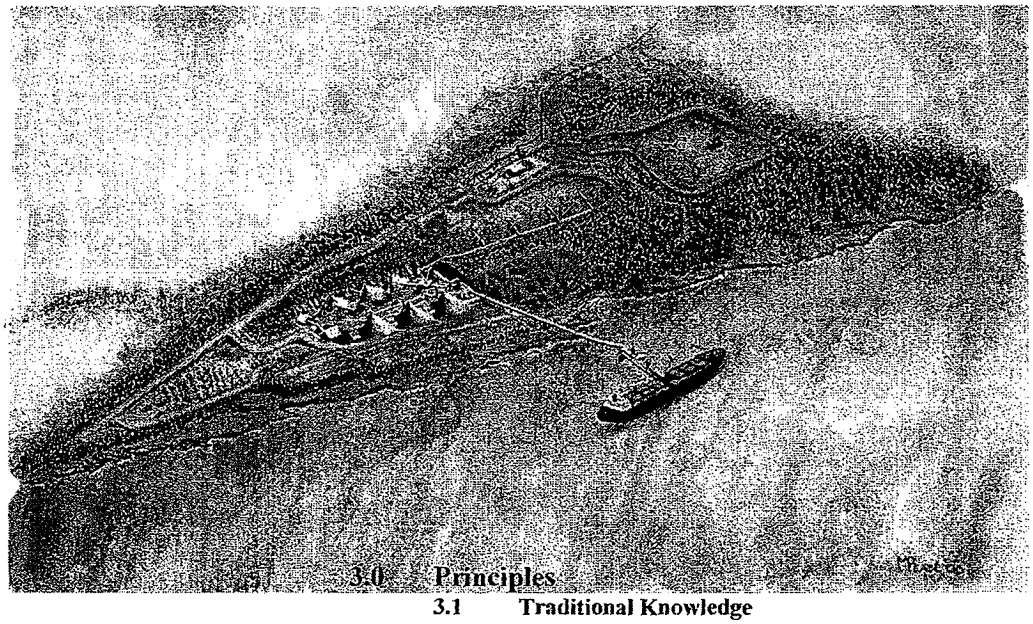
Whites Point Quarry and Marine Terminal

RESPONSES

VOLUME II



BILCON

February 2007

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C0629-001

3.1 Traditional and Community Knowledge

EIS Reference: Volume IV, Chapter 3, Section 3.1 and Volume V, Chapter 8, Section 8.2

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3.0 Principles

3.1 Traditional and Community Knowledge

3.1 Traditional and Community Knowledge

WP 1452 – Joint Review Panel

Traditional and Community Environmental Knowledge
The Panel encourages the Proponent to employ traditional knowledge more fully to resolve some of the data gap as identified through the information requests. For example:

9.1.7.1.5 Ocean Tides and Currents – This is an instance where the evidence could have been informed by local knowledge.

RESPONSE
Please refer to Bilcon's responses in Section 9.1.5 – Marine Environments and Physical Oceanography, in this document.

9.3.6.1 Aesthetics Research – Information on tourism and the recreational use of the waters in the Project area could have been supported with local knowledge.

RESPONSE
Please refer to Bilcon's responses in Section 9.3.3 - Aesthetics

WP 1542 - Health Canada

Traditional Knowledge and Social Impacts on First Nations' Quality of Life and Well Being

The TKS elaborated by the Confederacy of Mainland Mi'Kmaq states that: "the Mi'Kmaq have used Digby Neck and its surrounding waters since before the arrival of Europeans and continue to use the area for traditional purposes to this day" (Appendix III, Tab #16 – Confederacy of Mainland Mi'Kmaq 2005, page 3), and "there is significant traditional current Mi'Kmaq use in Oositookum (Digby Neck) and its surrounding waters" (page 21). No further information is provided regarding the potential impact the project site itself may have on the traditional use of land for camping, harvesting of wood, stones, clay, food plants, berries, wild fruit, quills, seashells, or the hunting of ducks and deer, or the use of the surrounding waters to fish for haddock, lobster, halibut, urchin, trout, Pollock, mackerel, herring scallop and crab (Appendix III, Tab #16 – Confederacy of Mainland Mi'Kmaq, 2005, page 21).

Realizing previous consultation difficulties encountered by the proponent, Health Canada would like to see more information about whether the project may limit access to traditional hunting/gathering or fishing grounds used by local First Nations people.

RESPONSE
The EA analyzes and documents the effects of the Project on natural and socio-cultural environment features. The EA concludes that, following the application of mitigation measures, no significant adverse effects are expected to result from the proposed Project

activities. This involves VECs that are of particular concern for First Nations such as fishery resources in the intertidal and nearshore environments as well as contaminants in marine and land food sources.

WP 1630 - Environment Canada

Item #5 Consideration of Traditional Ecological knowledge and Current Use of Lands and Resources for Traditional Purposes by Aboriginal Peoples

Information Request
Provide clarification on status of First Nations consultations. Provide clarification on how the Mi'kmaq Knowledge Study will be incorporated into the analysis of potential project impacts as well as proposed environmental management and mitigation measures.

The use and respect for traditional knowledge and community environmental knowledge represents one of the principles applied by the EIS (see EIS, Vol. IV, Section 3.1). To obtain traditional knowledge and community environmental knowledge, Bilcon has undertaken extensive consultation over a four-year period. The consultation efforts involved government agencies, municipalities, stakeholders, First Nations and the public at large (see EIS, Vol. IV, Section 3.2, and Section 5). Purpose of the consultation was:

- To inform the public about Bilcon's proposal;
- To identify Project-related issues and concerns; and
- To solicit information on local environmental features and conditions.

Overall objective was to engage in a dialogue with interested parties in order to resolve issues and concerns and advance the Project proposal that avoids and minimizes adverse effects and maximizes beneficial effects. Public involvement was facilitated through such mechanisms as open house events, newsletters, and Community Liaison Committee meetings. To solicit information related to traditional knowledge, approximately 60 interviews with community members were conducted in 2005. These efforts and the outcome of the interviews are documented in the Digby Neck and Islands Traditional Knowledge Consultation Report (Reference Documents, Vol. IV).

The outcome of the consultation is documented in the EIS (Vol. IV, Chapter 5) and information obtained through the process has been extensively used throughout the preparation of the EIS.

Bilcon is committed to continuing with the involvement of all interested parties and First Nations throughout Project planning and implementation phases and will continue to incorporate traditional knowledge and community environmental knowledge as it becomes

available. For example, Bilcon has had several informal meetings with fishers from Digby Neck.

Status of First Nation Consultations
Bilcon has been attempting to consult the aboriginal community since the fall of 2002. The objectives have been to inform the aboriginal community about Bilcon's proposal, to learn about the community's Project-related concerns and to solicit information pertaining to traditional ecological knowledge and use of lands and resources for traditional purposes.

Contact between the aboriginal community and Bilcon included two information sessions (April 2004 and January 2005), extensive written and verbal communication, and repeated requests for a Mi'kmaq Knowledge Study (MKS). A chronology of contacts and correspondences is presented in Chapter 9.3.3. (EIS, Vol. VII).

On January 10th, 2006 a Report entitled "*The Mi'kmaq Use of Oositookum (Digby Neck), Its Surrounding Waters, and The Mainland Shore of St.Mary's Bay*" was submitted to the Panel by CMM.

This report is presented in Appendix 16 of the EIS.

Integration of Mi'kmaq Knowledge Study
Bilcon intends to integrate findings of the MKS in all phases of the Project. It is envisaged that this will be accomplished through:

- On-going dialogue with the aboriginal community and consultation throughout all Project phases;
- Liaise with First Nations to ensure that traditional knowledge is incorporated in environmental management and mitigation, and ensure that the First Nation is fully informed of Project related activities;
- Archaeological site survey (already completed: EIS Ref.Vol.VI, Tab 35);
- Implementation of mitigation/monitoring measures related to archaeological /historical resources (see EIS Chapter 9.3.2)
- Implementation of mitigation/monitoring measures related to bio-physical environmental components (e.g., terrestrial habitats, intertidal and nearshore marine environments; refer to EIS, Vol. VI, Chapters 9.1 and 9.2;
- Provision of monitoring results to the aboriginal community;
- Provision of job opportunities in site development, quarry operation and environmental management aspects of the Project for aboriginal community members; and
- Provision of opportunities for active involvement in on-site habitat management, site reclamation, and forest management on adjacent Bilcon lands.

3.1 Traditional and Community Knowledge

Bilcon is committed to exploring further opportunities for implementation of the Mi'kmaq Knowledge Study in communication with the Aboriginal Community. On September 7, 2006, Bilcon wrote to Michael Cox, Director, Lands, Environment and Natural Resources, of The Confederacy of Mainland Mi'kmaq requesting clarification of the location of the historic Indian Hill Camp. Not having received a response, Bilcon wrote another letter on October 26, 2006 again requesting information on the location of the Indian Hill Camp. To date, Bilcon has not received a response.

WP 1441 - Confederacy of Mainland Mi'kmaq

1. In Section 6.4.4 Stakeholders there is no mention of First Nations in the Section. First Nations needs to be added so that meaningful participation in the panel process will be realized.

2. In Section 2.0 Information Disclosure and Public Consultation, Bilcon states that they sought to carry out consultations. Please be advised that letter, phone calls, e-mail, fax's do not constituted consultation. In our view the consultation for this project needs to be completed by the Government of Canada and Nova Scotia. To initiate this, Bilcon was advised that the Governments need to contact the Mi'Kmaq Rights Initiative. Consultation does not rest with the proponent. The section also talks to a study on traditional community knowledge. Please be advised that this study did not involve First Nations. This section spells Mi'Kmaq wrong and initiative wrong. Also for clarity, CMM provided the report titled "Mi'Kmaq Use of Oositookum (Digby Neck), its Surrounding Water, and the Mainland Shore of St. Mary's Bay" to the Panel.

3. Table C-1 Commitments Table -9.1, 9.2, 9.4-CMM requests to be involved in the monitoring of archaeology, advised of the training provided, and be involved in the communication strategy in the event that archaeological resources are identified. CMM is also interested in being involved in the underwater archaeology.

4. Table C-1 Commitments Table 12.4 – Bilcon should consider involving the Mi'Kmaq as observers for marine mammals and species at risk.

5. Table C-1 Commitments Table 17.1- it states that "Bilcon will continue its efforts to involve the Design First Nations in the project'? CMM request clarification on what this means.

6.8.2.4 Specific Activities Meetings with Indigenous Peoples – Bilcon is in error when they suggest that they did not provide any further public consultation because of the study (mentioned above) was ongoing. The study provided by CMM is not consultative in nature- rather the intent of the study is to provide potential Mi'Kmaq concerns with the project related to Mi'Kmaq use and occupation. The proponent was advised of this several times

and in no way should have limited or impacted Bilcon's work plan. The section also states that Chapter 9.3.5 has additional information but the section doesn't exist with the EIS. This section needs to be dramatically changed to be accurate and CMM takes exception to its current content.

RESPONSE
Please see Response to Environment Canada WP 1630 Item #5 previous pages.

WP 1625 – Partnership for Sustainable Development
EIS Guidelines – Section 3.0 - Principles
Deficiency Statement 2
EIS Guidelines
3.1 – Use and Respect for Traditional and Community Environmental Knowledge – The EIS Guidelines require the Proponent to make best efforts to incorporate traditional knowledge into the EIS or facilitate the presentation of traditional knowledge to the Panel.
EIS
Traditional knowledge is mentioned a number of times in section 9.3 of the EIS. However, section 9.1 on Physical Environment provides only one reference to the use of traditional knowledge. Section 9.1.7.1 states, "Traditional knowledge indicates floating ice has been observed in the Bay off Whites Point, presumably from ice break-up in the inner Bay of Fundy and the Annapolis Basin." Section 9.2 on the Biological Environment includes no references to traditional knowledge. This does not represent 'best efforts' by the Proponent to incorporate traditional knowledge into the EIS.
There is no information in the EIS that demonstrates effort by the Proponent to facilitate the presentation of traditional knowledge to the Panel.

RESPONSE
Bilcon gathered Traditional, Community, and Environmental Knowledge over almost a four-year period from Traditional Knowledge interviews, CLC, open houses, and individual consultations. The knowledge gathered was used throughout the Environmental Impact Statement and reference to the interviews and minutes contained in the EIS clearly demonstrates that that knowledge was used throughout the EIS.

Please refer to response to the Panel and Environment Canada.

Deficiency Statement 45
EIS Guidelines
8.1 – Methods – "Identify which studies included the assistance of communities and who was involved, specify and reference sources for any contributions based on traditional knowledge"

3.1 Traditional and Community Knowledge

EIS

8.1 – Methods – There is no clear indication in section 8.1 of the EIS of the assistance of communities in studies undertaken for the EIS. The EIS states that, "All studies including scientific, engineering and traditional knowledge are referenced in relevant sections of the EIS."[99] References to traditional and community knowledge studies may be made in other sections of the EIS but this approach makes it almost impossible for the reader to evaluate how the Proponent used those studies to inform their methodology. The studies and sources should be clearly referenced in the Methods section of the EIS in order to meet the requirements of section 8.1 of the EIS Guidelines.

RESPONSE

Please refer to Partnership for Sustainable Development's Statement #2 above on Traditional Knowledge.

3.2 Public Involvement

EIS Reference: EIS Volume IV Chapter 3, Section 3.2

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3.0 Principles

3.2 Public Involvement

3.2 Public Involvement

WP 1452 - Joint Review Panel
Public Involvement
Public involvement needs to go beyond disseminating information and surveying respondents. The Panel expects the Proponent to identify meaningful opportunities for the public to participate in the assessment process (e.g. in the identification of VECs) and in plans for the Project mitigation and monitoring.

