of moose in the project area. Surveys for nesting birds will be conducted if nesting habitat is to be disturbed between April and September. Periodic surveys of flora and fauna on and about the property will help determine if the project is having impacts which require management.

Compensation will be provided for unavoidable impacts. An interpretative centre will be established to replace the park and museum, both displaced by the open pit development. Wetlands disturbed by the construction of the tailings facility will be replaced within the same watershed at a ratio agreed to with NSDNR. Studies will be undertaken to determine the extent of rare lichens which are similarly affected by the development.

Contingency plans for the tailings facility have been developed. These include actions to be taken in the event of a water treatment failure, excessive seepage, a dam overflow, or a dam failure. Also, a conceptual reclamation plan for the Project site has been developed. The open pit will be allowed to flood becoming a lake, the plant removed to foundations, and the waste rock stockpile and tailings facility re-sloped and vegetated. Water draining through the site will be treated until its quality returns to that which existed prior to development.

Conclusions

The Focus Report concludes that the TOR, as directed by the Minister, have been fulfilled. The study provides a thorough explanation of the rationale behind the project design and a detailed description of FRSA. The impacts of the development are discussed and evidence provided in the form of modeling of air and water quality that effects will not extend beyond the property boundaries.

The Project design entails world's best design standards for the tailings facility which dramatically exceed those for civil construction elsewhere in the province. The facility is also

engineered to manage the effects of extreme weather and employs a complementary program of operating procedures, monitoring, and contingency plans to ensure fail-safe operation.

In the course of completing the Focus Report, the proponent has gone above and beyond expectations in engaging the public and employing feedback to enhance the Project plan. The result is a project development that is both technically and economically sound while being responsive to community concerns. Independent polling results attest to the fact that the public shares this view.

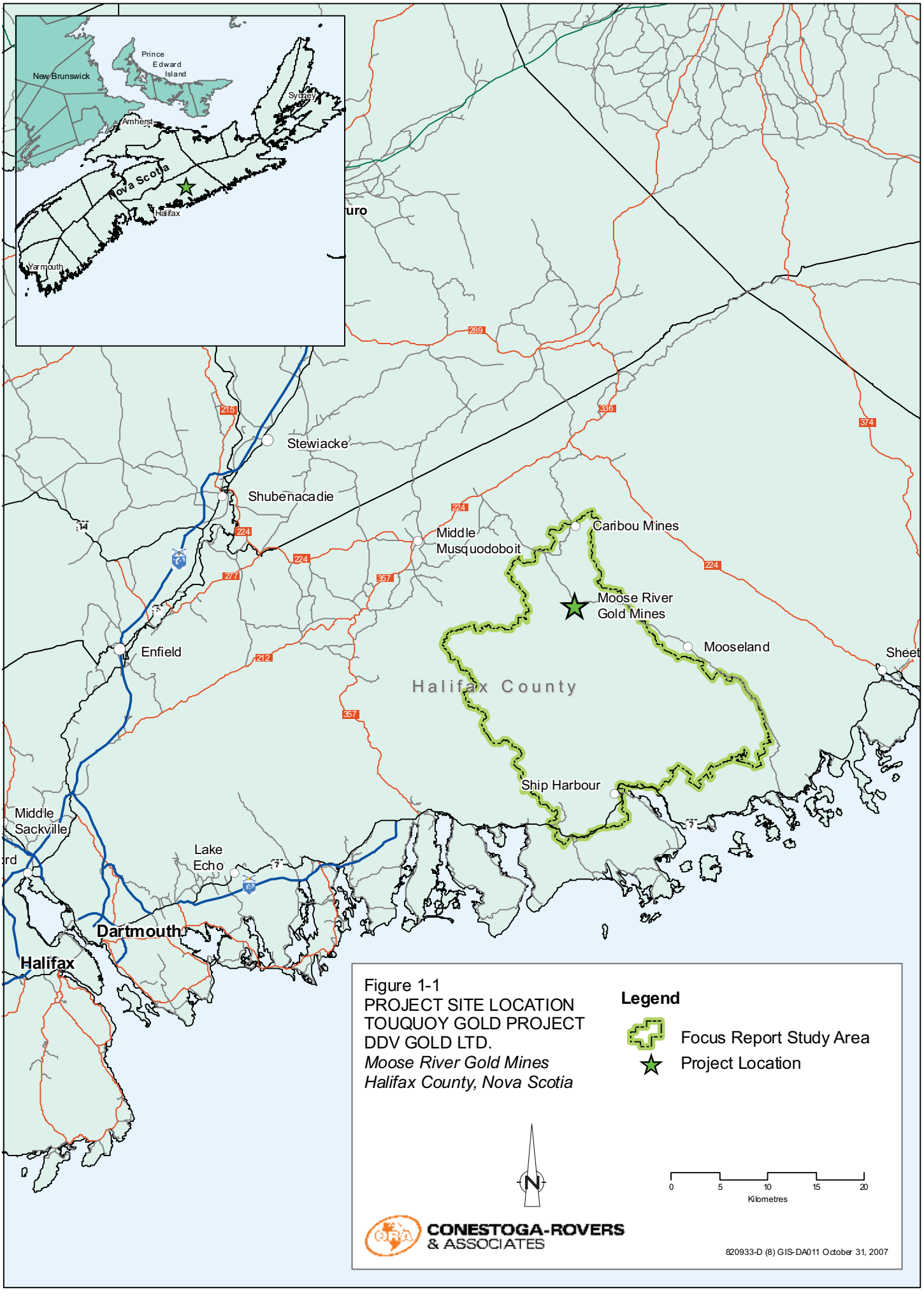
1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

DDV Gold Limited submitted an Environmental Assessment Registration Document (EARD) on March 15, 2007 to the Minister of Environment and Labour. This document provided project details and requested that an Environmental Assessment Approval be granted. A review of the EARD was completed by the public and regulators over a 25 day period and the Minister's decision was issued on April 10, 2007. The Minister directed DDV Gold in a letter that although "the adverse effects or significant environmental effects which may be caused by the undertaking are limited" a Focus Report was required to provide additional details on certain aspects of the project. A copy of this letter has been provided in the Focus Report (Appendix A). This letter outlined that Terms of Reference (TOR) for the Focus Report would be issued that would detail what DDV Gold was to provide and would include a Study Area for the Focus Report. The TOR is included in Appendix A. It is important to note that the Province felt that only certain aspects of the Touquoy Gold Project required additional details. DDV Gold has addressed these details in this Focus Report and has provided a Table of Concordance below to show how DDV Gold has addressed the requirements. **It is imperative to read the Environmental Assessment Registration Document provided before reading the Focus Report.**

1.2 PROJECT DESCRIPTION

The mine is planned as a surface operation with drill-and-blast, load-and-haul, process-on-site type development. Production is estimated at approximately 4,500 tonnes of ore per day with a total ore production estimate over the life of the mine of at least 9 million tonnes for recovery of almost 0.5 million ounces (oz) of gold. Following a 12 month construction and commissioning phase, the mine life is estimated to be six years for production and two years for closure. However, once in production Project economics are expected to allow additional reserves to be identified, developed and mined over a longer period.


Prince Edward Island
New Brunswick
Sydney
Amherst
Nova Scotia
Halifax
Yarmouth
Stewiacke
Shubenacadie
Middle Musquodoboit
Caribou Mines
Moose River Gold Mines
Mooseland
Enfield
Halifax County
Ship Harbour
Middle Sackville
Lake Echo
Dartmouth
Halifax
Figure 1-1
PROJECT SITE LOCATION
TOUQUOY GOLD PROJECT
DDV GOLD LTD.
Moose River Gold Mines
Halifax County, Nova Scotia
Legend
Focus Report Study Area
Project Location
N
0 5 10 15 20
Kilometres
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820933-D (8) GIS-DA011 October 31, 2007

1.3 PROJECT LOCATION

The Project site is located at Moose River Gold Mines in Halifax County (Figure 1-1). The proposed active surface footprint of the site is approximately 265 ha within a total property area of 400 ha and encompasses the settlement of Moose River Gold Mines, part of a small provincial park and undeveloped forest. It is bounded to the west by the Moose River and surrounded on all other sides by forested land in varying degrees of re-growth due to logging.

1.4 SCOPE OF THE FOCUS REPORT

The Focus Report Study Area (FRSA) was designated by the government of Nova Scotia and encompasses an area of 54,337 ha in the general area of Moose River Gold Mines in Halifax County. Geographic boundaries extend north to Caribou Mines, south to the community of Lake Charlotte, west to Shaw Little Lake, and east to Snowshoe Lake (Figure 1-2). The FRSA encompasses the Fish River-Lake Charlotte Watershed (in part, the proposed Ship Habour Long Lake Wilderness Area) and the Tangier Grand Lake Wilderness Area (catchment areas 1EL-1, 1EL-2, 1EL-3, 1EL-4 and 1EL-SD9) (Figure 1-2). In addition to the communities mentioned above, Upper Lakeville, Ship Harbour and Markland are located within the FRSA.

1.5 TERMS OF REFERENCE CONCORDANCE

The table below cross references sections of the Focus Report with the Terms of Reference developed by NSEL and other relevant stakeholders.

Table 1.5-1 Table of Concordance

Focus Report Requirement (by section)	Section where Requirement is Specifically Addressed in this Focus Report	Location of Additional Information Related to the Requirement
1.0 Project Description		
Description of project location	Section 1.3	EARD Section 2.3
Identification of project boundaries	Figure 1-2	Not applicable
Assumptions underlying details of project design	Section 2.0	Not applicable
Project temporal and spatial boundaries	Section 1.0	EARD Section 2
2.0 Other Methods for Carrying out the Undertaking		
Description of other methods for carrying out the undertaking	Section 2.0	EARD Section 3.2

Table 1.5-1 Table of Concordance

Focus Report Requirement (by section)	Section where Requirement is Specifically Addressed in this Focus Report	Location of Additional Information Related to the Requirement
Demonstration of how potential impacts were considered in design	Section 2.0	EARD Section 2
3.0 Description of the Study Area		
Flora and Fauna / Rare Species and Species-at-Risk • General characterization of flora and fauna species and potential habitat within the study area	Section 3.1	EARD Section 9.0
Aquatic Resources • Identification of fish and fish habitat in downstream receiving watercourses including species-at-risk and sensitive or critical habitat • Baseline data for mercury concentrations in fish tissue • Baseline data for sediment quality in watercourses downstream of the proposed tailings impoundment	Section 3.2 Section 3.2.1 & 3.2.2 Section 3.2.3 Section 3.2.4	EARD Section 7.1.2 EARD Section 7.0
Atmospheric Conditions • Review of baseline ambient air quality and meteorological data • Discussion of local and regional emission sources and the influence of climate and weather conditions • Description of any potentially sensitive receptors	Section 3.3	EARD Section 5.0
Surface Water and Wetlands • Identification of location, size, class of wetlands in predicted zone of influence • General hydrologic, hydraulic and water quality description of all surface water bodies downstream of mine and tailings management facility • Description of groundwater/surface water interactions • Identification of existing uses, withdrawal capacities and users of the watercourses • Baseline water quality data for arsenic, pH and DO	Section 3.4 Section 3.5 Section 3.5.1 Section 3.5.1 Section 3.2 and 3.5	EARD Section 10.0 EARD Section 7.0
Ambient Light and Noise Levels • Description of existing ambient acoustical environment • Special boundaries of existing noise and vibration levels, locations of recording stations and length of record for data • Description of existing ambient light levels for areas where project activities could have an environmental effect on light levels • Description of night-time illumination levels during different weather conditions and seasons	Section 3.6.1 Section 3.6.1 Section 3.6.2 Section 3.6.2	EARD Section 6.0