The Community Liaison Committee established previously under provincial regulations, struggled to operate effectively. The Proponent identifies a significant role for a renewed CLC in monitoring of the Project. Explain the steps the Proponent will take to enhance the effectiveness of the CLC as an independent advisory committee and to improve the climate for public involvement in Project assessment.

Appropriate measures for conflict resolution should be included and defined in all the plans for mitigation and follow-up.

RESPONSE
Bilcon agrees that public participation involves more than public disclosure of information and surveying respondents. As a point of reference, the following are the definitions of public consultation and public disclosure which the Company uses and will continue to use to engage and inform the public:

Public Consultation
A process of engaging affected people and other interested Parties (stakeholders) in open dialogue through which a range of views and concerns can be expressed in order to inform decision-making and help build consensus. To be meaningful, consultation should begin early on in the environmental assessment process by identifying project stakeholders.

Public consultation seeks to integrate the views of all interested individuals or groups into the decision-making process, to prevent or minimize adverse impacts and, where adverse impacts are unavoidable, to manage them in a manner that responds to people's conditions, needs and wishes. Discussions between the public and those responsible for the planning, development and operations of this project must be established to gain a better, more informed understanding of each other's concerns and needs. No one way exists to undertake public consultation. It can and should take a variety of forms to suit the informational and communication needs of any particular situation.

Public Disclosure
The process of making information available to affected people and other interested parties/stakeholders regarding all aspects of a project including the project description, planning process, environmental and socio-economic issues of projects. Disclosure of

3.2 Public Involvement

information should be done in a timely manner, in publicly accessible locations and in a language and format readily understood by affected groups.

Public consultation and disclosure have been implemented throughout the course of the EA process on the basis of the Public Consultation and Disclosure Plan provided in Chapter 8.2 of the EIS.

Meaningful opportunities for participation were provided through the program by:

- Adequate timing of all activities and associated notices and advertisements
- Application of a wide variety of communication tools and menas for entering dialogue and obtaining information
- Providing for a wide public involvement in the discussion of issues that are key to the environmental assessment.

The dates of the various activities are documented in Section 8.2. Communication tools for informal and formal input into the project include the following means:

- issues scoping meetings
- public meetings
- individual meetings and interviews
- an open door policy at the Digby office
- open house events
- quality of life survey
- attitude survey
- exit survey
- individual component studies
- e-mail
- telephone
- fax
- letters

Issues considered key to the EA process included the Project Description VECs and mitigation measures. Among others these three topics were subject to intense public debate during the issue scoping meetings, public meetings and open house events. The information obtained through these events served together with the Panel EIS Guidelines as the key input to the establishment of the VECs (please see Bilcon's response to WP 1452 Joint Review Panel in Section 4.1 EIS Format).

3.2 Public Involvement

Effectiveness of Community Liaison Committee

Bilcon agrees that the CLC should be reinvigorated and provided with a significant role during project implementation and the environmental monitoring. Important aspects to establish/improve the effectiveness of the CLC involve:

- Wide representation of community interests and stakeholders
- Provision of sufficient operating funds (through Bilcon)
- Development of a terms of reference in consultation with all CLC members
- Provision of monitoring results
- Provision for active involvement
- Establishing open dialogue
- Involvement of a facilitator trained in conflict resolution

The roles of the CLC and conflict resolution measures are discussed in detail in answering questions on Section 8.2 - Public Consultation.

3.3 Sustainable Development

EIS Reference: EIS Volume IV Chapter 3, Section 3.3

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3.0 Principles

3.3 Sustainable Development

3.3 Sustainable Development

WP 1630 - Environment Canada
Item #1 Applying Sustainability Principles
Information Request
Analyze the Project's net contribution to sustainability using an appropriate evaluative framework and sustainability indicators taking into account applicable agreements, policies and programs as well as the stated views and concerns of affected communities and stakeholders.

RESPONSE
The EIS guideline lays out the Panel's criteria for the evaluation of the Project's contribution to sustainability. These criteria are:

- the extent to which the Project makes a positive overall contribution toward the attainment of ecological and community sustainability, both at the local and regional levels;
- the effort made to enhance positive effects of the Project on the physical, biological and human environment as well as mitigation of adverse effects;
- how the planning, design and operation of the Project will strengthen local and regional capacities and opportunities to a achieve a sustainable future;
- how monitoring, management and reporting systems will attempt to ensure continuous progress towards sustainability; and,
- appropriate indicators to determine whether this progress is being maintained

Table 1 on the following page evaluates the Project's contribution to sustainability based on the above criteria.

3.3 Sustainable Development

Table 1: Project Contribution to Sustainability

	Factor	Project Contribution
1	**Overall contribution toward sustainability:** the extent to which the Project makes a positive overall contribution toward the attainment of ecological and community sustainability, both at the local and regional levels;	The proposed Project is planned to have a life of 50 years. It is anticipated that over the life of the Project positive contributions will be made as follows: Community Sustainability: • enhancement of skilled labour force; • provision of employment opportunities; • reduced out-migration (with the ability to employ local people, it is expected that more of the local population will remain in the local and regional area); • increased local tax base (will contribute to sustained municipal services); Ecological Sustainability • maintenance of preservation zones for wildlife (both flora and fauna); • gradual site rehabilitation with creation of new habitat.
2	**Enhancement of Positive Effects:** the effort made to enhance positive effects of the Project on the physical, biological and human environment as well as mitigation of adverse effects;	The project is expected to result in a number of positive effects. The proponent is committed to enhance these positive effects to the extent possible: Bio-physical environment • Continuous/gradual site reclamation as lands become available (as opposed to reclamation at the end of the project life) • involvement of local interest groups and First Nations communities to be involved in reclamation concepts for habitat management. Human environment • Commitment to utilizing local labour market and suppliers for the quarry construction and operation; To mitigate against adverse effects a wide range of mitigation measures have been developed related to each of the bio-physical, economic and socio-cultural VECs. For a complete listing refer to the EIS Report Volume VII, Chapter 11.5; Table ECM-1 and revised Table 2 Mitigation-Commitment Summary in Section 11. Mitigation of Adverse Effects • Adverse effects will be mitigated in keeping with industry and regulatory standards.

3.3 Sustainable Development

	Factor	Project Contribution
3	**Local and Regional Capacities:** how the planning, design and operation of the Project will strengthen local and regional capacities and opportunities to achieve a sustainable future;	The Project is expected to support local and regional capacities as far as local skills, knowledge base and technology is concerned. This contributes to the local and to some degree the regional economic sustainability. Future opportunities to strengthen sustainability are expected from the decommissioning of the operation and the site development for conservation and/or recreational purposes. Local and Regional Capacities • The design and operation of the proposed Project will include the equipment most commonly used in the industry today. This will allow workers exposure to the most modern of facilities and equipment and enhance their knowledge base which can be applied to other similar operations elsewhere in the industry and thereby build local and regional capacity in this field. Opportunities for Achieving Sustainability: • Development and implementation of a decommissioning plan that contributes/ enhances local sustainability; • Final decisions for decommissioning will include feedback from the community.
4	**Monitoring, Management and Reporting:** how monitoring, management and reporting systems will attempt to ensure continuous progress towards sustainability;	Monitoring The proponent is committed to implement an extensive monitoring program involving • Compliance monitoring (compliance with requirements established by federal and provincial regulators) • Performance monitoring (effectiveness of mitigation measures; environmental auditing) Details of the monitoring programs are presented in the EIS Report Vol. VII, Chapter 11.4, Table ECM-2 and Table ECM-1 and revised Table 1 Follow-up and Monitoring Programs-Summary in Section 11. Management Monitoring information (see above) coupled with the implementation of adaptive management will ensure timely response to changing conditions as they arise. Reporting Reporting and release of information on environmental performance is considered essential in providing for accountability, transparency, and corrective action if required

3.3 Sustainable Development

	Factor	Project Contribution
		and involves such efforts as • monitoring reports; • environmental auditing reports; and • environmental complaint record.
5	**Indicators:** appropriate indicators to determine whether progress towards sustainability is being maintained	The Proponent is committed to maintaining its operations at or above the North American industry standard. As such, designated company personnel will be aware of industry standards, will participate in industry associations and will undergo an internal audit of its policies once per year. Environmental indicators (examples – see full monitoring program proposed in EIS Report Vol. VII, Chapter 11.4, Table ECM-2) and revised Table 1 Follow-up and Monitoring Programs-Summary in Section 11. • Water discharge quality • Concentrations of contaminants in sediments (on and off site) • Contaminants in terrestrial and marine biota • Vessel collisions with marine mammals Economic indicators • Application for compensation for lost/damaged gear • Complaint records from tour boat operators • Number of employees • Tax contributions to local, provincial and federal government levels • Property values in site vicinity Human – environment indicators • Complaint records • Company records on training and education programs • Contaminants in country foods • Health and safety records • Contaminants in terrestrial and marine biota

3.3 Sustainable Development

Item #3 Taking a Long-Term View
Information Request
Explain how the proposed decommissioning plans, and infrastructure that remains on the site, would support future land uses and strengthen local and regional capacities and opportunities to achieve a sustainable future.

RESPONSE
Please refer to the Revised Project Description, Section 7.10 – Reclamation and Decommissioning.

WP 1625 – Partnership for Sustainable Development
Deficiency Statement 4
EIS Guidelines
3.3 - Sustainable Development - 'Promotion of sustainable development is a fundamental purpose of environmental assessment..." "...the Panel will evaluate the Project's contribution to sustainability on the basis of: the extent to which the Project makes a positive overall contribution towards the attainment of ecological and community sustainability, both at the local and regional scales'.
12.7 - Residual Impacts - 'Discussion of residual impacts and significance should indicate how the Project might contribute to sustainable development in the area affected by the Project."
EIS
Executive Summary, Section 3.3 and other sections - EIS falls well short in the evaluation of sustainability. The EIS appears not to include any explicit discussion of efforts to identify and address issues particularly relevant to sustainability concerns.
The key points raised in the Panel's EIS Guidelines discussion of the sustainable development principle seem to have been almost entirely overlooked. The Proponent should revise the EIS to address these deficiencies.

RESPONSE
Please refer to Response to Environment Canada in this Section.

3.4 Ecosystem Approach

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EIS Reference: Volume IV, Chapter 3 Principles - 3.4 Ecosystem Approach

3.0 Principles

3.4 Ecosystem Approach

3.4 Ecosystem Approach

WP 1431 - Joint Review Panel

The Ecosystem Approach

The Panel believes that an ecosystem approach requires the Proponent to identify the links and relationships between ecosystem components rather than treat them simply as individual components. The EIS should provide such an appropriate analysis and it should consider how the Project would potentially affect ecosystems and individual species.

The Panel recognizes that the boundaries of ecosystems may seem somewhat "arbitrary" but expects the Proponent to identify and describe suitable boundaries for its analyses in the EIS

RESPONSE

Bilcon's understanding of an ecosystem approach and its application in the EIS is presented in Section 3.4, Vol. IV of the EIS Report. The understanding of the concept and its application are both based on the information provided on the Convention of Biological Diversity web site suggested by Environment Canada in Item #2 of its review comments http://www.biodiv.org/convention/default.shtml).

It is Bilcon's belief that the EIS addresses environmental effects, mitigation and monitoring in compliance with the principles of the ecosystem approach outlined in the EA Guidelines. For the benefit of a well structured document and in an effort to explicitly address the environmental components listed in the EIS Guidelines, the EIS report is structured by VECs. This does not imply that VECs are treated as individual, disconnected items.

In response to the Panels' information request, key aspects of the approach applied in the EIS are highlighted here together with supplementary information to demonstrate links and relationships between ecosystem components as requested by the Panel.

Linkages and Relationships

The EIS guidelines list four aspects that the panel expected to be evaluated (Fournier 2005, p 11). These four aspects all relate to ecosystem links and relationships. They are listed in Table 1 together with information on how the particular items have been addressed.

3.4 Ecosystem Approach

Table 1: Ecosystem Approach Followed by the EIS

Ecosystem Considerations (EIS Guidelines)	Addressed by the EIS
The interconnections between the physical environment, the biological environment and the human environment	• Interconnections between the listed environmental components have been taken into account in the EIS. Overall, the EIS is based on an understanding of project-environment interactions involving a source – pathway – receptor relationship. The source for environmental change is tied to a certain Project activities and/or works. The environmental change maybe directly (e.g., removal of habitat) or indirectly via a pathway (e.g., changes in habitat as a result of changes in groundwater levels). The ecosystem approach requires the recognition of these linkages or pathways. Effects on VECs must take into consideration the potential changes in other VECs that may act as pathway on one or more receiving VEC. Typically, the Human Environment VECs are the ultimate receiver of changes in the physical and biological environment (e.g., effects on groundwater levels may affect habitat, which may affect hunting as a traditional use of natural resources. • For Bilcon's understanding of the interconnections between the physical, biological and human environment refer to the attached Linkage Figures (Figures 1 to 7).
The links between terrestrial, coastal zone, and oceanic processes	• As demonstrated in Figures 1 to 7 these linkages have been recognized. They have been addressed by Bilcon for example through a discussion of o Effects of on-site generated storm and waste water into the marine environment; o Changes in terrestrial vegetation and their effects on near-shore visual quality (as experienced by tour boat operators); o Effects of the marine terminal on marine water quality (e.g., turbidity) and the effects on coastal fish resources and associated economies; and o Effects of blasting activities in the terrestrial environment and their effects on marine mammals in the coastal zone. • Further the response to various review comments (e.g., IR-2 related to Section 9.1.2 Geology; 9.1.4 Surficial Geology and

3.4 Ecosystem Approach

	Soils, 9.3.19 Human Health – Marine Contaminants) related to the effects of copper concentration in site run off on terrestrial and marine biota explicitly discusses the potential for adverse effects through interactions between the terrestrial and the coastal zone.
The interchanges between the subsurfaces, the surface, and the atmosphere	• These linkages are communicated in for example in Figures 1, 2, and 3. • Examples for consideration of such linkages in the EIS report are o the evaluation of the potential for changes to groundwater flow and the resulting impacts on drinking water wells of near-by residents; o the evaluation of the potential for changes to ground and surface water flow and the resulting impacts on adjacent Little River watershed; o the evaluation of surface activities (use of combustion engines; vegetation removal) on global climate changes due to changes in atmospheric characteristics;
The repercussion of potential local impacts at a regional, national, global level	• These cause – effect linkages have been taken into consideration in the EIS particularly with respect to two VECs: o Climate; and o Marine Aquatic Environment – marine mammals / marine species at risk. • Predicted local greenhouse gas (GHG) emissions have been discussed in context of current GHG emission quantities on regional level and an understanding of potentially global implications. • Accidental collisions between vessels exporting the basalt from the Project site and marine mammals such as the Right Whale have been discussed. Such local accidents are evaluated in the context of shipping activities in the Bay of Fundy region and the effects on the entire regional Right Whale population.

3.4 Ecosystem Approach

To demonstrate Bilcon's understanding of the interconnections between the physical, biological and human environment the attached Linkage Figures 1 to 7 have been developed. They represent a simplified schematic of ecosystem interaction. For practical purposes, the figures only show key linkages. The intent is to communicate the overall principle rather than all plausible interconnection between Project activities and VECs. The project works and activities considered are summarized in Table 2.

3.4 Ecosystem Approach

Table 2: Project Works and Activities

Project Phase	Works and Activities
Construction Phase	Quarry and terminal site clearing
	Development of infrastructure:
	• Access and service road,
	• Electrical power supply
	• Fuel storage
	• Water supply
	• Site water management and drainage
	• Sediment retention ponds
	Construction of buildings and plant facilities:
	• site offices
	• stores
	• warehouses
	• maintenance shops
	• crushing, screening and wash plant
	• lay down, reclaim and materials handling and transfer facilities
	Construction of marine shipping terminal incl. mooring dolphins
	• buoys
	• pile supports
	• aggregate conveyors and
	• ship loader
Operation Phase	Clearing and quarry face development
	Drilling and blasting (aggregate production)
	Crushing, screening and wash plant operation
	Aggregate stockpiling, reclaim and loading
	Storm and wastewater management
	Vessel transport
	Quarry reclamation
	• slope reduction
	• slope stabilization, re-vegetation
Shutdown and Reclamation	Removal of quarry plant and buildings
	Removal of site infrastructure including marine terminal
	Site reclamation (incl. slope reduction, stabilization, re-vegetation)

3.4 Ecosystem Approach

Ecosystem Approach and Boundaries

The application of an ecosystem approach entails the recognition of VEC-specific boundaries. This has been implemented in the EIS for the Whites Point Quarry. Table 3 illustrates the various boundary considerations that Bilcon applied in the baseline characterization and/or effect assessment.

Table 3: VECs and Associated Boundaries

	VEC	Boundaries Considered in EIS							
		Global	Region	Local	Site plus nearest residences	Site	Inter-tidal zone (at Project Site)	Near-shore zone (at Project Site)	Bay of Fundy
1	**Climate**	✔	✔	✔		✔			
2	**Geology & Hydrogeology**								
	Basalt Rock		✔	✔		✔			
	Residential Well Water Yields				✔	✔			
	Residential Well Water Quality				✔	✔			
3	**Surficial Geology and Soils**			✔	✔	✔			
4	**Surface Water**								
	Little River Watershed			✔		✔			
	On-site Surface Water Drainage/Wetlands			✔		✔	✔	✔	
	On-site Surface Water Quality			✔		✔	✔	✔	
5	**Physical Oceanography**								
	Turbidity					✔	✔	✔	
	Tides and currents					✔	✔	✔	
6	**Air Quality**			✔	✔	✔			
7	**Noise and Vibration**			✔	✔	✔			
8	**Light**			✔	✔	✔	✔	✔	
9	**Terrestrial Ecology**								
	Habitat (incl. plants, wildlife)			✔		✔			
	Wetlands			✔		✔			
	Migratory Birds		✔	✔		✔	✔	✔	
	Species at Risk		✔	✔		✔			
10	**Aquatic Environment – Freshwater**								
	Fish Habitat			✔		✔			
	Fish Species			✔		✔			
11	**Aquatic Environment - Marine**								

3.4 Ecosystem Approach

	VEC	Boundaries Considered in EIS							
		Global	Region	Local	Site plus nearest residences	Site	Inter-tidal zone (at Project Site)	Near-shore zone (at Project Site)	Bay of Fundy
	Marine Fish Habitat (Intertidal, Nearshore)						✔	✔	
	Marine Mammals (incl. NARWCA)							✔	✔
	American Lobster						✔	✔	
	Marine Waterbirds						✔	✔	
	Marine Species at Risk ((fish, mammals, reptiles, waterfowl)						✔	✔	✔
12	**Heritage Resources**								
	Marine Archaeology					✔	✔	✔	
	Land Archaeology					✔			
	Heritage Properties			✔	✔	✔			
	Site History			✔	✔	✔			
13	**Aboriginal Land and Resource Use**			✔	✔	✔	✔	✔	
14	**Aesthetics**								
	On-shore (HWY 217)			✔	✔	✔			
	Bay of Fundy						✔	✔	
15	**Transportation**								
	Land			✔					
	Sea						✔	✔	✔
16	**Economy**								
	Employment		✔	✔					
	GDP		✔	✔					
	Municipal Taxes		✔	✔					
	Economy – Fishery (/Aquaculture)		✔	✔				✔	
	Economy – Fishery/Intertidal		✔	✔			✔		
	Economy – Fishery/Nearshore		✔	✔				✔	
	Economy – Tourism		✔	✔			✔	✔	
	Economy – Land Value		✔	✔	✔				
	Recreation			✔		✔			
17	**Socio-Cultural Environment**								
	Quality of Life		✔	✔	✔				
	Social Capital			✔					
	Commercial Patterns		✔	✔					
	Community Infrastructure; Institutional Capacity		✔	✔					
	Education, Training, Skills		✔	✔					

3.4 Ecosystem Approach

	VEC	Boundaries Considered in EIS							
		Global	Region	Local	Site plus nearest residences	Site	Inter-tidal zone (at Project Site)	Near-shore zone (at Project Site)	Bay of Fundy
	Infrastructure and Institutional Capacity		✔	✔					
18	**Human Health and Wellness**								
	Drinking Water Quality			✔	✔				
	Marine Contaminants						✔	✔	✔
	Land Contaminants				✔	✔			
	Country Foods			✔	✔	✔			

✔= Boundary considered in the EIS in baseline characterization and/or effects assessment

Figure 1: Linkages and Pathways between Project and VECs
Atmospheric Environment (climate, air quality, noise and vibration, light)

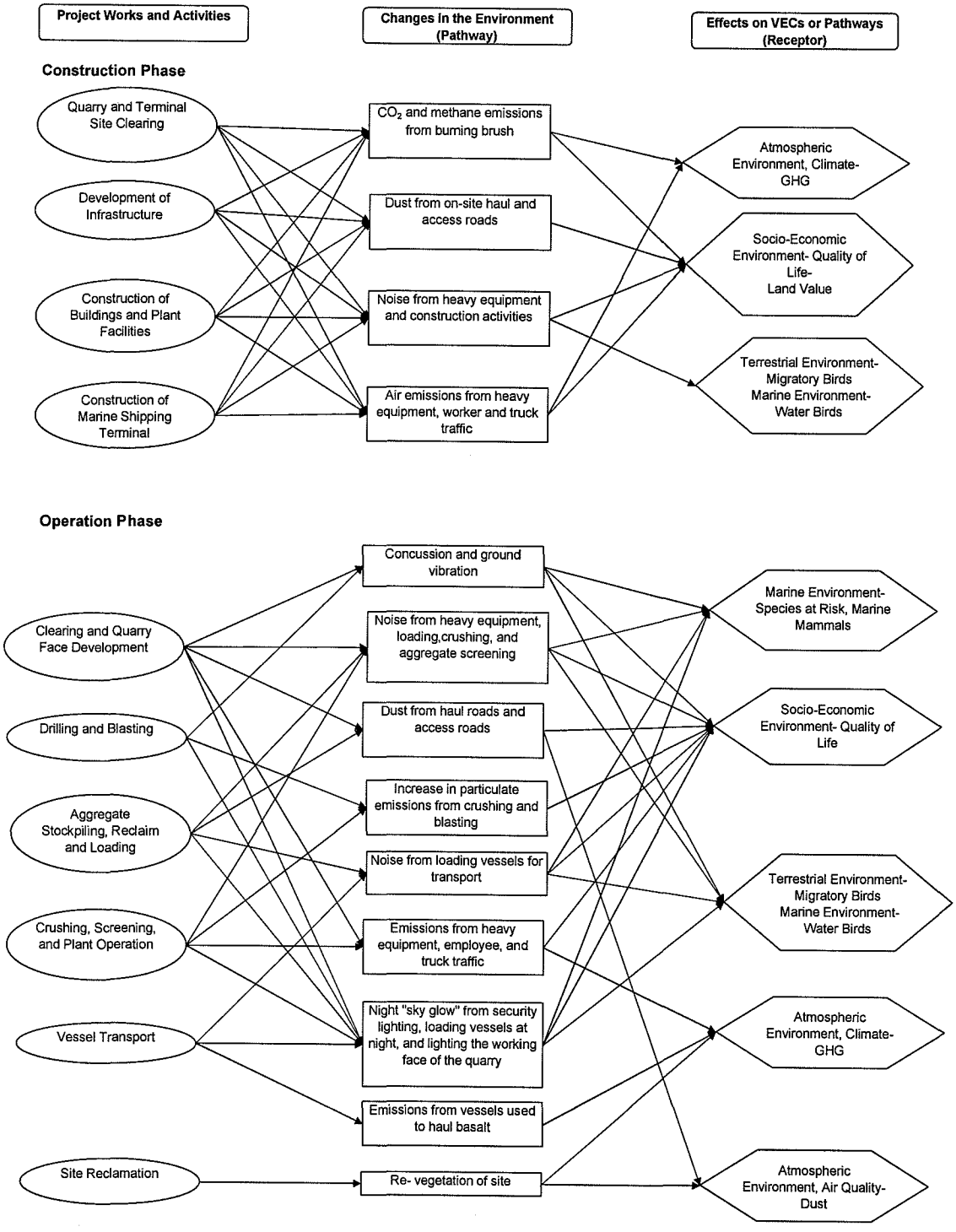


Figure 2: Linkages and Pathways between Project and VECs
Geological and Soil Environments (geology and hydrogeology, surficial geology and soils)

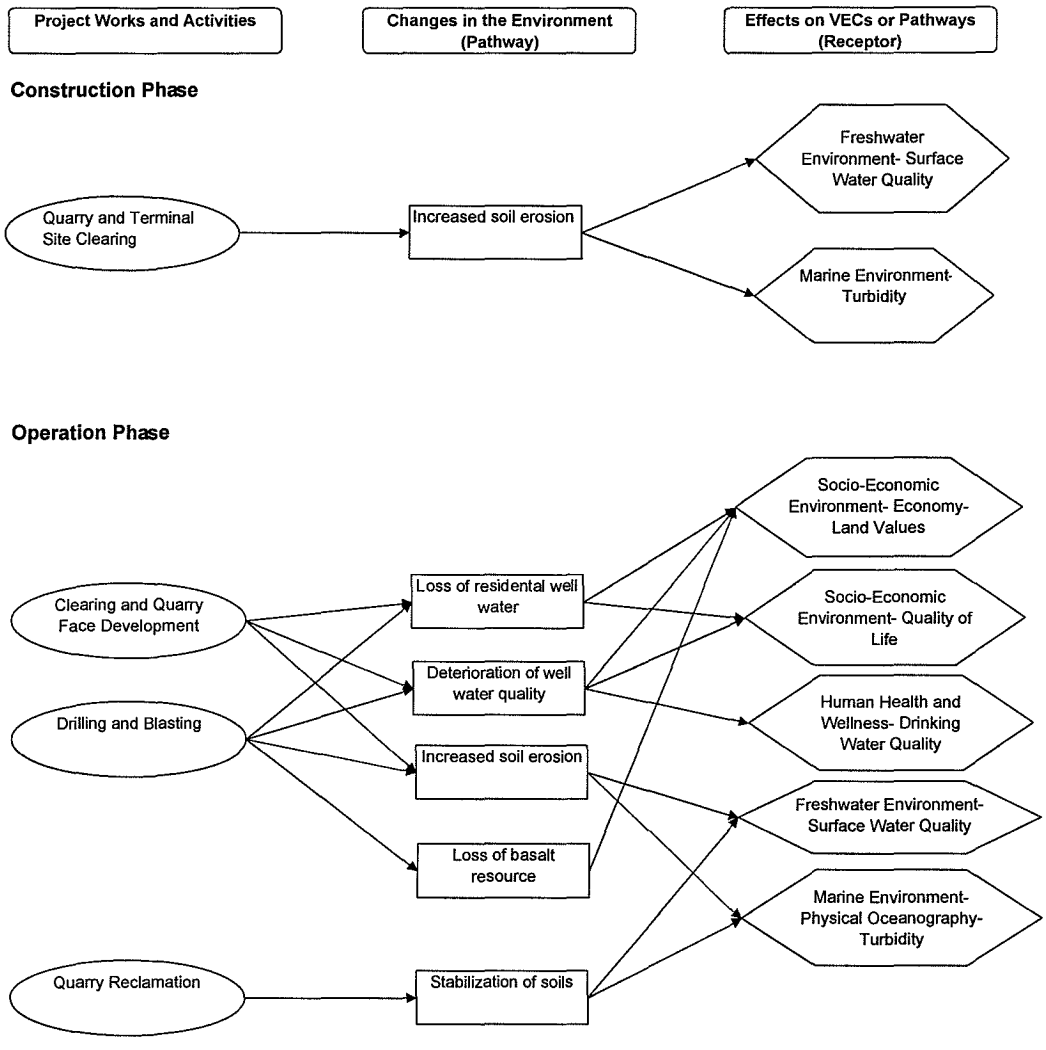


Figure 3: Linkages and Pathways between Project and VECs
Freshwater Environment (surface water, aquatic environment-fresh water)