Table 1.5-1 Table of Concordance

Focus Report Requirement (by section)	Section where Requirement is Specifically Addressed in this Focus Report	Location of Additional Information Related to the Requirement
Ecological Value		
• Characterization of study area's ecological value in terms of rare, unique, or provincially under-represented ecosystems, landscapes and wilderness attributes	Section 3.7	EARD Section 9.0
Recreational Value		
• Description of current and traditional recreational land and water use	Section 3.8	EARD Section 4.0 and 11.0
• Description of methodology and details of stakeholder engagement	Section 2, 5 and 6	EARD Section 4.0
4.0 Adverse Effects and Environmental Effects Assessment		
Lighting		
• Description of potential lighting requirements and range of influence	Section 4.1	EARD Section 9.0
• Description of potential effects on the study area	Section 4.1	Not applicable
Noise and Blasting		
• Quantitative assessment of anticipated project related noise levels, potential effects and comparison with baseline levels	Section 4.2	EARD Section 6.0
• Discussion of blasting locations, frequencies and potential effects on the study area	Section 4.2	
Air Emissions and Dust		
• Emission summary of contaminants from project activities and quantitative analysis using dispersion modelling	Section 4.3	EARD Section 2.6.7 & 5.0
• Description of potential distribution of air emissions and dust within the study area	Section 4.3	
• Description of known or potential impacts of projected sulphur dioxide emissions on the nine species of red and yellow listed cyanolichens known to occur in the mine development area	Section 4.3.1	
• Description of known or potential impacts of projected sulphur dioxide emissions on the nine species of red and yellow listed cyanolichens and boreal felt lichen within a 100km radius surrounding the proposed development area	Section 4.3.1	
Visual Impact		
• Assessment of the visual impact of the mine site on the study area	Section 4.4	EARD Section 3.0

Table 1.5-1 Table of Concordance

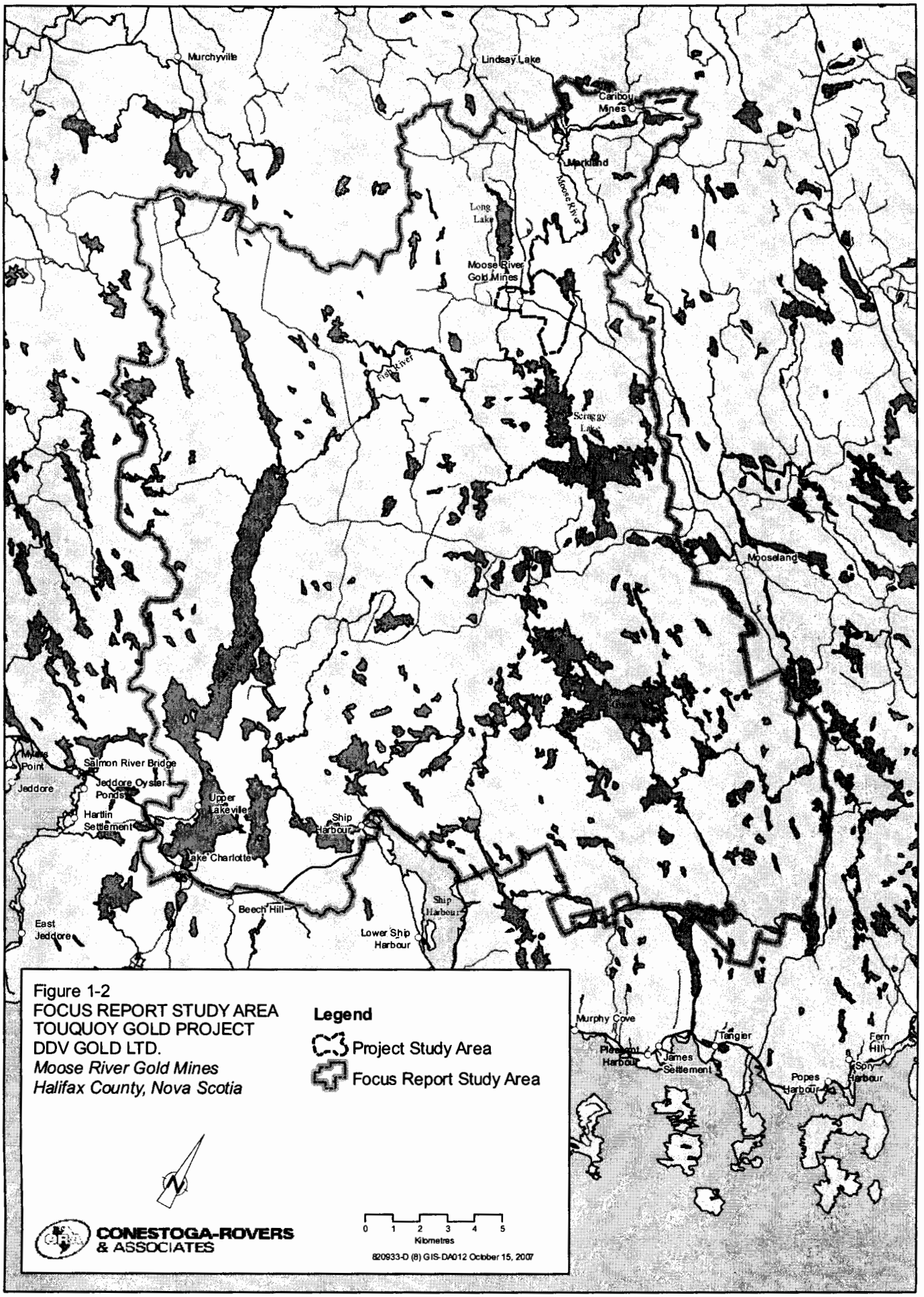
Focus Report Requirement (by section)	Section where Requirement is Specifically Addressed in this Focus Report	Location of Additional Information Related to the Requirement
Impacts to Surface and Ground Waters		EARD Section 7.0 & 8.0
• Description of releases that could occur under normal conditions and under 'worst case scenario' including tailings dam failures, extreme weather events and climate change influence	Section 4.5	
• Description of project related water withdrawal and any interactions with groundwater which may impact the downstream environment and discussion of effects	Section 4.5	
Soil Contamination		EARD Section 2.6.5
• Description of the expected concentrations of arsenic and metals in the tailings post-closure relative to soil quality guidelines	Section 3.9	
• Identification of potential 'hotspots' within the tailings such as locations of disposal of arsenic-rich sludges	Section 4.6	
• Description of expected forms in which arsenic will occur and the expected stability of these forms	Section 4.6 and 6.0	
5.0 Mitigation Measures and Monitoring		
Description of all measures taken to avoid or mitigate negative impacts and maximize positive environmental effects of the project	Section 6.0, 7.0	EARD Sections 5.2, 6.2, 7.2, 8.2, 9.3, 10.2, 11.2 & 12.2
Description of reclamation plans	Section 7.6	EARD Section 2.7
Description of monitoring programs used to determine whether mitigation measures are adequate and description of how baseline data collection and future monitoring programs relate	Section 6.4.4, 6.6.3, 7.2	EARD Sections 5.2, 6.2, 7.2, 8.2, 9.3, 10.2, 11.2 & 12.2
Description of contingency plans to address accidental releases	Section 6.4.6, 7.4	EARD Section 2.6.8
Description of proposed compensation that will be provided when environmental damage is unavoidable or cannot be adequately mitigated	Section 7.5	EARD Section 2.6.8

1.6 ORGANIZATION OF THE FOCUS REPORT

Section 1 provides an introduction and purpose for the Focus Report., information on the Study Area and Project Description. Section 2 discusses methods for carrying out the undertaking, information on the Project Design, and the numerous ways in which DDV Gold has sought to design the best possible project. Section 3 provides the Study Area Description including specific details required in the TOR on the physical, ecological

and recreational features. Section 4 contains the important effects assessment and the ways in which this was completed. Section 5 describes the thorough and extensive consultation process and dissemination of information about the project. Section 6 provides answers to over 250 questions about the project and provides comprehensive detail regarding impact mitigation measures. Section 7 contains the ways in which the identified effects will be addressed and the ways in which potential effects are to be monitored, mitigated and/or compensated. Included in Section 7 is an itemized list of over 300 mitigation and monitoring measures employed in the project design. Section 8 is a brief summary of key results. Section 9 provides references, both cites and personal communications.

The Focus Report text references a large number (30 in total) of appendices (Appendix A to Appendix DD) that provide important back-up information. For the most part the appendices contain specialist consultant reports in their entirety while some contain only information pertinent to the Terms of Reference for the Focus Report or have proprietary information excluded. All appendices have been identified in the Table of Contents and then referenced in the text at least once.


Murchyville
Lindsay Lake
Caribou Mines
Markland
Moose River
Long Lake
Moose River Gold Mines
Scraggy Lake
Mooseland
Salmon River Bridge
Jeddore Oyster Ponds
Jeddore
Upper Lakeville
Hartlin Settlement
Ship Harbour
Lake Charlotte
Beech Hill
East Jeddore
Ship Harbour
Lower Ship Harbour
Murphy Cove
Tangier
Fern Hill
Pleasant Harbour
James Settlement
Spry Harbour
Popes Harbour
Figure 1-2
FOCUS REPORT STUDY AREA
TOUQUOY GOLD PROJECT
DDV GOLD LTD.
Moose River Gold Mines
Halifax County, Nova Scotia
Legend
Project Study Area
Focus Report Study Area
CONESTOGA-ROVERS & ASSOCIATES
0 1 2 3 4 5
Kilometres
820933-D (8) GIS-DA012 October 15, 2007

2.0 PROJECT DESIGN PROCESS

2.1 OVERVIEW

The Project design process involves several phases as shown in Figure 2.2-1. Development scenarios are first evaluated for technical feasibility. Feasible schemes are then assessed on an economic basis. Finally, social and environmental impacts of the Project plan are considered.

At each stage, an unsatisfactory result may cause the previous basis to be re-evaluated. For example, a technically feasible plan may prove uneconomic causing a new approach to be adopted. Similarly, an environmental impact may have an economic impact or require mitigation which can addressed through modifying the technical plan. The iterative nature of the process ensures that issues are considered in the context of the entire Project and not in isolation.

Technical and economic evaluation occurs prior to addressing environmental and social issues because without a practical, economic plan there is no investment, no reason for development, and no impact. Just as important, however, is the fact that sustainable projects which can meet their environmental and social obligations must have a sound economic basis.