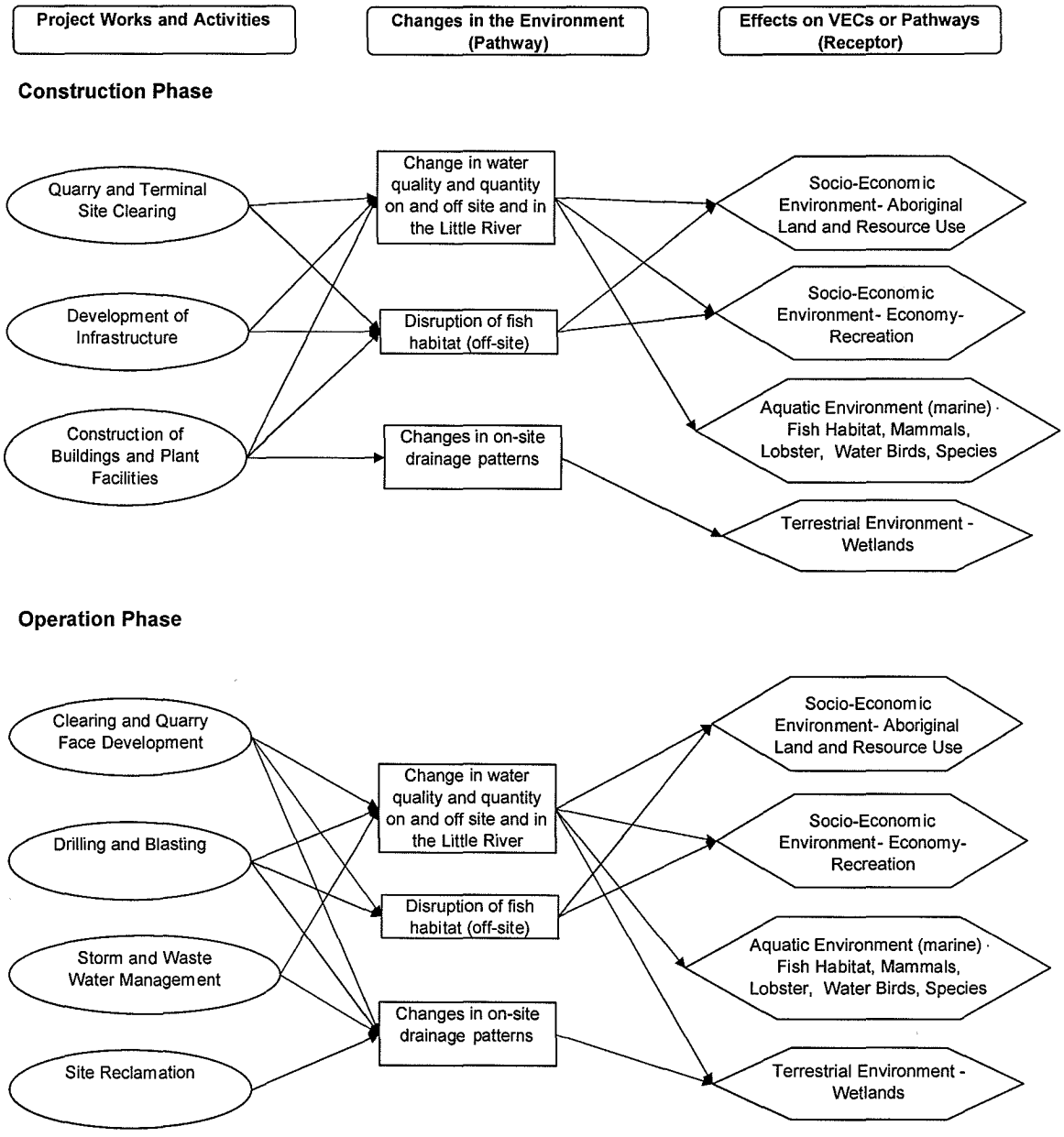


Figure 4: Linkages and Pathways between Project and VECs
Marine Environment (physical oceanography, aquatic environment-marine)

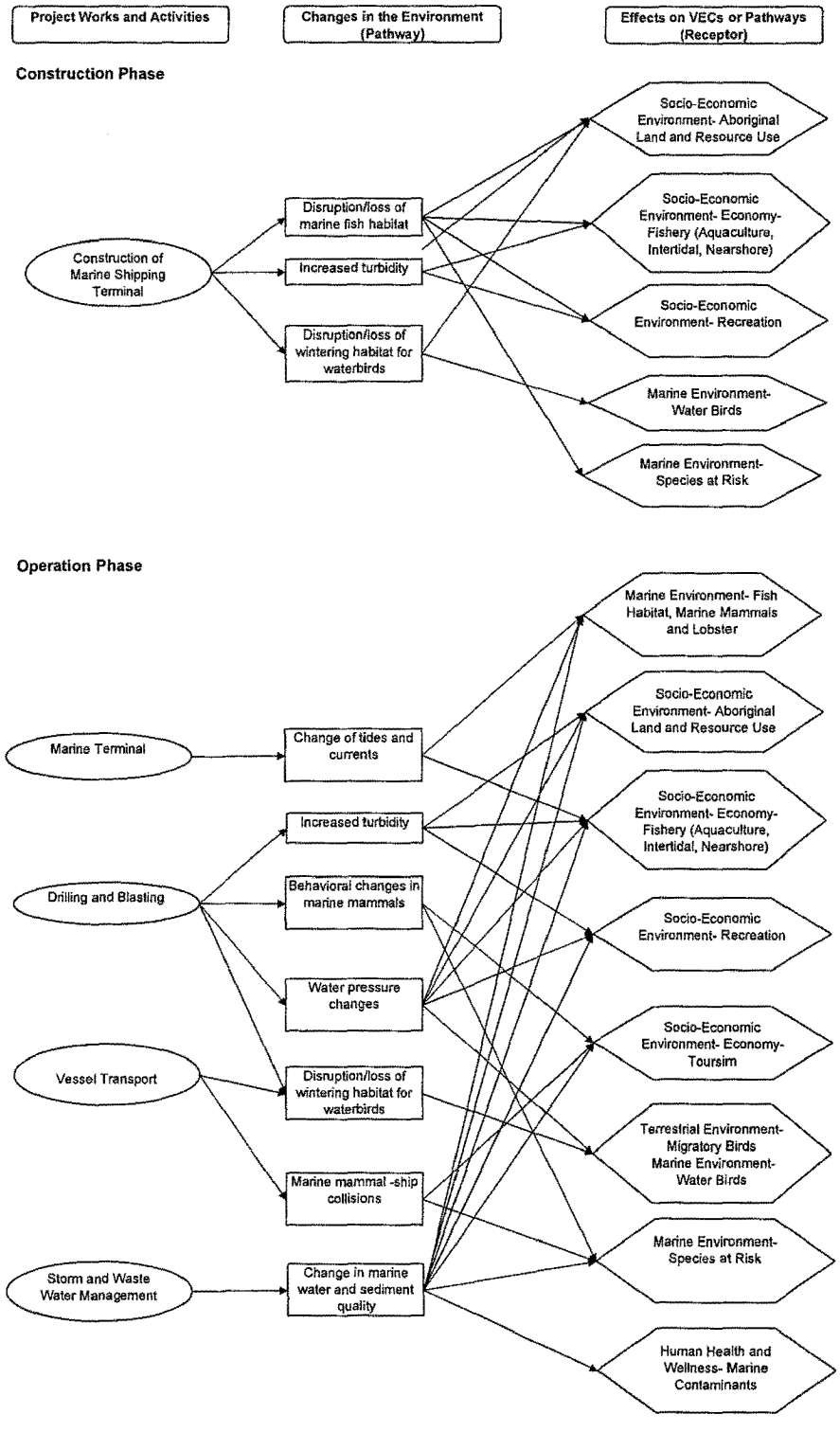


Figure 5: Linkages and Pathways between Project and VECs
Terrestrial Environment (terrestrial ecology)

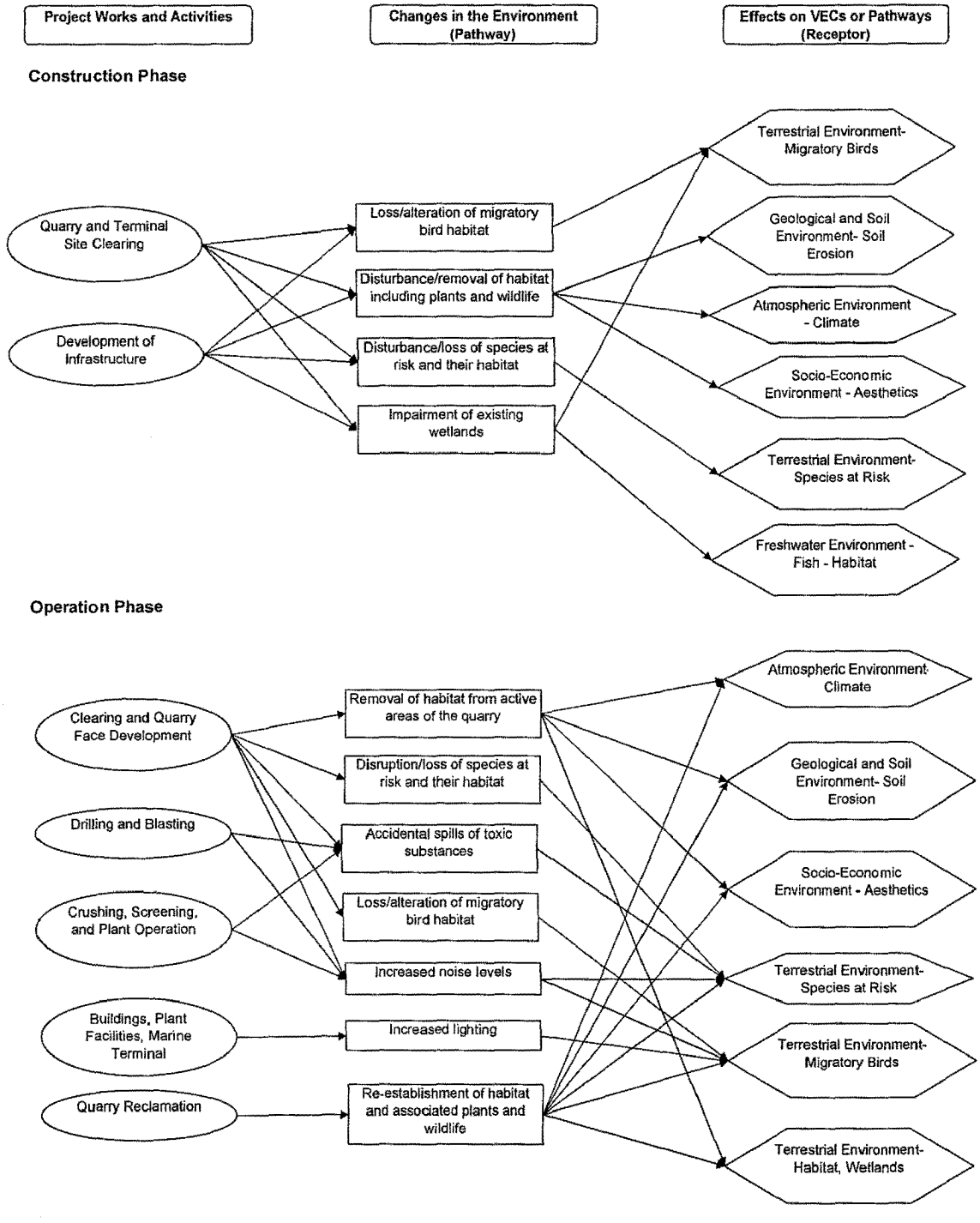


Figure 6 : Linkages and Pathways between Project and VECs
Socio-economic Environment (heritage resources, aboriginal land and resource use, transportation, economy, socio-cultural environment)