2.2 DESIGN PRINCIPLES

The Project design was based on a number of guiding principles since inception. The TOR for the Focus Report specifically requested ways in which these design principles were used in project design. These are listed as follows:

1. Constrain environmental impacts to the property itself.

2. Minimize impact on fish habitat and wetlands.

3. Use technology to mitigate impacts that would be otherwise unacceptable.

4. Design the mine to co-exist with the proposed adjacent wilderness area.

5. Ensure local workforce will be capable of operating the mine.

6. Foster activities in the community that will be self-sustaining when mining ceases.

7. Leave no long-lived adverse environmental legacy.

8. Return the site to an equal or better state of usefulness when mining ceases.

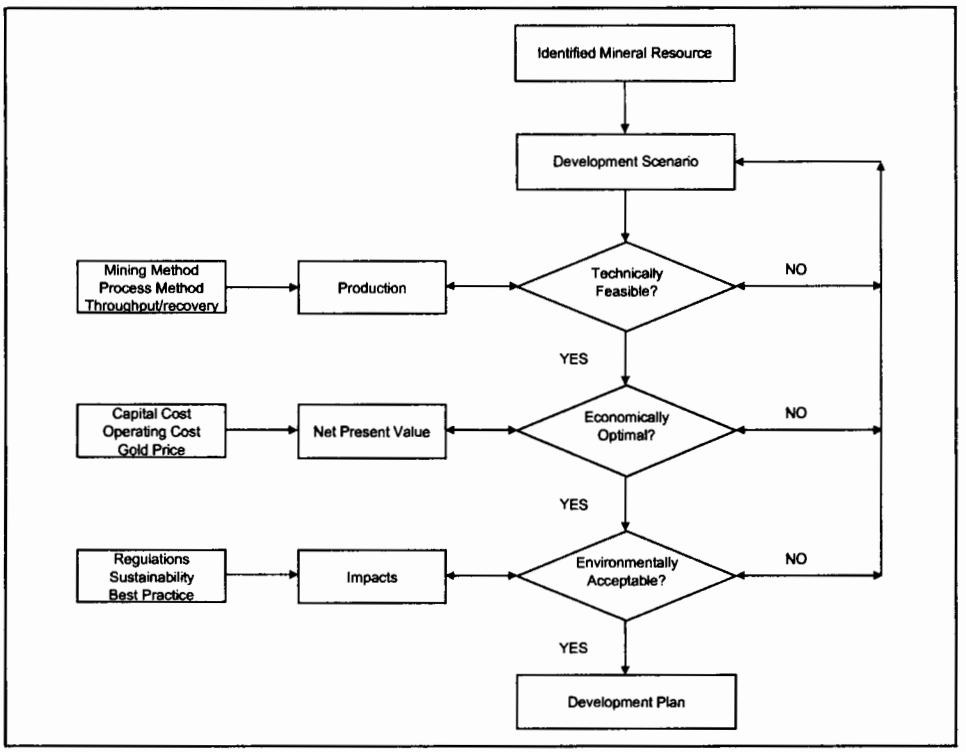


Figure 2.2-1 Project Design Decision Process

2.3 MINERAL RESOURCES

The basis for the process is the identification of a mineral resource with potential economic value. The Touquoy gold deposit hosts mineable resources of 7.6 Mt grading 1.6 g/t gold and an additional 2.9 Mt of "inferred" resources at a similar grade within the open pit boundaries. The inferred resources are expected to be upgraded by in-fill drilling conducted as part of the Project development. Total gold resources are approximately 555,000 oz.

Typically, gold deposits in Nova Scotia are hosted by narrow, steeply dipping, quartz-carbonate vein structures. The veins contain coarse (visible) gold and mineralization is

relatively high grade (> 5 g/t). The host rock is hard and generally barren. In contrast, the Touquoy deposit is characterized by both quartz-carbonate veining containing coarse gold and disseminated, low grade (< 2.0 g/t) mineralization in the surrounding host rock, the latter style predominating. Together they comprise an orebody amenable to development by low cost, bulk mining methods.

2.4 TECHNICAL ASSESSMENT

2.4.1 MINING METHOD

This phase of Project design focuses on determining the most practical, economical and lowest risk way to develop the deposit. At Touquoy, the theoretical alternatives are either open pit or underground mining. Open pit mining is significantly less expensive than underground mining as shown in Table 2.4-1 and is usually the method of choice for developing low grade, near surface deposits such as Touquoy. The fact that underground mining may be more attractive in terms of limiting surface disturbance or the size of the waste rock stockpile is addressed in environmental assessment phase of the Project design. However it would be decidedly uneconomic.

2.4.2 PROCESSING METHOD

Processing options include (1) gravity only, (2) flotation with offsite smelting, and (3) gravity and carbon-in-leach (CIL). Gravity only recovery would be attractive because it requires no toxic reagents (cyanide), however, recovery would only be about 60% meaning almost half the gold processed would never be extracted.

Flotation with off-site smelting similarly would avoid the use of cyanide. Flotation recovery for Touquoy ore is high (93%). A concentrate equivalent to about 10% of the volume milled would be collected and shipped to a smelter (nearest in Quebec) for gold extraction. The cost of shipping and smelting with contract penalties for high levels of arsenic in the concentrate would add untenable cost.

The last option is gravity concentration followed by CIL. The coarse gold is removed mechanically, the fine gold is leached with cyanide, and 93% of all gold is recovered on site. This process requires cyanide management in line with the International Cyanide Management Code (Appendix B) and an appropriate waste facility as with the other two options, but these systems are conventional, effective, well-proven, and relatively low cost.

2.4.3 SCALE OF OPERATION

Along with recovery, mill throughput is a key technical driver. At a given grade, the more ore that can be milled annually, the more gold that can be produced in that year. As throughput increases so does capital cost but this can be offset by lower operating costs derived from economies of scale.

Economies of scale cannot continue indefinitely. The mine and process plant cannot be made so big that the orebody is mined so fast that there is insufficient time to depreciate the investment. Generally, for a Project with a reserve of Touquoy's size, five years would be the minimum mine life. Table 2.4-2 shows how throughput affects mine life and economics. All figures are in Canadian Dollars.

Table 2.4-1 Comparison of Indicative Operating Costs for Touquoy Gold Project

Mining method	Open Pit	Open Pit	Open Pit	U/G	Open Pit	U/G	U/G	U/G
Process method	G/CIL	G/CIL	Flotation	G/CIL	Flotation	Flotation	G/CIL	Flotation
Process rate (tpd)	4500	1000	4500	4500	1000	4500	1000	1000
Cost $/t	20.00	29.00	32.00	35.00	41.00	47.00	63.00	75.00

Table 2.4-2 Illustration of Economies of Scale Open Pit Development for Touquoy Gold Project

Reserve	Mt	10	10	10	10	10
Throughput	tpd	1,000	2,000	3,000	4,000	5,000
Operating cost	$/t	28.00	26.00	24.00	22.00	20.00
Minelife	Yrs	30	15	10	7.5	6
Capital cost	$M	65	70	75	80	90

2.5 ECONOMIC ASSESSMENT

2.5.1 CAPITAL COST

Capital cost is the initial investment required to bring the Project into production. The elements associated with the capital cost for the Touquoy Gold Project can be found in Table 2.5-1. As shown, the capital cost for an open pit development would be less than that for an underground mine. It can be seen that the cost of an underground mine at

Touquoy would probably be 50% more than that for a similar sized open pit development.

Underground mining is very capital intensive because prior to mining, access to the orebody must be developed in the surrounding waste rock. Also, underground mining is generally conducted on a smaller scale than open pit mining. Underground development is best suited for the selective extraction of small, high grade ore zones using small equipment in limited working areas. An underground mine generating 4,500 tpd would be considered a large operation requiring more equipment and development relative to a similar sized surface mine. Thus it would have a higher capital cost.

Table 2.5-1 Comparison of Indicative Capital Costs for Touquoy Gold Project

	Open Pit 4500tpd	Underground 4500tpd	Open Pit 1000tpd	Underground 1000tpd
Total capital cost ($M)	84	126	66	84

2.5.2 OPERATING COST

Table 2.4-1 compares the cost of various open pit and underground development schemes. Open pit mine development is less expensive than underground mine development regardless of scale. Economies of scale make a larger, 4,500 tpd, operation far more cost effective than a smaller, 1,000 tpd, operation.

Gravity/CIL recovery is the most cost effective form of processing. Flotation concentration is less expensive than gravity/CIL (about 20% less) because it does not use cyanide management systems, elution, or goldroom operations. It must be recognized, however, that flotation only generates an intermediate product, concentrate, which must then be smelted to extract the gold. Shipping and smelting add significant additional cost which makes the option uncompetitive.

2.5.3 FINANCIAL PERFORMANCE

The Project value is assessed on the basis of net present value (NPV). Annual cash flows are calculated for each year of the Project life and discounted back to the present for comparative purposes. The cash flows represent net income and consider capital, revenue, operating costs, interest, and taxes. The development plan with the highest NPV is the most economically attractive.

A simpler approach to quickly assessing the suitability of a development scenario is through the concept of payback. Payback considers how long it takes to repay the original capital investment on an undiscounted basis. The more cash generated from operations in excess of costs, the shorter the payback and the more attractive the Project is as an investment.

Table 2.4-2 shows that a very small scale operation (1,000 tpd) would last for almost 30 years. The size of the development would have lower capital cost ($65 M v. $85 M) than the design and could potentially lessen environmental impact but the payback period would be so long (about 15 years) that such a development scheme would be financially unattractive.

It can be seen that as the production level increases so does capital cost. This added burden is offset by economies of scale which reduce operating costs and Project life but speed payback. Table 2.4-1 shows that for the Touquoy deposit, open pit development using gravity/CIL processing at a rate of 4,000-5,000 tpd provides the optimal trade-off between capital investment, mine life, and payback.

2.6 ENVIRONMENTAL ASSESSMENT

2.6.1 ASSESSMENT PROCESS

Once a technically feasible and economically attractive development plan has been identified, the design process assesses the impact on valued environmental components (VEC) on the Project site and in the surrounding area. For the Touquoy Gold Project, these elements are identified as:

- Aesthetics: Noise and Visual impact
- Air and Water Quality
- Recreational Value and Wilderness Experience
- Flora/ Fauna and associated Habitat
- Access and Community

The design process assesses the impact of the development on each of these elements in the context of (1) regulatory standards, (2) best practice, and (3) sustainability. For example, noise from operations would be considered in terms of:

- Does it meet applicable standards?
- Is the proposed operating plan the best way to manage impacts for this development?
- Is the proposed operating plan sustainable (as opposed to one which results in ongoing, cumulative impact)?

2.6.2 IMPACT MANAGEMENT

Impact is qualitatively described in terms of none, low, moderate, and high. The goal of the Project design process is to formulate a development plan which minimizes impact. Impact can be minimized through design, mitigation, or compensation.

Design offers the opportunity to eliminate impact by designing facilities, processes, and procedures which eliminate the opportunity for impact to occur. For example, the Project facilities were sited to avoid disturbing fish habitat and avoiding wetlands. As a result, no fish habitat on the site is impacted and wetland disturbance is minimized.

Mitigation includes all measures which are designed to limit or nullify a potential, unavoidable impact. The fact that water must be discharged from the site contributes to the use of three complementary water treatment systems, cyanide destruction, settlement and natural degradation, and effluent treatment, to mitigate the impact on the downstream receiving waters (see Appendix C - Effluent Treatment Design Report).

Compensation entails payment for or replacement of VECs which are unavoidably impacted by development or due to a failure of operating safeguards. An example of unavoidable impact would be replacement of 4.3 ha of wetlands destroyed during construction of the tailings facility. These will be replaced by the company at a ratio agreed with NSDNR. An example of compensation due to a failure of operating safeguards would be insurance carried by the company to address the impacts of a dam failure.

2.7 PROJECT DESIGN REVIEW

The technical and economic assessment concluded that the optimal development plan for the Touquoy Gold Project was an open pit mine and process facility employing gravity and CIL gold extraction. The associated infrastructure would include a waste rock stockpile and tailings management facility (see Appendix D - Tailing Dam Design Document.