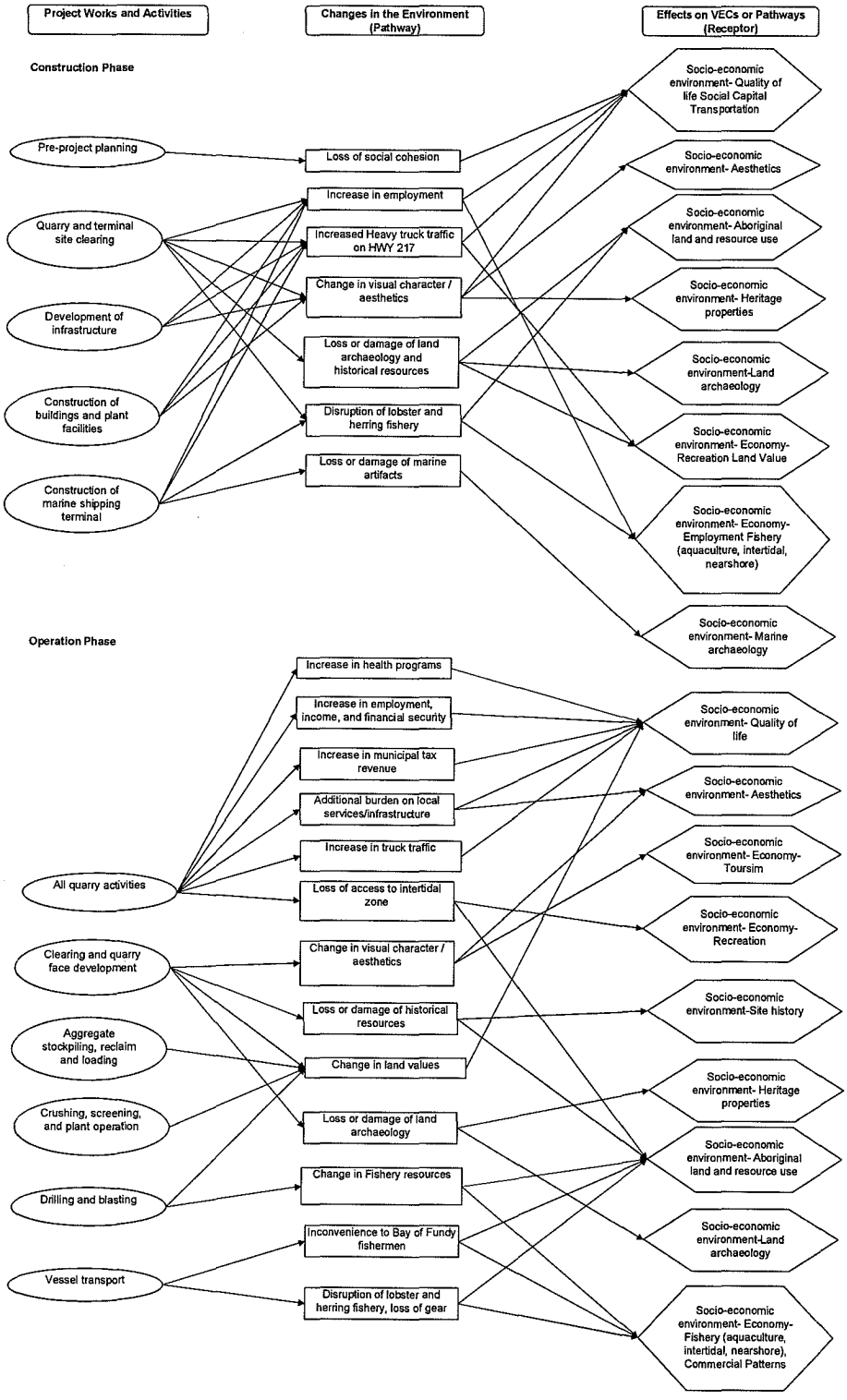
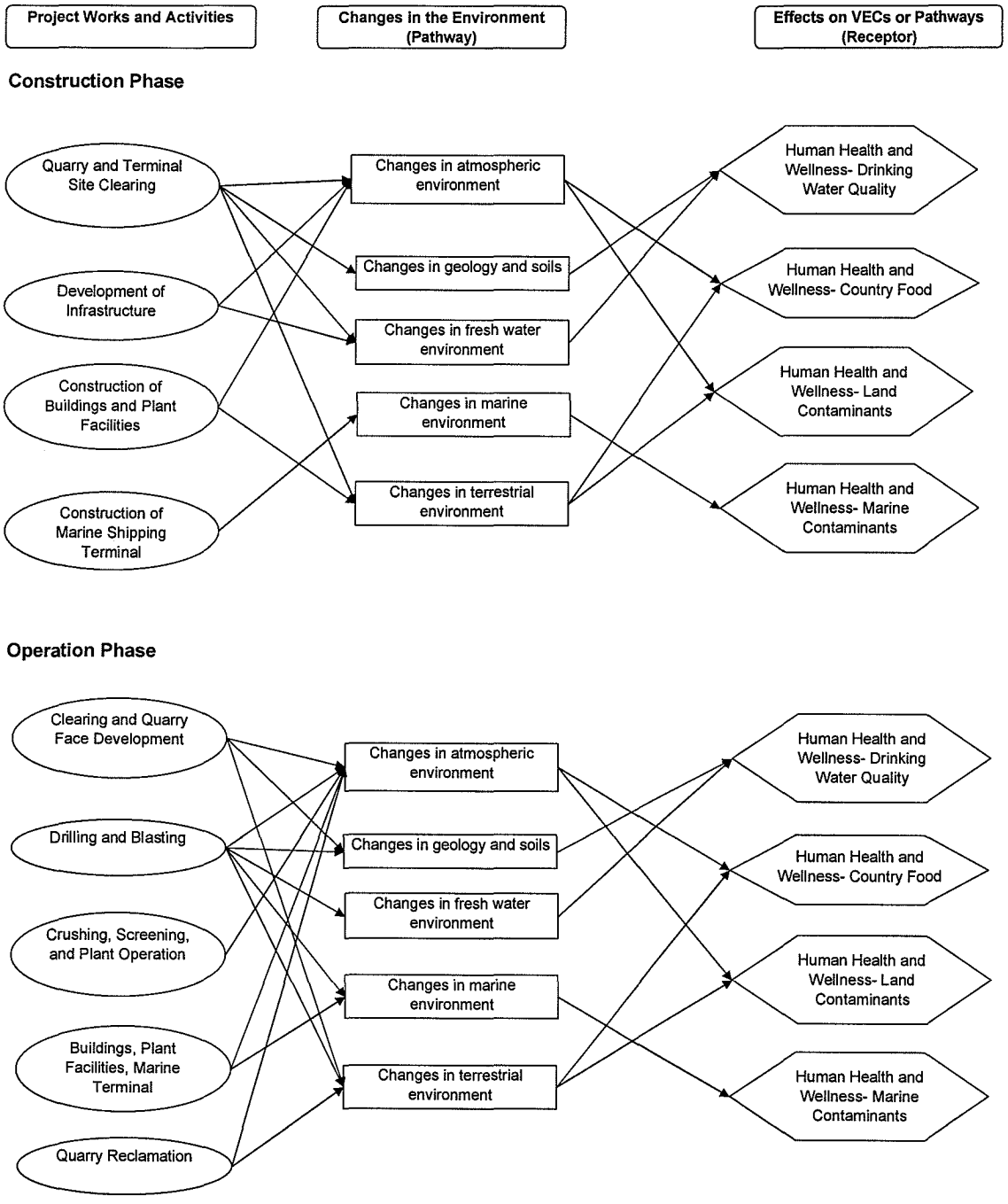


Figure 7: Linkages and Pathways between Project and VECs
Human Health and Wellness



3.4 Ecosystem Approach

WP 1630 - Environment Canada

Item #2 Incorporating an Ecosystem Approach

Information Request
Demonstrate how an ecosystem approach has been applied to the environmental assessment effort, taking into account available guidance resources, as well as the agreements, policies, programs, and regional initiatives informing management of the study area and the identified VECs.

RESPONSE

Bilcon's application of an ecosystem approach has been discussed and demonstrated in Bilcon's response to WP 1431 Joint Review Panel in this section.

A summary of examples of how Bilcon's ecosystem approach reflects guidance resources, as well as agreements, policies, programs and regional initiatives is presented in Table 1.

3.4 Ecosystem Approach

Table 1: Guidance Sources and Ecosystem Approach of WPQ EIS

Source	Key Information (Excerpts)	WPQ EIS Ecosystem Approach
EIS Guidelines (Section 3.4) (Fournier 2005)	See Table 1 in response to IR-2 (Panel Request on Preamble - Ecosystem Approach; Page 1)	See Table 1 in response to IR-2 (Panel Request on Preamble - Ecosystem Approach; Page 1)
Convention of Biological Diversity (United Nations Environment Program) (http://www.biodiv.org/convention/default.shtml)	The UNEP Convention is tailored and dedicated to promoting sustainable development through an ecosystem approach to management. Operational guidance for the application of the ecosystem approach as developed by the Convention include five principles (see also discussion in EIS Vol. IV, Section 3.4, p.4): • Focus on relationships and processes within ecosystems; • Enhance benefit-sharing • Use adaptive management practices; • Carry out management actions at the scale appropriate for the issue being addressed; and • Ensure intersectoral cooperation. The recommended management tools to ensure implementation involve (examples): • Monitoring; • Public Participation • Modeling; • Environmental assessment; • Adaptive management; and • Interdisciplinary research and communication.	To the extent applicable, the principles have been incorporated into the approach of the WPQ EIS: • Interrelations between environmental components have been recognized and assessed (see response to IR 2- Panel Request on Preamble - Ecosystem Approach; Page 1). • Socio-economic effects will benefit the local community • The project will follow an adaptive management approach (monitoring will be used to trigger corrective action if required) • Management actions will consider local stakeholder and community input • Bilcon's team has been working interactively ensuring intersectoral cooperation in the effects assessment. As documented in the EIS report, all of the management tools listed have been applied or will be applied during Project implementation.
The Census of Marine Life. 2005. http://www.coml.org/coml.htm	The Census of Marine Life is a growing global network of researchers in more than 70 nations engaged in a ten-year initiative to assess and explain the diversity, distribution, and abundance of marine life in the oceans. The Gulf of Maine Census is a Census of Marine Life Project which will pursue its goal by documenting and understanding the region's biodiversity and the processes that change and sustain it. The study area includes all of the Gulf of Maine and Bay	Bilcon is aware of the Census of Marine Life and its promotion of the ecosystem approach. The specific principles of the approach sited have been incorporated into the EIS, e.g.: • Long-term sustainability: consideration of short- and long-term effects; incorporation of sustainability in the effects evaluation; site rehabilitation and habitat creation. • Clear, operational goals: analysis of all project works, activities and

3.4 Ecosystem Approach

	of Fundy, Georges Bank, the southern half of the Scotian Shelf, the adjacent Slope Sea and the New England Seamounts. The Gulf of Maine Census advocates an ecosystem based management and provides on its website a synopsis of definitions and concepts of ecosystem-based management. Representative of some of the definitions provided on the website is the following list from the Ecological Society of America (ESA). 1995. The scientific bases for ecosystem management: An Assessment by the Ecological Society of America. Washington, DC: • Long-term sustainability as fundamental value. • Clear, operational goals. • Sound ecological models and understanding. • Understanding complexity and interconnectedness. • Recognition of the dynamic character of ecosystems. • Attention to context and scale. • Acknowledgment of humans as ecosystem components. • Commitment to adaptability and accountability.	phases. • Sound ecological models and understanding: application of blast effects model CONWEP • Understanding complexity and interconnectedness: see response to IR 2- Panel request on Ecosystem • Approach. • Recognition of the dynamic character of ecosystems: effects monitoring and implementation of adaptive management approach. • Attention to context and scale: consideration of VEC-specific boundaries (see response IR 2-Panel request). • Acknowledgment of humans as ecosystem components: consideration of socio-cultural VECs. • Commitment to adaptability and accountability: commitment to monitoring and release of monitoring results; on-going community liaison.

References:

The Census of Marine Life. 2006. Information provided over the organization's web site at http://www.coml.org/coml.htm.

Ecological Society of America (ESA). 1995. The scientific bases for ecosystem management: An assessment by the Ecological Society of America. Washington, DC. Summary information on website of Census of Marine Life: http://www.coml.org/coml.htm.

Convention of Biological Diversity 2006. Information provided by the secretariat at http://www.biodiv.org/convention/default.shtml

3.4 Ecosystem Approach

Fournier 2005. EIS Guidelines to Review Whites Point Quarry and Marine Terminal Project. Whites Point Quarry and Marine Terminal Project Joint Review Panel. March 2005.

Item #19 Birds and Bird Habitat – Biodiversity

Information Request
Describe and assess the ways in which the Project might influence biodiversity, through changes in ecosystem and habitat loss...

Describe the effects of the Project on biodiversity (including birds and bird habitat) at ecosystem and regional scales....

RESPONSE
Biodiversity and Birds/ Bird Habitat

The recorded species are expected to remain/recolonize the site as reclamation progresses; abundance (on-site) may temporarily be reduced but plenty of similar habitat is available on adjacent lands. This will ensure the presence of the species in the local environment and allows species to rapidly re-populate the site as habitats within the site boundaries are rehabilitated and mature. The implementation of the proposed forest management plan on Bilcon lands is expected to promote a diverse bird population associated with forest habitat. Due to the size of the land and limited fragmentation, it is expected to support bird species typical for interior forest habitat. Following completion of the Project it is expected that the on-site biodiversity including bird species will have been re-established or may exceed present conditions.

WP 1625 – Partnership for Sustainable Development
Deficiency Statement 5
EIS Guidelines
3.4 – The Ecosystem Approach - 'In the EIS, the Panel will expect evaluations of the potential impacts of the Project on:

- *the interconnections between the physical environment, the biological environment, and the human environment;*
- *the links between terrestrial, coastal zone, and oceanic processes;*
- *the interchange between the subsurface, the surface and the atmosphere, and*
- *the repercussion of the potential local impacts at a regional, national and global level."*

Section 10 – Environmental Impact Analysis - 'The assessment must recognize not only the complexity and inter-connectedness of all the parts that comprise a single environmental

3.4 Ecosystem Approach

entity (e.g. the physical environment), but also the broader, even more complex, inter-connectedness between the physical, biological and human components."

EIS

The EIS Guidelines require that as much attention as is given to the discrete parts of the ecosystem should be given to the ecosystem itself. The EIS is clearly deficient in this regard; there is not even a section devoted to this important requirement. The lack of ecological perspective is illustrated in the Plain Language Summary (page 24) where a point is made of stating that parts of the existing forest is diseased or dying, as if this is grounds for getting rid of it. Diseased trees are part of a natural cycle, and provide niches for a whole suite of organisms, such as wood-boring beetles and black-backed woodpeckers.

RESPONSE

Please refer to Bilcon's response to the Panel and Environment Canada in this Section.