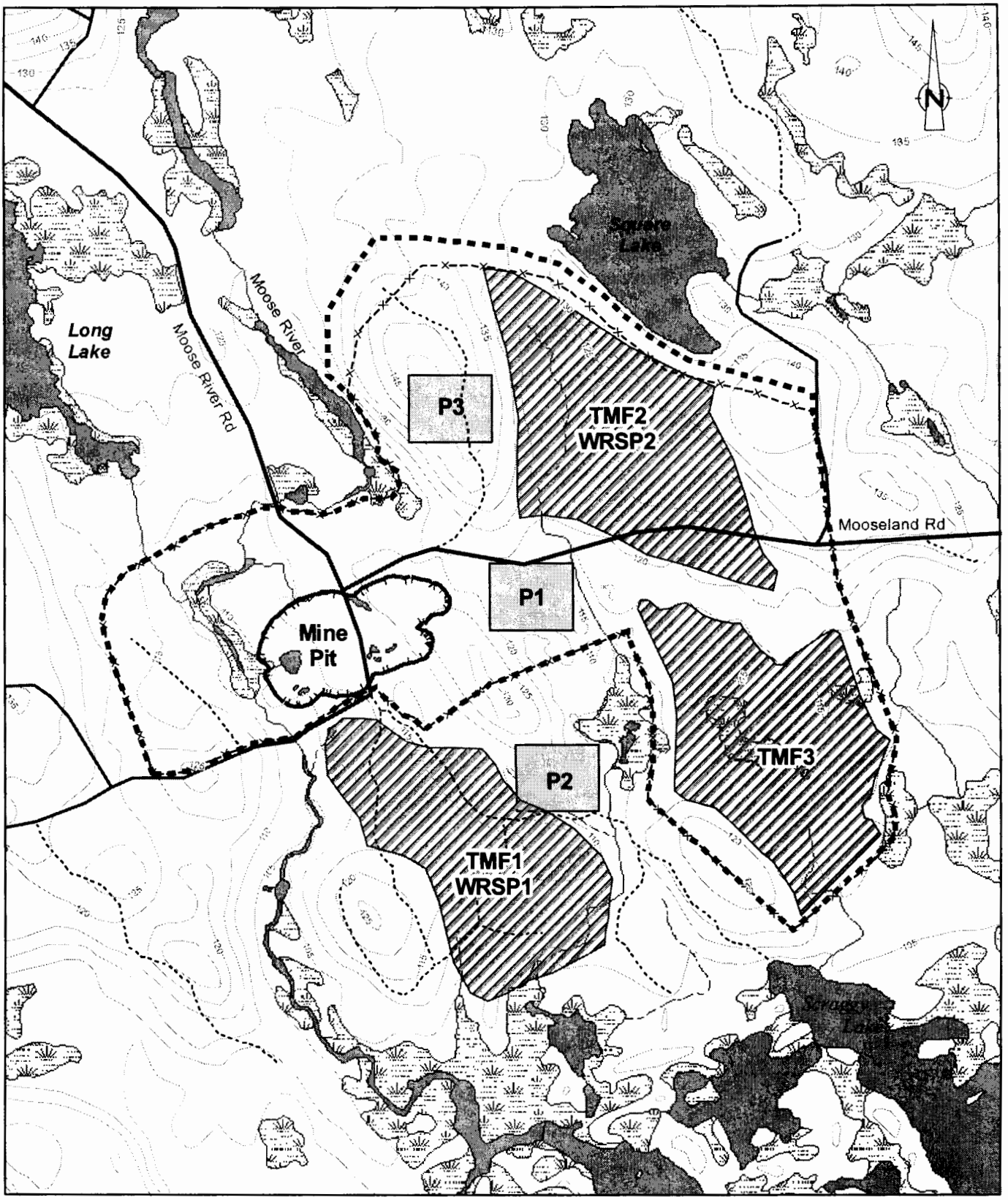


Figure 2-2
MINE LAYOUT OPTIONS
TOUQUOY GOLD PROJECT
DDV GOLD LTD.
Moose River Gold Mines
Halifax County, Nova Scotia

Options

Plant Locations

Tailings Management Facility
Waste Rock Storage Pile

0 0.2 0.4 0.6 0.8
Kilometres

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Several possible arrangements were considered for the facilities to determine the optimal location for each. These layouts are shown in Figure 2-2. In some cases, the position of a facility was independent of other infrastructure while in others the locations were linked. The results of the Project design review with respect to VECs are summarized in Table 2.12-1. The following sections provide a detailed discussion of the impacts resulting from each facility given various design assumptions.

2.8 OPEN PIT

2.8.1 Location

The open pit size and location is a function of the orebody. There are no alternatives to relocating the open pit.

2.8.2 Visual Impact

The open pit will be screened from the public road by trees. It will not be visible from Scraggy Lake, 1 km to the south due to topography and intervening forest. At night, equipment will use headlights for visibility. Every 10 minutes one truck will travel to the crusher and two to the waste rock stockpile. These vehicles will be occasionally visible from the public road and from the north end of Scraggy Lake.

2.8.3 Noise

Equipment noise will be 80-100 dB, attenuating to background, 40 dB, over a distance of 500 metres. As the open pit is 1 km from Scraggy Lake, mining activities will not have a noise impact there. Occasionally, equipment will be working on the dam; in these instances noise reaching the north shore of Scraggy Lake will be 60 dB.

Blasting noise will be heard up to 1 km away (north end of Scraggy Lake). Blasting noise will be momentary, once a day, five days a week. Blasting noise at the north shore of Scraggy Lake will be similar to a car door slamming.

The nearest regular seasonal human receptors are the fishing/hunting camps on Scraggy Lake 2 km south of the mine and Camp Kidston, 3 km north of the mine. Bands of trees left throughout the Project site will assist in dampening sound generated by operating activities.

2.8.4 Air Quality

The mining fleet is composed of 10 units of heavy equipment and various light vehicles. Greenhouse gas emissions will be 7,000 tonnes per year which will have negligible effect on air quality in the Project area. Gases generated by blasting will dissipate in the atmosphere within minutes of shooting without any harmful effects.

Moisture content of the material is considered high at 4% inhibiting dust generation. Dust produced from excavation and blasting will be confined to the open pit area. Roads will be watered as required to prevent generation of dust. A complete listing of measures can be found in the Project Fugitive Dust Management Plan (Appendix E).

2.8.5 Water Quality

All water from the open pit will be pumped to the tailings facility where it will either be re-cycled for processing or treated and discharged. The impact of water discharged from the TMF is covered under Tailings Management Facility (Section 6.4).

Hydrogeologic investigations supported by drilling and packer testing indicate that there is no transfer of water between the Moose River and subsurface areas of the pit. Appropriate blasting practices are not expected to encourage transfer of water between the pit and the river.

2.8.6 Recreational Value

Recreational activities will (obviously) not be permitted within the area of the open pit. This land use will probably reduce the use of off-road recreational vehicles in the area. Canoeing on the Moose River would be interrupted briefly during times of blasting. However there has been little evidence of such activity, due in part to the shallow nature of the river in summer, and any canoeists put in further south to access the Fish River system.

The recreational value of the adjacent wilderness area will not be reduced by noise, light, air emissions, or mine water discharge. The enjoyment of hunting, fishing, camping, or canoeing in the adjacent wilderness area will not be affected. The presence of the mine may deter poachers who previously used Moose River Gold Mines as a point of access to the adjacent wilderness area.

2.8.7 Wilderness Experience

The wilderness experience of anyone on the north shore of Scraggy Lake would be occasionally diminished by noise generated from activities on the tailings dam 300 m to the north. The only indication on the north shore of Scraggy Lake of recreational use is three boathouses in various states of disrepair. The wilderness experience of canoeists on the Moose River would be marginally diminished by the sound of equipment from the open pit and interruptions due to blasting if these occur when they are passing the mine site area.

2.8.8 Flora & Fauna

The open pit is located west of the area identified to contain rare cyano-lichens. The open pit area was clear cut within the last 10 years and is in various stages of regrowth. The area is not considered prime moose habitat due to the ongoing human presence on the site.

The open pit will be fenced to prevent entry by animals. The open pit does not present a barrier to migratory or wide-ranging species. Animals will be able to pass through the shelter barriers along watercourses or easily bypass the site altogether.

2.8.9 Habitat

The open pit does not contain any unique or special habitats. The open pit will be 75 m from the Moose River at its nearest point. The riparian habitat along the Moose River has been degraded by human activity. Affected areas will be regenerated in consultation with authorities to ensure a minimum 30 m buffer exists along the river edge. Development of the open pit does not impact habitat in any way in the adjacent wilderness area to the south.

2.8.10 Landscape

The development of the open pit does not disturb any unique landforms or landscapes. At closure the open pit will flood creating a lake similar to those scattered throughout the area. The flooded mini-pit, excavated in 1989, shows that even without any reclamation efforts the mine will return to a natural state over time.

2.8.11 Access

The public road which currently runs through the proposed open pit will be relocated 200 m to the north. A fence will prevent unauthorized access into the pit area from the public road.

Mining activities will neither increase nor diminish access to Scraggy Lake. Access to the area west of Moose River will be disrupted by pit development. New access to the west side of Moose River will be established from north of the community by upgrading an existing logging track.

2.8.12 Community

A large portion of the community site falls within the open pit. All structures will be removed prior to development. Hydro-carbon contamination from the old town site will be disposed of at an approved facility. More than half the pit area has been subjected to some form of human disturbance due to the community, historic mining, or forestry activities.

At least two areas in and around the open pit have been identified to contain tailings from historic mining. These will be cleaned up as a part of the pit development. A risk assessment will be done to ensure that remediation of historic tailings outside the pit boundaries does not mobilize contaminants that could affect downstream areas.

The open pit will encompass the area currently occupied by the provincial park. The charter for the park provides for mining within its boundaries as its purpose is to commemorate both the mine rescue of 1936 and the long mining history of Moose River Gold Mines. Subject to consultation with stakeholders and to public safety and environmental considerations the park will be relocated to a position overlooking the pit where an interpretative centre will be established to preserve the history presently housed in the aging museum.

2.9 WASTE ROCK STOCKPILE

2.9.1 Location

The Waste Rock Stockpile (WRSP) could be located in the large clear cut area south of the open pit or to the east, between Square Lake and the public road. Establishment of

the WRSP south of the open pit would be operationally most desirable as it provides the shortest haul, the land has been cleared, and regrowth is not well advanced. However, this area contains a stream classified as fish habitat which would be destroyed.

Also runoff from the WRSP would have to collected and pumped to the tailings management facility (TMF). The area east of the open pit between the public road and Square Lake is partially cleared. It is an extra 1 km away from the open pit making for a longer haul which adds cost and emissions in the form of vehicle exhaust from additional equipment hours. The WRSP in this location can be sited to avoid the fish habitat to the west and is ideally located to drain runoff to a TMF sited south of the public road.

2.9.2 Visual Impact

The WRSP will be approximately 40 m high at completion. The final crest elevation will be 166 m ASL compared to 152 m ASL for the mill hill 500 m to the west. As the surrounding hills will be fully treed the relative heights will appear similar. The first two lifts (20 m) will be screened from the public road by trees. Each 10 m lift will be re-sloped to 2.5:1 (h:v), covered with topsoil, and seeded as it is completed. The slopes will be vegetated with native grasses and shrubs. At the finish of mining, 80% of the stockpile will already be returned to a natural state leaving only the remainder to be reclaimed within one to two years of mining cessation.