Deficiency Statement 6

EIS Guidelines

3.4 – The Ecosystem Approach – "The Panel believes that the Project has to be evaluated in a holistic manner, using an ecosystem approach, where the interconnections receive as much attention as the discrete components."

EIS

3.4 – The Ecosystem Approach – The EIS relies on the FAO definition for ecosystem approach and emphasizes the conservation and biological diversity aspect (along with sustainable use). There are other aspects other than genetic and biological diversity to effective functioning of the ecosystem. A definition that is more in-line with the EIS Guidelines is one that includes a comprehensive and holistic approach to understanding and anticipating ecological change, assessing the full range of consequences, and developing appropriate management responses.

The EIS goes on to describe 12 principles. Unless the Proponent authored these principles, a citation should be provided. The EIS does not provide any clear rationale for the selection of these principles or any connection to other elements of the EIS. For example, principle 5 states, "Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a target of the ecosystem approach." The EIS should describe how the Proponent will measure and use ecosystem services for management. Principle 8 states, "Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objective ecosystem management should be set for the long term." The EIS should explain what it means to objectively manage an ecosystem for the long term and demonstrate how that will be done in the proposed Project.

The EIS goes on to list five points of 'operational guidance for application of the ecosystem approach." Item # 2 in the list is "Enhance benefit-sharing." The EIS should describe what this means and how it serves as an operational principle of effective ecosystem management.

3.4 Ecosystem Approach

Item #3 in the list is "Use adaptive management practices." This is one of several instances where this terminology is used in the EIS, but there is no clear explanation provided. Adaptive management requires a commitment to baseline monitoring, science-based decision-making and post-operational monitoring. These concepts are not defined in the EIS. For adaptive management to be successful, the best approach would be to define targets that will not be surpassed, and to put into place a series of "precautionary" responses that will be implemented if the targets are surpassed. For example, significant species will not decrease in abundance, and if significant decreases are seen, the response will be ..... This approach requires baseline measures of abundance, reference sites, targets, and post-operational monitoring programs, none of which appears to be included in the EIS.

RESPONSE

Please refer to Bilcon's response to the Panel and Environment Canada in this Section.

Deficiency Statement 7

EIS Guidelines

3.4 – The Ecosystem Approach – "The Panel believes that the Project has to be evaluated in a holistic manner, using an ecosystem approach, where the interconnections receive as much attention as the discrete components."

> *10 - Environmental Impact Analysis - 'The assessment must recognize not only the complexity and inter-connectedness of all the parts that comprise a single environmental entity (e.g. the physical environment), but also the broader, even more complex, inter-connectedness between the physical, biological and human components."*

10.4 - Summary Table of Impacts - 'Develop a table that summarizes the identified potential effects of the Project on all components and relationships in the environment."

EIS

The EIS Guidelines are quite explicit on the type of integrated analysis required for inclusion in the EIS. Volume II of the EIS (EIS Guidelines Referenced to the EIS Document) directs the reviewer to Section 3.4 of the EIS. While Section 3.4 (Ecosystem Approach) discusses in very general terms the use of the Ecosystem Approach, no details or specifics are provided on this analysis.

The secondary and tertiary interactions between physical, biological and human components represents a broad area of concern raised by members of the public with respect to the Project. Analyses of these issues are largely absent from the EIS. The Proponent should revise the EIS to reflect the EIS Guidelines, Sections 3.4, 10 and 10.4.

Should the Proponent require guidance in undertaking such an ecosystem analysis, the following fundamental should be consulted:

Gordon E. Beanlands and Peter N. Duinker, An Ecological Framework for Environmental Impact Assessment in Canada, Institute for Resources and Environmental Studies, Dalhousie

3.4 Ecosystem Approach

University, 1983, Published in Cooperation with the Federal Environmental Assessment Review Office.

RESPONSE

Please refer to Bilcon's response to the Panel and Environment Canada in this Section.

3.5 Precautionary Principle

EIS Reference: EIS Volume IV, Chapter 3, Section 3.5 and Volume V, Chapter 8, Section 8.5

INDEX OF COMMENTS

3.0 Principles

3.5 Precautionary Principle

3.5 Precautionary Principle

WP 1452 - Joint Review Panel
The Precautionary Principle
The Panel called for the application of the precautionary principle.

The examples provided by the Proponent in sections 8.5.1 to 8.5.4 as applications of the precautionary principle, demonstrate a misinterpretation of the accepted definition as provided in the Guidelines. For instance, creating sediment retention ponds does not, in itself, demonstrate the application of the principle although designing the ponds to appropriate structure and capacity for 100-year storm events would indicate precaution. The monitoring program should reflect the precautionary principle through early and regular monitoring along with appropriate responses to mitigate any adverse effects. Provide the Panel with a detailed summary of the application of the precautionary principle to all components of the proposed Project.

RESPONSE
Please refer to Bilcon's response to Environment Canada Item #4 in this section.

WP 1630 – Environment Canada
Item #4 Environmental Management and Applying a Precautionary Approach
Information Request
Discuss how worst case scenarios, including risk assessments and the extent of uncertainty have been evaluated in relation to VECs particularly where a precautionary approach is warranted.

Present an adaptive management framework to deal with Project components and activities for which the extent and significance of environmental impacts and the effectiveness of proposed mitigation is uncertain. Such a framework should include the following considerations:

- *Monitoring is scheduled to match most sensitive time periods for specific VECs*
- *Monitoring results are reviewed on a regular and on-going basis not solely linked to regulatory reporting requirements;*
- *Criteria and threshold values for initiating responses are set below regulatory or permitting requirements; and*
- *Appropriate stakeholders are involved in the review of monitoring results and discussion of adjustments to mitigation."*

3.5 Precautionary Principle

RESPONSE

Precautionary Principle and EIS Guidelines

Bilcon's commitment to the application of the precautionary principle in its approach to Project design and implementation in particular, in the environmental management component of the Project, is stated in the EIS, Vol. IV, Chapter 3.5, page 6. The application of this principle in the various Project phases is further documented in the EIS, Vol. V, Chapter 8.5, page 31.

In response to the Panel's comments, Table 1 has been generated. The table lists the characteristics of the precautionary approach as defined in the EIS Guidelines. In correspondence with each characteristic, the particular approach followed by Bilcon is discussed.

Application of the Precautionary Principle To All Project Components

Table 2 has been generated to provide a brief listing of the various design features and proposed measures that are considered to reflect the Project's precautionary approach in the context of each Project component.

It is of note that Table 2 does not merely repeat the complete list of mitigation and monitoring measures proposed for the Project. For such a listing refer to Bilcon's response to the Panel's IR-2, 11.6 Follow-up Program, and EIS, Vol.VII, Chapter 11, Tables ECM-1 and ECM-2. Instead, Table 2 focuses on measures that are considered to best document Bilcon's commitment and application of the precautionary principle. In general terms, this includes such measures as

- Planning for worst case scenarios
- Conservative model assumptions
- Avoidance strategies
- Extensive monitoring
- Frequent monitoring events
- Low threshold values/trigger values
- Frequent and early review of monitoring results including third party reviews
- Adaptive management approach.

Worst Case Scenarios, Risk Assessment and Uncertainty

Bilcon proposes to manage risk and uncertainty in the implementation of its Project proposal through

- Adoption of an adaptive management approach; and
- Implementation of a precautionary approach.

3.5 Precautionary Principle

Bilcon's understanding of the adaptive management approach is presented in its response to the Panel's IR-1 (Adaptive Management) and is also further discussed below in text and table format (Table 1). Bilcon's implementation of the precautionary approach is presented in its response to the Panel in this section.

As part of its precautionary approach, Bilcon discussed worst case scenarios, risk and uncertainty in the EIS in the context of the analysis of accidents and malfunctions (Vol. VII, Chapter 11; see also Bilcon response to Panel's IR-2, 11.2 Accidents and Malfunctions).

Another example for the application of a precautionary approach is provided by the modeling of anticipated blast effects. This model exercise has been based on worst case model assumptions with respect to environmental conditions, type of explosive used, parameters of blasting event/site. In addition to the conservative (i.e., protective model assumptions) a Safety Zone for marine mammals at risk has been established. With a radius of 2,500m this zone is about five-fold over the distance at which physical effects are expected.

3.5 Precautionary Principle

Table 1: Precautionary Approach

	EIS Guidelines	EIS
1	Design and operation to give priority to strategies that avoid the creation of adverse effects	Environmental concerns have been taken into account early on in the Project design and resulted in numerous features inherent to the Project design with the purpose to avoid and or minimize adverse environmental effects. Examples of such strategies include: Design: • Avoidance of large scale fish habitat destruction by use of pipe piling (as opposed to approaches using sheet piling, caissons, or crib structures) and spanning of conveyor system over most of intertidal zone. • Avoidance of sediment discharges into the marine environments through the design of a series of storm water retention ponds functioning as "sediment traps"; Operation: • Avoidance of adverse effects on whales through implementation of operating policy (blasting protocol) that does not permit blasting in case of observed presence of whales within 500m of the detonation site or presence of fin, blue or North Atlantic right whales within 2500m of the detonation site. • Avoidance of the release of GHGs from vegetation removal during site clearing by chipping of vegetation instead of burning. • Avoidance of the use of groundwater in favour of use and recycling of water from retention ponds.
2	Control of deleterious outputs or other potentially damaging activity goes beyond current emission standards where warranted by the potential environmental effects	The quarry operation is associated with few outputs (emissions and discharges). Air emissions include emissions from vehicular combustion engines (mostly diesel powered), and dust emissions (particulate matter) from the crushing and screening activities. Water discharges are limited to the discharges of storm and wastewater from the on-site retention ponds. Other "out puts" can be considered to include noise emissions and concussions. All of the above "outputs" will remain within applicable government regulations. In some instances emission / discharge controls go beyond current emission standards. These include: • Diesel powered heavy operational equipment to meet EPA Tier 3 emission specifications (equivalent to the *Off-Road Compression Engine Emission Regulations (2005)* of the *Canadian Environmental Protection Act (1999)*); currently only diesel engines of 2006 and later model years are required to meet EPA Tier 3 emission standards; Bilcon will require all on-site diesel engines to meet these specifications as a precautionary approach to the Project's contribution to global climate change; • Blast events to stay within the recommended guideline criterion of

3.5 Precautionary Principle

		100 kPa in the nearest marine water column (Wright D.G., and Hopky G.E., 1998, Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, Canadian Technical Report of Fisheries and Aquatic Sciences 2107.) • The Project setback, environmental preservation zone, and the quarry topography are expected to attenuate sound levels at the property boundary to remain well below NSDEL guideline values of 65dBA during the day and 55dBA at night for residential receptor locations; since the nearest residential receptor locations are approximately 150m off site (500ft) quarry-related sound levels at these locations will be even lower; • Monitoring of copper concentrations in detention pond effluent with a trigger level at 4.8 ug/L; currently there are no Canadian water quality guidelines for copper concentrations in saltwater; • Increase in turbidity levels at/near the effluent discharge point to remain within 8 NTUs from background under clear conditions for short-term exposure [e.g., 24 hr period]) ("Ambient Water Quality Guidelines (Criteria) for the Turbidity, Suspended and Benthic Sediments")
3	Contingency plans explicitly address worst-case scenarios and include risk assessments and evaluations of the degree of uncertainty	Examples for the consideration of contingency plans, worst-case scenarios, and risk and uncertainty: • The EIS includes a discussion of Accidents and Malfunction Scenarios (Vol. VII, Chapter 11; see also Bilcon response to Panel's IR-2, 11.2 Accidents and Malfunctions); these scenarios are considered "worst-case" and have been assessed based on "worst case assumptions"; • Risk and uncertainty have been considered in the assessment and screening of the accident and malfunction; further risk assessment will take place as part of the development of site and operation-specific contingency and emergency response plans (see Bilcon response to Panel IR-2, 11.6 Follow-up Program, Table 2) • Environmental Management Plans (EMPs) will be developed and implemented which will include site specific contingency and emergency response plans (which include spill prevention and clean up planning); further vessel/fleet-specific emergency response plans will be required from vessel owners/operators;
4	Monitoring plans are designed to ensure rapid response and correction where adverse effects are detected	Monitoring and rapid response and correction are ensured through a number of mechanisms: • Adoption of an adaptive management approach (see Bilcon response to Panel IR-1 Adaptive Management); • Monitoring plans for environmental effects monitoring (EEM) and environmental compliance monitoring (ECM) (see Bilcon response to Panel IR-2, 11.6 Follow-up Program); Note: monitoring plans will be finalized in consultation with regulatory agencies and will include threshold and trigger values (see Bilcon response to Panel IR-2, 11.6 Follow-up Program, Item 1.4.3 Framework for Developing a Final Monitoring Program). • Environmental management plans (EMPs) that establish

3.5 Precautionary Principle

		management structure, responsibilities, reporting mechanisms, QA/QC protocols, environmental audits, and emergency plans for immediate response (see Bilcon response to Panel IR-2, 11.6 Follow-up Program, Table 2); • Assignment of responsibility for environmental management to Environmental Management Team and Environmental Liaison Officer; and • Community Liaison Committee meetings which will include a review of the Project's environmental performance and discussion of corrective action if required.
5	Liability and insurance regimes are established that hold the Proponent and its contractors accountable for adverse effects and associated damages and their limitation and control, throughout the life of the Project, including its decommissioning and rehabilitation	Bilcon of Nova Scotia Corporation assumes responsibility for all phases of its proposed Whites Point quarry operation and its environmental performance within applicable regulatory requirements. Bilcon will obtain commercial liability insurance as deemed necessary and has further committed to the following financial compensation schemes (see Bilcon response to Panel IR-2, 11.6 Follow-up Program, Table 2 and EIS, Vol. VII, Chapter 11.0.1, page 4): • A "lobster trap fund" that is funded by Bilcon of Nova Scotia Corporation and administered by a designated fisher group to compensate for fishing gear destroyed as a result of the vessel transporting quarry products; • Compensation for drilled-well owners whose well has failed due to quarry activities; and • Compensation plan for adjacent property owners within 800m of the active quarry to apply if property values are shown to be diminished due to quarry activities.