The upper lifts (3 and 4) of the WRSP will be visible from locations on the property and from the few locations in the adjacent wilderness areas which are treeless. At night, headlights from equipment may be occasionally visible on the upper lifts from the property and only rarely from the adjacent wilderness area.

2.9.3 Noise

No more than one truck and one bulldozer are anticipated to be working on the stockpile at any given time. Waste dumping activities will generate sound on the order of 80 dB which will attenuate to background levels within 500 metres. Activities on the WRSP will not be heard above guidelines at Scraggy Lake or in the adjacent wilderness area.

2.9.4 Air Quality

Dust from waste dumping will be inhibited by the high, 4%, moisture content in the material. Roads on the dump will be watered as required. The progressive reclamation described previously will minimize the amount of exposed rock on the dump at any given time. The moist climate will further inhibit generation of dust on the dump. The Project Fugitive Dust Management Plan details all dust control measures.

2.9.5 Water Quality

Runoff from the WRSP may contain arsenic leached from the surface of exposed rock. All runoff will be directed by ditches employing gravity flow to the TMF where that water will be either re-cycled for processing or treated and discharged.

2.9.6 Recreational Value

The WRSP will not significantly reduce the value of surrounding lands for hunting, fishing, camping, or canoeing.

2.9.7 Wilderness Experience

The upper lifts of the WRSP will only be visible from treeless sites (clear cuts or bogs) in the adjacent wilderness area. Also, noise and dust effects will not extend beyond the property boundaries. As such, the presence of the WRSP will not significantly diminish the wilderness experience of those using the surrounding lands in the FRSA.

2.9.8 Flora And Fauna

The WRSP does not present a barrier to the movement of migratory or wide-ranging species. Waste dumping does not present a hazard to wildlife, and the noise and human presence will encourage most animals to stay away.

2.9.9 Habitat

The WRSP located at Site (1) will destroy fish habitat while locating the structure at Site (2) does not. At both locations the WRSP will result in direct loss of the terrestrial habitat (clear cuts and re-growth forest) it occupies. This habitat is not highly valued, except the fish habitat at Site (1).

2.9.10 Landscape

As mentioned, the WRSP will blend into the existing landscape based on its size, shape, and plans for re-vegetation. The WRSP does not affect landforms or landscapes in surrounding wilderness areas. Narrow landings of exposed rock will be left between lifts to prevent soil erosion until re-vegetation takes hold.

2.9.11 Access

The WRSP has no effect on access to the adjacent wilderness areas. It does not encroach on the track to Square Lake to the east.

2.9.12 Community

The WRSP has no effect on the existing Moose River Gold Mines community or the nearest other community, Mooseland, 10 km to the southeast.

2.10 PROCESS PLANT

2.10.1 Location

Three plant locations were considered (1) 200 m east of the pit, (2) 500 m south of the pit, and (3) 700 m north of the pit on a low hill. Figure 2-2 shows these layouts.

Site (1), 200 m east of the pit is close to the pit providing for a short ore haul. Overburden is < 1 m thick in the area making it easy to found the mills on bedrock. The site is easily accessible from the main road. Tailings would be pumped to the TMF.

Site (1) is, however, too close to the pit for blasting safety and was located in a drainage that has been classified as fish habitat. Construction in the low ground near the drainage would be problematic as would runoff management. Disturbance of the fish habitat would be unavoidable.

Site (2), 500 m south of the pit, is a safe distance from the open pit for blasting. Overburden is of moderate depth, < 10 m. Access to the plant and offices would require employees and private vehicles to drive through the operating area in order to get to the workplace. This is undesirable from a safety and security standpoint.

Site (2) would also have runoff management issues as it is situated on high ground above the same fish habitat as Site (1). Tailings would have to be pumped to the tailings management facility (TMF) which is less desirable than gravity drainage operationally.

Site (3), 700 m north of the pit is safe for blasting and provides a moderately longer haul to the crusher than Sites (1) or (2). Overburden is deep, up to 30 m. Pilings will add cost to foundation construction for the mills although all other structures can be erected without significant additional cost. Access is easily controlled via an improved road running up the hill west of the waste dump from the NW corner of the TMF. Site (3) will necessitate crossing of the public road by haul trucks.

Runoff from Site (3) can be directed into containment away from the fish habitat but still in the same watershed. Tailings flow will be assisted by gravity.

2.10.2 Visual Impact

Site (3) offers the opportunity to use existing clear cuts to locate the plant and service facilities in already disturbed areas. This means disturbance can be minimized and the view-shed will not be impacted. The ROM pad will be partly visible from the public road but not from other areas in the FRSA. It too will be screened with existing forest that will be left undisturbed. Access to the ROM pad will be via a haul road up the south slope of the hill. Trees will be left in place to screen the road from view.

Site (1) will be visible from the road regardless of trees left to screen it from view. Site (2) would not be visible from the public road or the surrounding areas except across the clear cuts extending to the south.

2.10.3 Noise

The largest source of noise at the plant site is the crushing circuit which is located outdoors. Lesser sources of noise at the plant site are the agitator motors on the CIL circuit and service vehicles. All other process activities are indoors and do not generate significant sound traveling beyond their enclosures.

The maximum sound generated at the plant site is 80 dBA which attenuates to the background of 40 dBA over a distance of 500 metres. Regardless of plant location, noise impacts are limited in the FRSA.

2.10.4 Air Quality

Dust will be generated on the ROM pad by vehicles and at the crushing circuit. The crushed ore stockpile and reclaim facilities will be enclosed. Dust will be minor and will be controlled by the moisture in the ore, precipitation, and water sprays on equipment as required.

Minor air emissions will occur from the process plant. These include carbon dioxide from the kiln, solution heater, and smelting furnace, minor amounts of ammonia from the electro-winning cells, off-gassing of hydrogen cyanide from the CIL circuit, and oxides of nitrogen during smelting. All contaminants are dispersed in the atmosphere to harmless concentrations immediately following release. Airborne contaminants do not pose a health risk to flora or fauna on or off the site.

2.10.5 Water Quality

All runoff from the site will be collected and sent to the TMF for re-use or treatment prior to discharge. Areas designed for reagent storage and use will be concreted with containment provided.

The plant may draw water during start-up from Square Lake, although it is probable that runoff collected during construction will eliminate this need as described in Section 6. In the driest year, the volume in Square Lake will be reduced by 6% which will have nominal effect on lake level. During operations, the plant will draw 20 m^3/hr from Square Lake which is far less than recharge under the driest conditions.

2.10.6 Recreational Value

The plant location does not impact hunting, fishing, camping, or canoeing in any of the adjacent FRSA. No recreational activities will permitted in the actual plant area due to safety concerns.

2.10.7 Wilderness Experience

The ROM pad area will not be visible from the adjacent wilderness area thus the wilderness experience of those in the surrounding countryside will not be affected. Dust and noise will not extend beyond DDV Gold's property boundaries.

2.10.8 Flora And Fauna

The plant will not directly impact any species at risk or other flora and fauna. The plant site is not identified as a habitat for cyano-lichens or moose. No moose sightings or sign have been reported in the plant site area. The plant site does not restrict the movement of moose or other migratory or wide-ranging species. The site will be fenced to prevent entry by animals for their safety. The connectivity of the region's habitat types is not affected by the presence of the plant.

2.10.9 Habitat

The plant is not located in any highly valued or unique habitat. As stated, it will be built into the existing clear cuts on the proposed site with as little additional disturbance as possible. The presence of the plant may make the area less desirable for large mammals. The footprint of the plant site will no longer be available as wildlife habitat, however, the areas adjacent to it will still be populated by flora and fauna tolerant of human presence as is the case of the community of Moose River Gold Mines now and historically.

2.10.10 Landscape

The plant site is located on a drumlin, a common topographic feature formed from glacial till similar to the many low hills in the area. The plant will not affect the shape of the hill and, following closure and reclamation, all of the facilities will be removed.

2.10.11 Access

The plant has no effect on access to the adjacent areas. As mentioned, access to the plant will be by a road leading from the NW corner of the TMF, north past the waste dump and west up the hill. Haul truck access to the ROM pad will be via a haul road constructed up the south slope of the hill. Access to forestry operations, recreation areas and properties to the west of the plant site will be maintained.

2.10.12 Community

The plant site has no effect on the existing Moose River Gold Mines community or the nearest other community, Mooseland, 10 km to the southeast.

2.11 TAILINGS MANAGEMENT FACILITY

In order to assess the impacts of the tailings facility on the VECs at the site and in the surrounding area it is necessary to understand the nature of the Tailing Management Facility (TMF) design and operating plan. Both are based on a risk management plan which seeks to reduce the probability of a loss of containment to as near zero as practicably possible.

2.11.1 TMF Risk Management

The ability to manage risk associated with the TMF is based on a series of fail-safe mechanisms. These measures include (1) design, (2) operating procedures, (3) monitoring, and (4) emergency procedures which are both redundant and complementary. Each risk management measure is backed up by another system with the resulting probability of total failure so small that risk can be managed with a high degree of certainty.

Risk management design features of the TMF include:

- Earthquake resistant structure
- Designed to withstand 80% of the 1/10,000 year seismic event
- Multiple (4) barrier dam design
- Low permeability clay core
- Core cemented into bedrock to retard seepage

- Seepage collection ditches
- Surge capacity sufficient for the 1 in 200 year storm (see Appendix F)
- Spillways to maintain dam stability in the event of an overflow

Risk management operating features of the TMF include:

- Tailings discharged against dam walls to provide an additional barrier to seepage
- Recycle water system allows pond level to be controlled
- Excess water subject to effluent treatment
- 60 day retention time that ensures settling and natural degradation of residual cyanide
- 30 day holding capacity in polishing pond
- Seepage or treated water not meeting quality standards to be pumped back into pond

Risk management through monitoring includes:

- Visual inspections (daily/monthly/quarterly)
- Pond level measurements (daily)
- CN destruct performance (hourly)
- Effluent treatment performance (hourly)
- Discharge water quality (daily)
- Groundwater wells (weekly)
- Structural settlement surveys (monthly)
- Environmental effects (monthly/quarterly)

Risk management for emergency procedures includes:

- Protocols to respond to increased levels of inflow
- Increased monitoring frequency
- Deployment of siltation barrier
- Notification procedure
- Contingency plans to pump TMF water to the open pit if needed
- Contingency plans to build up dams or provide containment using mine equipment

2.11.2 Location

Three possible locations for the TMF were examined.

- Site (1) South of the open pit
- Site (2) East of the pit between Square Lake and the public road
- Site (3) East of the pit between the public road and Scraggy Lake

Site (1) is judged unsuitable due to its proximity to the Moose River and its conflict with the fish habitat in drainage south of the pit. Discharge to the Moose River would be problematic because in dry years it is reduced to a series of sluggish pools. Gravity drainage of runoff from the WRSP is not possible without facilities directly impacting wetlands or fish habitat. This site would require the longest length of tailings line to TMF which adds cost and risk and could be subject to additional risk if the Moose River were to flood.

Site (2) is practical. It too however would conflict with fish habitat and impose on the wetlands surrounding Square Lake. As the ground slopes north to south the TMF would threaten the public road if, as is highly unlikely, it failed. The cost of earthmoving necessarily required to slope the TMF towards Square Lake as the receiving waters, would impair Project economics.

Discharge into Square Lake may impact aquatic life there due to the small volume of the lake (640,000 m^3) relative to the average annual discharge volume of the TMF (1.5 M m^3). If a total dam failure occurred, Square Lake would not contain the bulk of the tailings which would flow south by gravity. If the TMF were prone to failure then directing the potential outflow towards Square Lake would protect the downstream watershed but the lake would be severely harmed by operations.

Use of Site (2) for the TMF would preclude use of Square Lake as a source of raw water. The length of tailings line to the TMF would be minimized but gravity drainage of runoff from the WRSP would not be possible, since, because of areal constraints, the WRSP would be located downslope of the TMF.

Site (3) has sufficient area to accommodate the TMF without imposing on the fish habitat to the west and makes use of a natural basin which facilitates containment. It contains 4.3 ha of wetlands which can be readily replaced at agreed ratios elsewhere on the site or local area.

The location is proximate to Scraggy Lake which provides a large volume of receiving waters (21 M m^3) that would mitigate impacts to resident aquatic life. The geography of

Scraggy Lake makes the lake easily sealed 2 km south of the north shore in the highly unlikely event of a dam failure. Locating the WRSP to the north makes it possible to drain runoff to the TMF by gravity. At this site the TMF will readily capture all run-off from the entire mine site. The tailings line is of moderate length and readily managed.

2.11.3 Visual Impact

The TMF is comprised of a series of rockfill dams. The main impoundment is approximately 100 ha in area with dams on three sides totaling about 3000 m in length. Directly south of the tailings impoundment is the polishing pond which occupies an additional 30 ha. The height of the main and polishing pond dams at closure will be 14 m and 6 m respectively.

Site (1) will not be visible due to its remote location. Site (2) may be visible from the public road if the downstream side of the facility faces the road. At site (3) the TMF will be screened from the public road by a barrier of trees a minimum of 30 m wide and from Scraggy Lake by a band of forest 200 m in width. As such, the facilities will only be visible by driving directly onto the dams themselves. The discharge into Scraggy Lake will make use of an improved natural channel and be blended into the shoreline.

2.11.4 Noise

The only significant noise at the TMF will come from equipment engaged in raising the dam. This will occur periodically, primarily in the summer. Equipment noise reaching a canoeist or other recreational user of the area located on Scraggy Lake will be no more than the ambient 40 dBA measured elsewhere on site.

2.11.5 Air Quality

Off-gassing of HCN gas due to the natural breakdown of free cyanide in the tailings water will be undetectable 1 m above the surface of the pond. Cyanate, the product of the cyanide destruction process, decomposes into CO_2 and ammonium. The generation of ammonia is inhibited by a mildly alkaline pH in the facility and discharge into low pH receiving waters.

Dust from the tailings beach will be minimized by frequent moves of the discharge point to maintain a wetted beach. Details can be found in the Project Fugitive Dust Management Plan (Appendix E).

2.11.6 Water Quality

Tailings are subject to cyanide destruction at the process plant before flowing to the TMF in a 250 mm HDPE double-contained pipeline. SO_2/Air cyanide destruction is proven 99.5% effective in destroying CN_F and CN_{WAD} into cyanate which decomposes harmlessly. Laboratory testing shows that CN_{WAD} in the tailings impoundment will be about 1.5 ppm.

All water entering the TMF is subject to settlement over a period of 30-60 days during which time residual CN_F and CN_{WAD} undergo natural degradation due to the effects of oxidation and sunlight. All runoff from the WRSP, plant site, and mine water from the open pit is also directed to the TMF. 90% of the process water used is recycled from the tailings pond with the excess (1.5 M m^3/yr) subject to treatment and discharge.

Treatment of tailings effluent at the polishing pond removes dissolved arsenic and other metals. Treated water is held in the polishing pond for up to 30 days to ensure quality before discharge. At discharge arsenic concentration is 0.04 ppm and CN_T concentration is < 0.1 ppm compared to MMER standards of 0.5 ppm and 1 ppm respectively.

At closure, runoff will be diverted away from the TMF. Water draining through the sites will continue to be treated until it is shown to have returned to pre-development quality. Waste from effluent treatment will be stored in clay-lined containment cells within the TMF and will remain there in a chemically stable condition permanently (see Appendix G - Containment Cell Design Report).

2.11.7 Discharge

Effluent could be piped to Moose River for discharge from Site (1). The average flow in Moose River is significant, 6000 M m^3/yr. Moose River may host a small salmon population. Some years, however, Moose River dries up into a series of pools. Sufficient dilution could not be guaranteed in this event, possibly resulting in impact.

Discharging into Square Lake from Site (2) would introduce an annual volume of effluent three times that of the lake. Relatively low inflow and outflow would result in limited dilution of effluent. Discharge would probably have a significant effect on aquatic life.

Discharge from Site (3) to Scraggy Lake would benefit from the large lake volume of 21 M m^3. Sufficient inflow exists to ensure that effluent will be diluted to CCME levels. No impact on aquatic life is anticipated. It is concluded that Scraggy Lake provides the best opportunity to discharge without impact to the receiving environment (see Appendix H - Water Quality Report).

2.11.8 Recreational Value

None of the proposed sites affect recreation outside the property boundary. All site locations would restrict recreation in the facility area.

2.11.9 Wilderness Experience

None of the proposed sites would impinge on the wilderness experience enjoyed in the adjacent lands. Noise and air quality are not impacted, the structure is not visible, and water quality is managed to protect aquatic life. Careful construction and siting of the discharge point into Scraggy Lake will promote the natural appearance of the shoreline.

2.11.10 Flora And Fauna

A lichen survey of the potential TMF sites resulted in no additional discoveries of rare lichens. Moose will be able to move past the facilities without hindrance. All sites will be fenced to prevent access by large mammals.

2.11.11 Habitat

Site (1) and (2) both destroy fish habitat. Site (3) destroys 4.3 ha of wetlands which can be readily replaced as required. No other significant habitats exist on the three sites.

2.11.12 Landscape

None of the potential sites impact unique or poorly represented landscapes. At closure the facility will be drained, the dam slopes flattened, and the impoundments re-vegetated.

None of the proposed sites will restrict access to surrounding areas. Signs will be posted so that those approaching the north end of Scraggy Lake from the track to the west do not enter the operating area.

2.11.13 Community

None of the TMF sites impact any existing communities. The possibility of well impacts on the Eastern Shore as a result of contaminated ground or surface water transfer is negligible. The company will carry insurance to address harm resulting from a failure or other sudden event resulting in an uncontrolled release of contaminants.

2.11.14 Failure Consequences

A worst case failure analysis indicates that a mudflow resulting from a total dam failure would result in the release of 500,000 m^3 of tailings and 2.5 M m^3 of water. This is about 10% of the total final stored tailings volume. Such an event has a probability of 0.0001 in a given year and could only be precipitated by a magnitude 8 earthquake of which none has ever occurred in Nova Scotia.

At Site (1) this mudflow would bury the Moose River. At Site (2) it would bury Square Lake or, depending on the TMF configuration, flow across the Mooseland Road creating a hazard to public safety. At Site (3) the tailings would be contained in the north end of the bottom of Scraggy Lake with a siltation barrier positioned across the narrows ensuring that little sediment made its way downstream.

From Sites (1) or (2) significant flooding would occur in Square Lake or the Moose River. From Site (3), Scraggy Lake the lake level would rise only 0.35 m. In all cases, the 2.5 M m^3 of untreated effluent would flow downstream through the Fish River and into Lake Charlotte.

There would be impacts on aquatic life but sub-lethal effects would be confined to Scraggy Lake during the initial inflow when mixing is incomplete. The most significant mitigating effect is that untreated water in the TMF will already meet discharge standards **prior to failure.** Downstream water quality would be expected to return to levels below CCME standards in 1-2 years.

2.12 CONCLUSIONS

The project development scheme is dictated by the physical nature of the deposit in terms of size, location, geology, and metallurgy. The implications of these factors on the adopted development plan can be summarized as follows:

- At least half the value in the deposit presents as near surface, low grade, disseminated mineralization suggesting that development will be dependent on low cost open pit methods.
- Sufficient tonnage and grade exists to support bulk mining extraction reinforcing the need to develop the orebody using surface mining methods.
- Grade and style of mineralization is not concentrated enough to bear the capital and operating costs associated with underground development.
- Flotation and direct cyanidation both offer similar recoveries.
- Smelter penalties and transportation costs make it uneconomic to generate a flotation concentrate and ship it to a smelter for gold extraction.
- A process plant milling 4,000-5,000 tpd employing gravity/CIL gold recovery would provide the best trade-off between throughput and capital cost.

Based on the above, a relatively small open pit supplying a 4,000-5,000 tpd process plant employing gravity/CIL gold recovery is the most viable means of developing the property. Assessment of the environmental impacts for the various options available leads to the following conclusions:

- The most significant impact from the development of the open pit is the removal of the existing community.
- The WRSP2 location avoids impact to fish habitat and facilitates effective management of site runoff, albeit at a higher operating cost than the alternative.
- The P3 plant location best addresses safety issues with regard to the proximity of the facility to the open pit and offers site specific opportunities to minimize disturbance and manage runoff, albeit at higher capital cost.
- The TMF3 tailings facility location is superior to the alternatives as it presents no risk to Moose River, Square Lake, and the public road while avoiding destruction of fish habitat on site.
- Given the proposed operating plan and design standards, discharge to Scraggy lake does not present an undue risk for downstream impact nor diminish the value of the adjacent lands.
- The final facility layout is not the lowest cost but represents the design which best mitigates environmental impacts for the chosen development scheme.

These conclusions are summarized in Table 2.12-1 which shows that the chosen development scheme is most desirable in terms of minimizing both on and off-site environmental impacts.

	On-Site Impacts								
Factor	Open Pit	WRSP Site 1	WRSP Site 2	TMF Site 1	TMF Site 2	TMF Site 3	Plant Site 1	Plant Site 2	Plant Site 3
Technical	1	1	1	1		1	2	1	2
Economic	1	1	2	2		1		1	2
Security				1	1	1	2	2	1
Safety	1					1			1
Visual	1	1	2	1	1	1	2	1	1
Noise	1	1	1	1	1	1	1	1	1
Air	1	1	1	1	1	1	1	1	1
Water	1	2	1			1	1	1	1
Recreation	2								
Wilderness Exp	1								
Flora & Fauna	1		1	1	1	1	1	1	1
Habitat	1		1				1	1	1
Landscape	1	1	1	1	1	1			
Access	1				1	1		2	
Community									
Subtotal	17	20	17	26	28	19	20	21	18

	Off-Site Impacts								
Factor	Open Pit	WRSP Site 1	WRSP Site 2	TMF Site 1	TMF Site 2	TMF Site 3	Plant Site 1	Plant Site 2	Plant Site 3
Technical									
Economic									
Security									
Safety					1	1			
Visual		1	1	1					1
Noise	1	1	1	1	1	1			
Air	1								
Water						1			
Recreation	1								
Wilderness Exp	1	1	1	1	1	1			
Flora & Fauna	1			1	1	1	1	1	1
Habitat	1								
Landscape									
Access	1								
Community									
Subtotal	7	3	3	9	7	5	1	1	2

Total	24	23	20	35	35	24	21	22	20

Table 2.12-1 Ranking of Project Design Options by Technical, Economic and Environmental Criteria
Note: 0 = Most desirable, 3 = Least Desirable

5.0 CONSULTATION AND COMMUNICATION

Section 5.0 outlines the specific activities completed and provides details on issues raised.