3.5 Precautionary Principle

Table 2: Application of the Precautionary Principle

	Project Component	Application of Precautionary Principle
Construction Phase		
1	• Quarry and terminal site clearing • Development of infrastructure • Construction of buildings and plant facilities	<u>Design/Planning</u> • Adaptive management approach • Identification and assessment of accident and malfunction scenarios (worst case scenarios) • Phased quarry development (applies to site clearing and quarry face development) • Designated fuel storage site • Designated re-fueling protocol • Design of sediment retention ponds to contain a 100 year storm-event • No direct uncontrolled discharges to marine environment • Environmental Preservation Zone along site perimeter • Avoidance of coastal wetland by preservation within Preservation Zone • Avoidance of GHG releases from burning of brush work • Diesel powered heavy operational equipment to meet EPA Tier 3 emission specifications • Perimeter drainage ditch along Bay of Fundy property boundary • Erosion and sediment control system • Immediate installation of storm water management infrastructure • Security fence around entire quarry property <u>Monitoring</u> • Daily environmental supervision of proper implementation of environmental management measures (EMP provisions) • Daily particulate emissions monitoring (site perimeter) • Daily (during wet weather conditions) monitoring of effectiveness of erosion control and site drainage • Monitoring of flow, water levels, and fish community in adjacent Little River Watershed • Weekly monitoring of retention pond effluent quality • Prior to any blasting - residential well survey • Yearly environmental auditing (environmental performance, training, complaint records

3.5 Precautionary Principle

	Project Component	Application of Precautionary Principle
		• Work stoppage in case of excessive turbidity during drilling (maximum allowable increase 8 NTUs from background under clear conditions for short-term exposure [e.g., 24 hr period]) Blasting related – see Operation Phase
Operation Phase		
1	• Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening and wash plant operation • Aggregate stockpiling, reclaim and loading	<u>Design/Planning</u> • Adaptive management approach • Identification and assessment of accident and malfunction scenarios (worst case scenarios). • Use of worst case modeling of anticipated blast effects for design of blasting protocols (i.e., modeling is based on worst case model assumptions with respect to environmental conditions, type of explosive used, parameters of blasting event/site). • Design of Safety Zones for marine mammals (includes application of a safety zone radius[2,500m] for marine mammals at risk that is five-fold over the distance at which physical effects are expected • Use of safety standoff thresholds established for seismic operation as conservative approach (= model assumes a more intrusive sound scenario) to the development of safety radii • Phased quarry development (applies to clearing and quarry face development) • Designated fuel storage site • Designated re-fueling protocol • Controlled storm/wastewater discharges to marine environment • Avoidance of the use of groundwater in favour of use and recycling of water from retention ponds • Design of mostly electrically powered stationary equipment (i.e., no power- generation-related emissions on-site) • Diesel powered heavy operational equipment to meet EPA Tier 3 emission specifications • Use of enclosures and hooded conveyor systems to reduce fugitive dust • Maintenance of Environmental Preservation Zone along site perimeter • Maintenance of coastal wetland by preservation within Preservation Zone • Erosion and sediment control system • Maintenance of security fence around entire quarry property • On demand delivery of components for explosives (i.e., no storage of explosives on site) • Operational and Environmental Management Planning: o Drilling and blasting in synch with processing and transport activities/capacities

3.5 Precautionary Principle

	Project Component	Application of Precautionary Principle
		○ No blasting in case of observed presence of whales and other marine mammals within 500m of the detonation site ○ No blasting in case of observed presence of marine mammal species at risk (i.e., fin, blue or North Atlantic right whales) within 2500m of the detonation site ○ No blasting in case of observed presence of seals within 170m of the detonation site ○ No blasting during atmospheric inversions ○ No blasting at high tide (blasting as close to max low tide as possible) • Blast events designed to stay within the recommended guideline criterion of 100 kPa in the nearest marine water column (blasting model results); recommended guideline criterion is 100 kPA ("Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters") <u>Monitoring</u> • Daily environmental supervision of proper implementation of environmental management measures (EMP provisions), including spill prevention • Daily particulate emissions monitoring (site perimeter) • Daily (during wet weather conditions) monitoring of effectiveness of erosion control and site drainage • Daily monitoring of sound levels at property boundary • Monitoring of flow, water levels, and fish community in adjacent Little River Watershed • Monthly monitoring of groundwater levels (site perimeter) • Twice per year monitoring of groundwater quality (site perimeter) • Every blasting event: measurements of concussion and ground vibration levels (blasting-land) • Every blasting event: observation of marine mammals presence within the safety radii • Initial blast events: Monitoring of sound levels in marine environment to verify sound propagation modeling predictions (results to be used to further define mitigative setback distances from the detonation to a marine mammal) • Yearly environmental auditing (environmental performance, training, complaint records <u>Mitigation/Environmental Management:</u> • Environmental Management Plan (EMP); key issues: ○ Contingency and emergency response planning (includes spill prevention, response and clean up planning, preparedness, and training) ○ Environmental management - blasting protocol provisions see Design/Planning

3.5 Precautionary Principle

	Project Component	Application of Precautionary Principle
		○ Erosion control and sediment management ○ Dust control ○ Work stoppage should items of potential archaeological significance be encountered) ○ Staff training • Human Health and Safety Plan (HASP); key issues: ○ Protocols for use of personal protective equipment ○ Provision of first aid equipment ○ Staff training • Public involvement: Community Liaison Committee meetings • Implementation of public communication and complaint process
2	• Storm and wastewater management	Design/Planning/Operation • Same as above if applicable plus: • Operation and gradual expansion of sediment retention ponds (design to 100 year storm-event) • Maintenance of perimeter drainage ditch along Bay of Fundy property boundary Monitoring • Same as above if applicable plus: • Weekly monitoring of retention pond effluent quality • Application of rigid trigger level: copper concentrations in detention pond effluent at and above 4.8 ug/L will trigger review of effectiveness of system and implementation of additional management features if warranted (see Bilcon response to Panel IR-2, 5. Contaminants) • Weekly review of integrity of retention pond structures (berms and discharge structures) Mitigation/Environmental Management: • Same as above if applicable
3	• Vessel transport	Design/Planning • Same as above if applicable plus: • Prescription of navigational route for vessels destined for /leaving the Bilcon terminal Monitoring

3.5 Precautionary Principle

	Project Component	Application of Precautionary Principle
		• Every vessel arrival/departure: land-based observation of marine mammals presence near/within designated navigation route and communication of presence of marine mammal species at risk to vessel captain (during poor visibility - water-based (work boat) observations) • Every vessel arrival/departure: land-based observation of the presence of waterbirds • Monitoring of phytoplankton and zooplankton in waters adjacent to marine terminal (early detection of invasive species from ballast water discharges) <u>Mitigation/Environmental Management:</u> • Same as above if applicable plus: • Operational and Environmental Management Planning specific to the marine terminal and the vessel/fleet ; most importantly, this will include o site and vessel/fleet-specific contingency and emergency response plans (including spill prevention, and response plans): o Prescription of navigational route (see planning) o Limitation of vessel speed in waters between the shipping lanes and the marine terminal to less than 12 knots/ hour (i.e., significantly less than the speed at which most severe and lethal ship strikes occur) o Further speed reduction or course alterations in the event of observed mammals in or near the prescribed shipping route • Provision of "lobster trap fund" to compensate for fishing gear destroyed as a result of the vessel transporting quarry products
4	• Quarry reclamation	• Same as for shutdown and reclamation phase (see below)
Shutdown and Reclamation		
1	Removal of quarry plant and buildings Removal of site infrastructure including marine terminal Site reclamation	<u>Design/Planning</u> • Same as for construction phase if applicable plus • Phased quarry reclamation • Use of on-site recycled top soils • Soil amelioration with on-site generated compost and sediments <u>Monitoring</u> • Same as for construction phase if applicable plus

3.5 Precautionary Principle

	Project Component	Application of Precautionary Principle
		• Soil testing (pH, nutrients, contaminants) • Annually: Vegetation/ habitat survey • At end of decommissioning phase: site assessment (remaining contaminants) <u>Mitigation/Environmental Management:</u> • Same as for construction phase if applicable plus o Site clean up/rehabilitation in accordance with after use and applicable regulatory requirements

3.5 Precautionary Principle

WP 1625 – Partnership for Sustainable Development

Deficiency Statement 8
EIS Guidelines
3.5 – The Precautionary Approach – 'Further, the Panel understands the application of the precautionary principle to require: that the onus of proof shall lie with the Proponent to show that a proposed action will not lead to serious or irreversible environmental damage, especially with respect to overall environmental function and integrity, considering system tolerance and resilience;.."

EIS
3.5 – The Precautionary Approach – The EIS Cross-Reference indicates that all requirements in section 3.5 of the EIS Guidelines are covered in section 3.5 of the EIS. The information provided in section 3.5 of the EIS does not meet any of the requirements set out in the EIS Guidelines. For example, the EIS states, "Where there is uncertainty with respect to the effectiveness of measures that are used to prevent serious or irreversible environmental damage, Bilcon will take an adaptive management approach." The Federal Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada states "Adaptive management, also referred to as 'adaptive resource management,' is a management and learning process developed to meet the challenges of managing resources in the face of uncertainty, with a focus on monitoring and assessing the outcomes of decisions to reduce uncertainty in the future (Bailey 2000). It can be applied only in those cases where harm is reversible, since it implies that midcourse corrections should be made where required." The Best Practice Guide indicates that adaptive management should not be used with respect to species at risk, as the effects may be irreversible. The approach taken in the EIS to precaution and adaptive management demonstrates a misunderstanding and misapplication of both. To satisfy the requirements of section 3.5 of the EIS the Proponent must make itself aware of the appropriate application of the precautionary approach and reapply it to the EIS.

RESPONSE
Please refer to Bilcon's response to Environment Canada in this Section.

Deficiency Statement 9
EIS Guidelines
3.5 – The Precautionary Approach – "The Panel believes that the precautionary approach will be relevant in circumstances where it is identified that a Project activity could cause serious or irreversible adverse impact on the environment and the cause and effect relationship cannot be clearly established."

3.5 Precautionary Principle

EIS

9.2.5.3 – Mitigation – The EIS states that, "If industrial activities...are identified as impeding recovery efforts, mitigation without conflicts with the respective industry would be the preferred resolution, as suggested in the National Recovery Strategy." This may be an appropriate response for industry that was established before the iBoF Atlantic salmon populations were classified as endangered. This approach does not comply with the precautionary approach as required by section 3.5 of the EIS Guidelines when applied to a proposed industrial activity interfacing with the marine environment. The Department of Fisheries and Oceans state that the cause of the observed marine mortality (of iBoF Atlantic salmon) is still unknown. They conclude that the severely depressed state and productivity of iBoF salmon implies that any level of human-induced harm could jeopardize its survival or recovery. The Proponent should revise the EIS to reflect this information.

RESPONSE

Please refer to Bilcon's response to Environment Canada in this section.

Deficiency Statement 10

EIS Guidelines

3.5 – The Precautionary Approach – "Further the Panel understands the application of the precautionary principle to require: verifiable scientific research and high-quality information; and access to information, public participation, and open and transparent decision-making."

EIS

9.2 – Aquatic Ecology - The precautionary approach and adaptive management seem to be restricted to pH and TSS. The EIS does not include any real measurement of biological diversity. There is reference to some baseline monitoring, but the levels and information is not integrated into the assessment. Baseline monitoring of regional reference site, as well as discharge area are absent. The Proponent should revise the EIS to ensure that the principal of Precautionary Approach is applied to all relevant areas.

RESPONSE

Please refer to Bilcon's response to Environment Canada in this section.

3.6 Adaptive Management

EIS Reference: Volume IV, Chapter 3, Section 3.5 and Volume VII, Chapter 11, Section 11.0.1

INDEX OF COMMENTS

3.0 Principles

3.6 Adaptive Management

3.6 Adaptive Management

WP 1431 - Joint Panel Review
The term adaptive management and its application to this project must be clarified.

Define the term adaptive management.

Why is the concept embodied in the term appropriate for use in the Whites Point Quarry Project?

Explain how the adaptive management concept will be implemented.

Given that it is necessary for all stakeholders in adaptive management to cooperate, describe the intention concerning the establishment of a community liaison committee in the Whites Point Quarry case.

RESPONSE
Bilcon's commitment to the precautionary approach and an adaptive management procedure is presented in Volume IV, Chapter 3.5, page 6 of the EIS.

A. Definition
Adaptive management is a systematic approach for improving environmental management and building knowledge by learning from management outcomes. For the purpose of the WPQ EIS, adaptive management is defined as "an approach to environmental effects management that:

- accommodates uncertainty with respect to the effectiveness of measures to prevent or minimize an adverse effect;
- involves monitoring to provide feedback on the Project's performance;
- permits early intervention through adjustment of mitigation measures, implementation of additional mitigation, or application of avoidance strategies to prevent a potential adverse effect from developing;
- ensures that the Project benefits as knowledge of the site and of quarry operations and techniques advance."
-

B. Appropriateness of its Use
As described in the EIS, Vol. VII, Chapters 11.3, 1..4 and 11.5, a number of environmental management, mitigation, monitoring, inspection, and auditing mechanisms will be in place to review the accuracy of the effects predictions, the effectiveness of the environmental controls and the compliance with applicable Project objectives, standards, guidelines, and policies (see also Bilcon response to Panel IR-2 on Follow-up Programs).