5.1 BACKGROUND

Prior to the filing of the Environmental Assessment Registration Document (EARD) in March 2007, the Company undertook a public consultation and communication program. This program consisted of a number of small group meetings, briefings with civic officials, and elected representative from all three levels of government, media interviews and three Open Houses. A number of public and stakeholder comments were received during the filing of the EARD (25 day review period) and these mostly originated from the Eastern Shore area.

Following the receipt of the Minister's decision which indicated a need for a Focus Report, the Company felt it appropriate to broaden its consultation and communication program to the Eastern Shore area. Whilst there had been some media coverage and advertised announcements of Company Open Houses prior to the filing of the EARD, a considerable effort has been made in recent months to better inform and obtain feedback from individuals and groups in the Eastern Shore area. At the same time, consultations and communications have continued with other geographic areas that are associated with the Project.

5.2 EXPANDED PUBLIC ENGAGEMENT PROGRAM

The objectives of the Company's expanded public engagement program since April 2007 have been to:

- Provide information about the Project to individuals and groups
- Encourage feedback and answer questions
- Elicit suggestions and recommendations to improve the Project design

In pursuit of these objectives, the company developed a stakeholders list composed of individuals and groups including:

- Elected Officials
- Provincial and Federal Regulators
- Non-governmental Organizations

- Special Interest Groups
- Community Organizations
- Business Community
- General Public

Stakeholders were sought out in order to both provide information and seek feedback in aspects of the Project. Among these stakeholders were parties who had filed commentary during the EARD review process. These groups and individuals were a focus of consultative efforts in order to better understand and address the specific concerns expressed during the EA review. The company also developed an email data base for the purposes of issuing statements and Project status updates. These statements and Project updates prompted a number of requests for briefings and also prompted a number of media interviews.

With the specific intent again of enhancing consultation and communications in the Project area, the Company held two added Open House information sessions in addition to the three from prior years. These were staged in Tangier on August 8, 2007 and Upper Musquodoboit August 9, 2007.

Both events were advertised in the Weekly Press and Eastern Shore Gazette as well as on the three area Job Search Centre websites one week in advance. For these sessions the Company assembled a team of twelve (12) experts to meet with members of the public. Total attendance at the two sessions exceeded 100 persons.

5.3 RECENT STAKEHOLDER CONSULTATION

The following is a listing of parties with whom the company initiated briefings and meetings since April 2007:

Federal Elected Officials and Their Representatives

Hon. Peter Stoffer, NDP MP Sackville-Eastern Shore
Ms. Anne Bigelow, Director of Regional Affairs for Hon. Peter MacKay, MP Central Nova

Provincial Elected Officials and Their Representatives

Hon. Brooke Taylor, MLA East Hants-Colchester, Minister of Agriculture
Hon. Ron Chisholm, MLA Guysorough County, Minister of Fisheries
Hon. Bill Dooks, MLA Eastern Shore, Minister of Energy

Hon. David Morse, Minister of Natural Resources
Executive Assistant to Hon. Mark Parent, Minister of Environment and Labour
Executive Assistant to Hon. Richard Hurlburt, Minister of Economic Development

Opposition Representatives

NDP Opposition Environment and Natural Resources Critics
Liberal Natural Resources and Environment Critics
Mr. Sid Prest, NDP Eastern Shore Regional Outreach Worker

Municipal Elected Officials and Organizations

HRM Regional Council
Mr. Steven Streatch, HRM Councillor for Project area
HRM Watershed Advisory Board
HRM Emergency Measures Organization

Special Interest Groups

Canadian Parks and Wilderness Society (CPAWS)
Ecology Action Centre
Nova Scotia Nature Trust
Nature Conservancy of Canada
Eastern Shore Forest Watch
Eastern Shore Fishermen's Protective Association
Atlantic Salmon Association
Nova Scotia Salmon Association
Eastern Shore Wildlife Association

Local Business Community

Greater Halifax Partnership
Sheet Harbour Chamber of Commerce
Antigonish and Eastern Shore Tourism Association
Seaside Tourism and Business Association
Eastern Shore Job Search Centre (Porter's Lake)
Sheet Harbour Job Search Centre
Musquodoboit Valley Job Search Centre

Industry

Nova Scotia Mining Association
Mining Society of Nova Scotia
Neenah Paper

Government Agencies

NSEL - Protected Areas
NSEL - Pollution Control
NSDNR - Species at Risk
NSDNR - Industry Liaison
NSDNR - Mineral Development and Policy
Environment Canada - Atlantic Region
Natural Resources Canada
Department of Fisheries and Oceans

In addition to meetings with the 40 parties listed above, the two open house information sessions held in August put the company in contact with more than 100 interested citizens. Also, during the months of August and September, company representatives attended public meetings held by Eastern Shore Forest Watch at three sites on the Eastern Shore; Tangier, Musquodoboit Harbour, and Oyster Pond; and one site in the Musquodoboit Valley at Middle Musquodoboit. This provided the opportunity to answer questions from another 120 members of the general public.

5.4 ISSUES OF PUBLIC CONCERN

Numerous questions and issues of concern have been raised with regard to the Project both during the original public review of the EARD and the expanded program of public engagement. These have been organized by category and are addressed in detail in the "Answers to Stakeholder Concerns" section of this document. In all, 255 questions are addressed. The breakdown by category is given below.

Table 5.4-1 Summary of Stakeholder Concerns by Topic

Topic	Number of Questions
Natural Environment	
Wildlife and Habitat	19
Baseline Geochemistry	8
Air/Light/Noise/View	15
Socio-Economic	
Employment	9
Project Benefits	12
Community	11
Traffic and Transportation	5
Tailings Management	
Design	6
Extreme Weather	5
Monitoring	2
Seepage	9
Dam Failure	15
Emergency Response	16
Water Management	
Usage	8
Acid Rock Drainage	17
Cyanide Destruction	11
Effluent Treatment	11
Effluent Water Quality	12
Water Quality Modeling	9
Wetland Purification	9
Other	
Monitoring	6
Compliance	7
Historic Mining	10
Reclamation	23
Total	**255**

5.5 PUBLIC OPINION RESEARCH

In September/October 2007, the Company contracted an independent opinion research professional to undertake public attitude research in the Eastern Shore Area. This research undertaken as a probability, telephone intercept has a known probability of error and can be confidently relied upon. The results of this research are in Appendix U - Public Opinion Survey. In summary, the results indicate a 66% level of awareness of the Project and a 67% level of overall support for the Project.

APPENDIX U

PUBLIC OPINION SURVEY

Moose River Gold Mine Survey

EXECUTIVE SUMMARY

September 2007

Prepared By

Peter M. Butler PhD

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INTRODUCTION

The findings presented in this summary are based on a survey of the opinions of Nova Scotians who are residents of the provincial riding of Eastern Shore, as well those who are residents of the Halifax Regional Municipality portions of Colchester Musquodoboit Valley and Guysburough-Sheet Harbour. The survey was carried out by NRG Research Group with offices in Vancouver, Calgary and Winnipeg. The objectives of the study as outlined below was to assess the attitudes of respondents on issues relating to the mining industry and the proposed development of a gold mine in the Moose River area.

The analysis presented in this report is based on data gathered from a sample of 502 respondents 18 years of age and older drawn from the voting population of the ridings. The survey was conducted by telephone from Winnipeg between September 19th and September 22nd, 2007. The sample frame provides a sufficient number of cases to be accurate to within +/- 4.5 percentage points, 95 out of 100 times.

Research consultant for the study was Dr. Peter M. Butler of Halifax who was assisted by Andrew Enns, Senior Vice President, NRG Research Group, Winnipeg Manitoba and David Dudka of Halifax.

OBJECTIVES

The purpose of this study was to assess the attitudes of residents of respondents, to the mining industry and its contribution to the economy of the area and in particular to attitudes and opinions about the proposed development of a gold mine in the area. Within this overall objective, the study was designed to yield information on the following:

- Key local and provincial issues on the minds of respondents with special reference to the economy of the ridings selected for study;
- Opinions about the importance of the mining industry relative to other industries in stimulating economic growth;
- Awareness and support for the proposed Moose River gold mine;
- The basis of support for parties and leaders in the event of a provincial election.

METHODS

To achieve the research objectives, the survey consultant recommended a quantitative research approach. This involved a telephone interview conducted from the NRG Research call center in Winnipeg, Manitoba.

The data was collected using a Computer Aided Telephone Interviewing System (CATI). This technique was employed as it is the most cost-effective means for collecting public opinion data. Taking an average of fifteen minutes to complete, calls were placed between the hours of 6PM and 9:30 PM Halifax time.

The population consists of all residents of Eastern Shore, Musquodoboit Valley and Sheet Harbour, 18 years of age and older. Male and female respondents were selected in proportion to the population of the areas, using a 50/50 sex quota. A total of 502 interviews were completed, with 307 in Easter Shore, 96 in the Musquodoboit Valley and 99 in Sheet Harbour.

Effective survey research must be based on a sample truly representative of the universe of interest. A systematic random sampling technique was employed to gather the data for this study, which produces a random sample with probability of selection proportionate to size.

SUMMARY OF FINDINGS

THE ISSUES

The top of mind issues for residents of this region of Nova Scotia, at this time, have to do with the *economy* (13%), *road maintenance (11%) and crime (10%)* (see Table 1). It is also interesting to note that *crime* is identified more frequently than *health care* as an unaided third choice. Other important issues included taxes/property taxes and Health Care. In unaided mention, the proposed Moose River Gold Mine was mentioned by only 1% of the respondents. One in five residents (21%) were unable to identify any issue that is very important to their community.

Table 1: Top Issue

Top Issue	Top Mention	1st – 2nd Mention
Employment/Economy	13%	18%
Road Maintenance	11%	21%
Crime	10%	14%
Taxes/Property Taxes	8%	13%
Health Care	8%	12%
Cars/Speeding	2%	4%
Environment	4%	8%
Public Transportation	3%	5%
Education	3%	5%
More Children's Activities	3%	4%
Communications/High Speed	2%	4%
Gas Prices/Fuel Prices	2%	3%
Moose River Pit Mine	**1%**	**1%**
Watershed Issues	1%	1%
Other	7%	15%
Don't Know	21%	N/A

Top Three Issues by Region

Eastern Shore	Guysburough-Sheet Harbour	Colchester-Musquodoboit Valley
Crime (13%) Road Maintenance (10%) Taxes (10%)	Employment/Economy (21%) Road Maintenance (17%) Health Care (12%)	Employment/Economy (31%) Health Care (10%) Road Maintenance (8%)

When the three ridings (regions) are considered separately the relative importance of the issues changes. Concerns about *employment* and the *economy* are considered the most important issues by residents of Guysburough-Sheet Harbour (21%) and especially by residents of Colchester-Musquodoboit valley (31%). By contrast, there is little consensus among respondents of Eastern

Shore on what the top issues facing the area are at present. But clearly, they are much less concerned about matters relating to the economy than are other residents of eastern Nova Scotia. The most frequently mentioned concerns are *crime* (13%) *road maintenance* (10%) and *taxes* (10%). These tend to be second and third choices respectively, in the other two ridings. The development of the Moose River mine is clearly not an important issue to voters in any of the ridings at this time.

Overall, there are few demographic effects on perceptions of these issues. Concerns about employment and the economy are most likely to be expressed by residents in the *35-54 age* (16%) cohort as well as those who are *middle income* earners (20%). This issue is also more likely to be a concern among those who have lived in the areas for twenty or more years.

The effect that top issues could have in determining the way residents of these eastern ridings might vote in a provincial election is captured in Table 2. As shown, a majority of respondents (27%) offer a **don't know** response to the question *'what is the most important issue in determining which party you will vote for in the next provincial election?'* On the other hand, there is clearly some association between perceptions of the top issues and their opinion about what could influence the way they will vote.

Table 2: Most Important Issue To Vote Intention

	%
Creating More Jobs	10%
Economy	9%
Candidate/Party Platform	7%
Ending right to strike for Health Care Workers	2%
Environment (General)	6%
Education	5%
Honest/Trustworthiness of candidate	5%
Health Care (General)	5%
Taxes	4%
Reducing Wait Times	2%
Moose River Gold Mine	**<1%**
Community Safety	<1%
Other	12%
Don't Know	27%

Most Important Issue To Vote Intention by Riding

Eastern Shore	Guysborough-Sheet Harbour	Colchester-Musquodoboit Valley
Economy (10%) Party Platform (8%) Candidate Honesty (7%)	Creating Jobs (15%) Economy (7%) Environment (7%)	Creating Jobs (20%) Economy (8%)

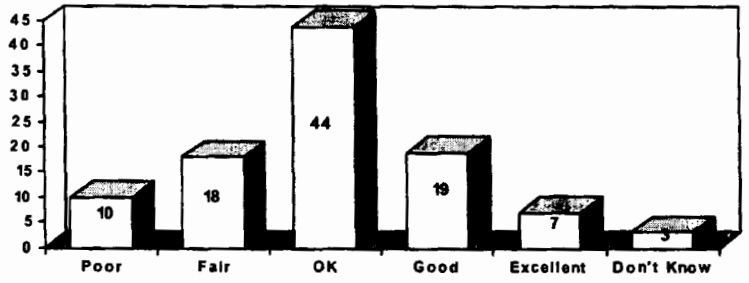
About one in five (19%) residents of this area of Nova Scotia, indicate that *job creation* and the *economy* will be an important influence on their voting choices. Moreover, also shown in Table 2 this perception is shared in each of the three ridings, but it is a view which is most frequently expressed by residents of Colchester-Musquodoboit Valley (20%). Two other points are worthy of note here; candidates and party platforms receive less than 10% of mentions overall, yet candidate honesty appears to have some significance among residents of Eastern Shore. And, among these residents of Eastern Shore where *crime* is identified as the top issue *community safety* receives 1% of mentions. Clearly these are not very structured opinions! Secondly, the proposed Moose River mine development appears not to resonate as a potential campaign issue at all!

The economy and jobs as a vote driver is most often mentioned by respondents who are under 55 years old ; as well as those who are *high income earners* ($80,000+) and those who are longer term (over ten years) residents of the area. Indeed, it should be noted that the refusal rate on this question was extremely low at 4% indicating that we might have some confidence in the reliability of the answers.

PERCEPTIONS OF THE LOCAL ECONOMY AND ECONOMIC GROWTH

Given the importance of economic issues to the people of these ridings in eastern Nova Scotia, it is interesting to find that respondents are generally positive about it. A majority (44%) of the ratings of the local economy cluster at 3 on a scale of 1(poor) to 5(excellent) with a mean overall rating of **2.9**. These findings are summarized in Table 3. The table also shows that ratings are higher than the average rating (X=3.2) in the Eastern Shore riding and lower than average in the other two ridings. Females, *younger* respondents (18-2years) middle income earners ($30K - $80K per annum) are most likely to give above average ratings to the local economy.

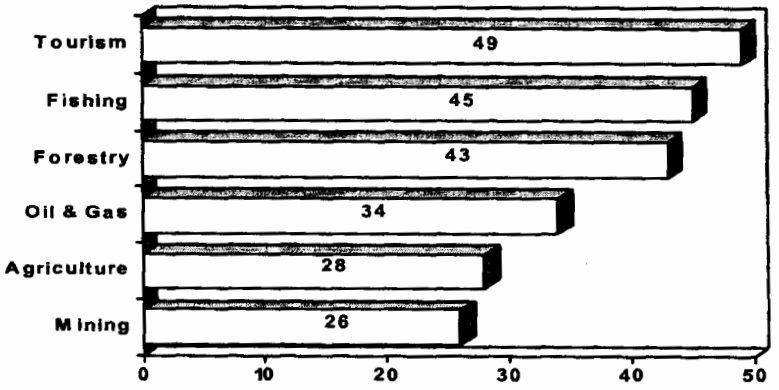
Table 3: Ratings of the Local Economy



Eastern Shore	Guysburough-Sheet Harbour	Colchester-Musquodoboit Valley
3.2	2.5	2.5

Opinions about the ability of the mining industry to stimulate future economic growth relative to six other industries which are important to this province. Are presented in Table 4, They are: *mining, tourism, fishing, forestry, agriculture* and *oil and gas*.

Table 4: Industries That Are Important to Future Economic Growth



A majority of respondents (49%) identify the tourism industry first with future economic growth and the mining industry last (26%). Residents of Musquodoboit Valley (53%) are the most likely to believe tourism is the pathway to a better economy as are people who are over 35 years (50%); *middle and high income earners* and those who have lived in the region for less than 5years. The fishing industry is mentioned as the second (45%) most important industry for growth in the region. Again this view is most likely to be expressed by residents of Musquodoboit Valley (65%). It is also most often identified by females and respondents who are over 50 years of age, Those who mention mining as being important to growth tend to be residents of the Guysburough-Sheet Harbour riding, and are most likely to be males.

In sum, opinions of the industries which will foster economic growth do not favour mining. At this time residents of the three ridings do not perceive that this industry will contribute much to the economy. And despite the seasonal nature of tourism and the short term employment opportunities offered in this industry, respondents believe it is a good employer for the area.

AWARENESS AND SUPPORT OF THE MOOSE RIVER GOLD MINE PROPOSAL

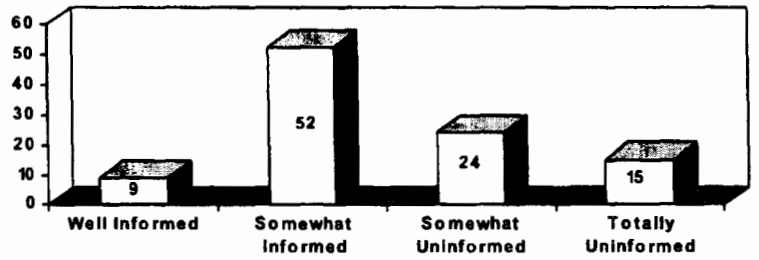
Two out of every three (66%) respondents have heard of the proposal to develop a gold mine in Moose River. The most familiar are residents of Guysburough-Sheet Harbour (Table 5) although a majority of the residents in each riding have heard of the project. Moreover, long term residents of the three areas, those who have resided in the areas for over thirty years are most likely to be familiar with the proposal (79%), correspondingly people who are *55 years* (76%) and older are also most familiar with it.

Table 5: Awareness of the Gold Mine By Area

Eastern Shore	Guysburough-Sheet Harbour	Colchester-Musquodoboit Valley
59%	75%	81%

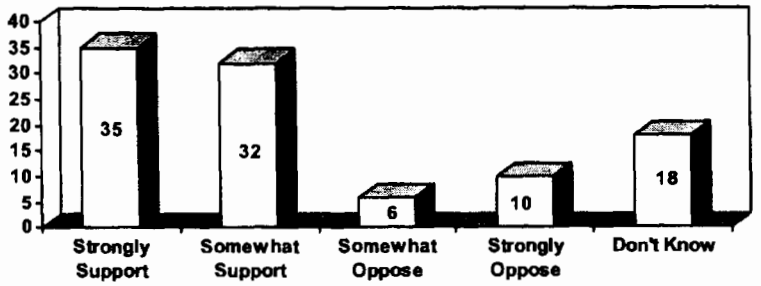
Table 6 also shows that a majority of respondents (61%) indicate they are informed about the proposed development of the gold mine. This belief is most likely to be offered by residents of Musquodoboit Valley (69%), *residents over 55 years*, and *middle income earners*. About 39% are uniformed and are most likely to be residents of Eastern Shore (44%), females (43%) *younger residents*. 18 –24 years old (48%) and higher income earners. Although these percentages reflect small numbers and offer only directional information.

Table 6: Feel Informed about the Proposed Gold Mine



A majority of respondents report that their main sources of information about the proposed gold mine are found in newspapers, as well as radio and television reports. This is true for all demographic groups in the sample. Word of mouth reports from neighbours and news from other residents is being reported by only one in every five respondents (20%) Moreover, meetings and community associations are reported as a source of information by a small minority of those interviewed (4%). Therefore, it appears that an effective public information campaign which may be contemplated, should be directed at news releases which might be carried by the media.

Table 7: Support and Opposition To The Gold Mine Proposal



Eastern Shore	Guysburough-Sheet Harbour	Colchester-Musquodoboit Valley
61%	75%	82%

There is clearly majority support for this project being expressed by residents of the areas studied. Again, over two thirds of respondents (68%) support the proposal (see Table 7). In fact over one in every three (35%) has indicated that they *strongly* support the proposal while only 15% are opposed to it. The Table also shows Colchester-Musquodoboit Valley residents are most likely to be in favour of further development of the mine. These are most likely to be *males* (70%), those who are *first time voters* (18-34 years) as well as lower and middle income earners of the area. Those who have lived in the ridings for over thirty years (79%) tend to be the strongest supporters of the project

Opponents of the development indicate they are concerned with its *environmental impact* (30%), *water quality impact* (25%) and possible *pollution* (21%). On the other hand it appears that they would be most likely to consider supporting the mine development if the developer **exceeds** provincial environmental standards and receives government approval (See Table 8). However, the table also indicate that 42%, the largest proportion of respondents would remain opposed to the project regardless of what is done.

Table 8: Opponent Would Switch If.....

	%
Developer meets all provincial environmental standards and received government approval.	13%
Developer exceeds all provincial environmental standards and received government approval.	38%
Both of the Above	1%
None of the Above	42%
Don't Know	5%

In summary, the proposal to develop the gold mine general appeals to the residents of the three ridings. The residents of Eastern Shore riding are the least supportive of the concept of the three groups of residents but nevertheless show that a majority (61%) are in favour of seeing it happen. Communications about the project will have to be carefully crafted as it appears that many opponents will remain that way regardless of how it is presented, mainly because they fear the environment impacts associated with mining projects. On the other hand, employment and the economy is likely to be a vote driver for all three ridings in the event of a provincial election. Communications relating to the project would be advised to emphasize the economic benefits of a gold mine, in a part of Nova Scotia that has few options. The belief in the environmental friendliness of tourism needs to be addressed as it is simply a seasonal industry that won't employ enough people to make it an alternative. That said, mining must be presented as less of environmentally unfriendly source of jobs, if it can be. The levels of public concern about the environment will dominate any media story on mining development projects in the near future and it will prove to be a difficult project to sell to public opinion in the Halifax area, where the media is located, even if job creation is a reasonable outcome of the development.