3.6 Adaptive Management

The adaptive management process guarantees that corrective action will be taken when deficiencies in the Project implementation are identified. It also ensures that the environmental management benefits from experience and advances in knowledge of the site and of the quarry operations. As such the adaptive management approach is considered appropriate in that it:

- supports the application of the precautionary principle during all phases of the Project realization; and
- provides mechanisms to ensure long-term sustainability.

Both, the application of the precautionary principle and the aim for long-term sustainability are explicitly supported by the Project's approach to environmental management. Adaptive management is a suitable tool to support and implement this approach.

Further, environmental assessments and effects management typically involves some degree of uncertainty due to the complex and dynamic nature of ecosystems and human environments. This uncertainty includes the effectiveness of some mitigation. In such cases, monitoring and the timely intervention of adaptive management measures are appropriate.

C. Implementation

Adaptive management will be applied throughout all phases of the Project and in particular with regard to the mitigation measures. As soon as monitoring identifies that mitigation measures are not performing satisfactorily, the adaptive management process will guide the improvement or replacement of those measures in conjunction with adaptive management practices in the Project Operations Plan. Key steps in the process encompass:

- identification of non compliance/ underperforming mitigation measure;
- evaluation of significance;
- analysis of cause;
- identification and evaluation of possible corrective actions;
- implementation of corrective action(s); and
- monitoring of effectiveness of corrective action(s).

Adaptive management will allow Bilcon to intervene in a timely manner to control any mitigation inefficiencies or adverse effects that may arise from project construction and operation. This control would be accomplished through the use of additional mitigation or effects avoidance techniques.

3.6 Adaptive Management

Reports of monitoring results will be submitted to the appropriate regulatory agency as indicated in the EIS. If there were a legitimate concern that existing or new performance based standards or thresholds, including any thresholds specified in the permit terms and conditions, may be exceeded, then adaptive management techniques would be implemented in consultation with the regulatory agencies to ensure that this does not occur.

Criteria and parameters applied in the identification of non-compliance will be established in consultation with regulatory agencies and will be documented in the Monitoring Plans.

D. Adaptive Management and Community Liaison Committee

As indicated in the EIS, Bilcon is committed to re-establishing the Community Liaison Committee (CLC). In the context of adaptive management, the CLC is expected to contribute to each of the steps listed above (Item C.). It is envisaged that Terms of Reference will be developed in consultation with the CLC to ensure that the CLC works efficiently during the Project implementation and provides meaningful input to the adaptive management process. However, it is ultimately Bilcon's responsibility to ensure that their actions do not compromise the ecological integrity of the environment. In this regard, Bilcon intends to work with the appropriate regulatory agencies to make adaptive management effective.

Bilcon's approach to the precautionary principle and the application of an adaptive management approach has been outlined in the EIS, Volume IV, Chapter 3.5 (page 6). For further information on Bilcon's definition and implementation of the adaptive management approach please refer to Bilcon's response to the Panel's IR-1 (Adaptive Management). In response to EC's particular comment on the considerations for an adaptive management framework please refer to Table 1 (presented on following page). The table provides examples on how the considerations proposed by EC have been addressed in the EIS.

3.6 Adaptive Management

Table 1: Adaptive Management and Whites Point Quarry Project

Adaptive Management Framework	Bilcon Whites Point Project Proposal
Monitoring is scheduled to match most sensitive time periods for specific VECs	Bilcon's proposed monitoring activities are presented in the EIS, Vol.VII, Chapter 11.6 and Table ECM-2. Further details on the programs and the finalization are presented in Bilcon's response to the Panel's IR-2 (11.6 Follow-up Program). The Table 1 that is presented in Bilcon's response to IR-2 states the proposed monitoring frequency. Where appropriate information on the general timing of the monitoring is included. The timing of the monitoring is intended to match the most sensitive time periods for the VECs that is monitored, coincide with particular Project-related activities/effects, or is conducted year round. Examples include: Schedule adjusted to VEC sensitivity: • **Surface Water** Little River water levels and flow are monitored twice a year; once during low flow season (most sensitive time period) and once during spring run off (for comparative purposes). Schedule adjusted to time of activity/effect: Some monitoring activities have been scheduled to coincide with a particular effect and therefore will provide the best results on potential effects. Examples: • **Noise and Vibration** Measurements of concussion and ground vibration levels (blasting-land) will be undertaken during every blasting activity (i.e., about every two weeks) • **Aquatic Ecology – Marine - Marine Species at Risk (Whales)** The number of whales observed near the Bilcon terminal will be recorded every time a vessel approaches or departs from the Bilcon marine terminal. Year-round monitoring: A number of parameters are monitored throughout the year on a daily/weekly or monthly basis; with this frequency it is expected that periods of highest sensitivity are captured. Examples: • **Air Quality (Particulate Matter)** To be monitored daily. • **Noise and Vibration** To be monitored daily. It is of note that the monitoring plans, including monitoring frequency and schedule will be finalized in consultation with provincial and federal regulators.

3.6 Adaptive Management

Monitoring results are reviewed on a regular and on-going basis not solely linked to regulatory reporting requirements;	Bilcon's approach to the management of the information gathered through monitoring is addressed in Bilcon's response to IR-2 (11.6 Follow-up Program). Reporting mechanisms for the public will be designed to allow easy access to this information, and will ensure that it is presented in an appropriate manner. Examples of the types of reporting mechanisms that may be used are web-based portals and web-cams, and regular newsletter. Further, it is envisaged that the Community Liaison Committee (CLC) will also review and discuss the monitoring reports. The frequency of reviews will be determined in consultation with CLC members. Independent from regulator and public requirements, Bilcon will also conduct a yearly auditing of its environmental performance, the results of which will be published as part of Bilcon's corporate performance reporting.
Criteria and threshold values for initiating responses are set below regulatory or permitting requirements;	Threshold values for initiating responses have been established for a number of parameters below regulatory guidelines or standards (e.g., Sound pressure levels Below 100kPA recommended guideline: 100kPA Copper: for copper concentrations in detention pond effluent: 4.8 ug/L trigger level; no Canadian guideline for saltwater Turbidity within 8 NTUs from background under clear conditions for short-term exposure [e.g., 24 hr period Noise: Below 65dBA during the day, below 60 dBA during the evening and below 55 dBA at night. All as measured at the property boundary. NSDEL guidelines specify 65 dBA, 60 dBA and 55 dBA for the same time periods See also Bilcon's response to IR-2 (Precautionary Principle).
Appropriate stakeholders are involved in the review of monitoring results and discussion of adjustments to mitigation."	As mentioned above, Bilcon anticipates that monitoring results and the need for management adjustments will be reviewed by the Community Liaison Committee (CLC). The frequency of reviews will be determined in consultation with CLC members. It is envisaged that the CLC will include a wide representation of local interest and stakeholder groups (e.g., representatives from the local fishing community, tour boat operators, residents, First Nations).

3.6 Adaptive Management

WP 1541 - Fisheries and Oceans Canada

Volume IV – Chapter 3

Page 6 – The document states, "Where there is uncertainty with respect to the effectiveness of measures that are used to prevent serious or irreversible environmental damage, Bilcon will take an adaptive management approach". Given the uncertainty surrounding potential behavioural impacts on marine mammals from blasting and impacts on lobster from blasting, what potential adaptive management strategies could be applied if the project was shown to have an adverse effect, behavioural or otherwise, on an endangered marine mammal or lobster population?

RESPONSE

Adaptive management techniques do not replace mitigation measures that have been implemented in the course of routine environmental management to reduce the adverse effects of impacts to an acceptable level. Adaptive management techniques use options that are supplementary to existing mitigation in situations where there is uncertainty about the effectiveness of the standard mitigation used to prevent serious or irreversible environmental damage.

Adaptive management is a systemic process for continually improving environmental management practices by learning from the outcomes of operational monitoring programs. An adaptive management strategy is developed where appropriate monitoring identifies stress signals that indicate a level of reaction to the effects of impact that is unexpected and is of concern, but is not fully addressed by the original mitigation. Monitoring identifies the need to use adaptive management strategies and allows for timely intervention before more serious or irreversible environmental damage occurs. Continued effects monitoring then verifies if this increased level of protections is working.

Conclusive studies are lacking on the potential effects of blasting on marine mammals and lobsters. This is due, in large part, to the unavailability of complete suites of baseline data, which could lead to false assumptions about the effectiveness of mitigation. Typically, these effects can range from behavioural to physical and could be:

- General awareness: where a species might simply acknowledge an awareness, but not act on it
- Low-level effects: where a species may appear anxious, but shows no other reaction
- Higher-level effects: where more definitive actions are taken by the mammal, such as avoidance or flight from the apparent danger
- Low-level damage: which may be observable, or detectable on closer examination, but may not be incapacitating
- Higher-level damage: such as incapacitating injury
- Fatality

3.6 Adaptive Management

In addition, these effects could vary in response to the same impact depending on:

- Seasonal variation or vulnerability at a particular life stage, such as the presence of young
- The specific mechanism of impact causing the effect, such as air, water, ground vibrations, noise, lights etc.

In general, a range of adaptive management options could be employed to mitigate these effects such as:

- Early warning of the pending impact, but at a lower, non-intrusive level than the actual impact. An example could be the use of an acoustic deterrence device (ADD) sounded prior to a blast
- Adjustment of the intensity or level of impact to a more appropriate level
- Adjustment of the limits to the safety zone to accommodate the increased concern
- Temporary cessation of the impact to avoid the undesired effects, such as not blasting when the species of concern has been identified as being in the area of effect, when young are present, etc.
- Timing of the impact to consider the presence or absence of a species of concern, life stage issues, such as avoiding an impact during certain times of the year when young may be present, migratory seasons, etc.
- Cessation of the impact if it is concluded that serious negative effects are unavoidable such as, the permanent presence of a species of concern and the inability to mitigate the effect to an acceptable level
- The use of an alternative to the preferred activity. These are typically a more costly means of achieving the same project result without effects to the species of concern. They may not be practical from a project point of view.

Specific adaptive management measures would have to be developed for individual species of concern to address the appropriate variables. Regardless of the species, effects monitoring is critical to the adaptive management process. As critical as monitoring, is the development of appropriate effects thresholds. These will permit the introduction of effective adaptive management techniques as the project advances that will allow for timely intervention to avoid or lessen impacts to marine mammals and lobsters.

WP 1625 – Partnership for Sustainable Development
Deficiency Statement 82
EIS Guidelines
12.4 – Monitoring – "Include a framework for compliance and monitoring of all effects throughout the life of the Project, including eventual abandonment. Provide information on all proposed monitoring activities and a framework for taking action to respond to monitoring results." "Describe how the results of monitoring programs will be used to refine

3.6 Adaptive Management

or modify the design and implementation of environmental protection and management plans.

EIS

11.4 – Monitoring - The EIS states, "If monitoring data indicates non-compliance with permit requirements, adaptive management procedures will be discussed with the appropriate regulatory authorities." This statement does not meet the requirements of section 12.4 of the EIS Guidelines to provide frameworks for compliance, monitoring and follow-up. There is no definition or detail provided on adaptive management. The EIS fails to address the response to regulatory non-compliance outside of permit requirements. In addition, how the results of monitoring will be used to refine or modify the design and implementation of environmental protection and management plans, strategies for enforcement, penalties for non-compliance have not been addressed.

RESPONSE

Please refer to Bilcon's response to the Panel in this section.

4.1 Proper Scientific Standards

INDEX OF COMMENTS

4.0 Standards and Format

4.1 Proper Scientific Standards

4.1 Proper Scientific Standards

WP 1452 Joint Review Panel
Proper Scientific Standards
The Panel requires sound data for assessing effects. In some cases, the data provided fails to meet appropriate scientific standards leading to conclusions that cannot be substantiated by evidence. In responding to information requests, the Proponent should endeavour to:

- *Standardize measurement units (in metric);*
- *Use appropriate scientific methods and describe them fully;*
- *Demonstrate that environmental baseline data was obtained using high standards in sampling, laboratory, and statistical practices; and,*
- *Provide quantitative data or estimates to replace vague qualifiers (e.g., "some", "extensive").*

RESPONSE
In developing the responses to the information requests, Bilcon placed importance on implementing the above-listed requirements with respect to units, methods, quality of data, and provision of quantified data.

Bilcon has enclosed the missing Certificates of Analysis as requested in the information requests and has included Certificates of Analysis for all new laboratory work, please refer to Appendix 1 in this section.

WP 1525 - Natural Resources Canada
Comments from Reviewer 2:
Section 9.1.3.1 (page 25): SI units should be used as much as possible (m, sec).

RESPONSE
Comment noted

WP 1619 – Nova Scotia Department of Natural Resources – Wildlife Division
The author's use of the term "critical habitat", for example in Section 9.2.0.1, is misapplied in the document. The authors should be aware that the term is a legal one encrypted in SARA, and it has not been defined for most species where the term is used. We suggest use of alternative terminology such as "significant habitat", "important habitat", "preferred habitat", "occupied habitat", "potential habitat", to name a few.

4.1 Proper Scientific Standards

RESPONSE
Errata: Section 9.0

Page	Paragraph	Line	Change
8	4	1	"Critical to important"
23	2	6	"Critical to important"
23	2	15	"Critical to important"
31	last	4	"Critical to important"
31	last	8	"Critical to important"
41	last	2	Delete "Critical"

4.1 Proper Scientific Standards

Appendix 1
Analyses and Certificates of Analysis

4.1 Proper Scientific Standards

ANALYSES AND CERTIFICATES OF ANALYSIS

2002 to 2006

WATER SAMPLE ANALYSIS

2002

ANALYTICAL SERVICES

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
KERN, DAVID
BUXTON, PAUL
FAX # : 902-532-7707

PSC Project Number : 0207406H
Client Project Number :
Printed : 2002/06/06
Reported : 2002/06/06

Matrix		Water	Water	Water	Water
Philip ID		02-H027788	02-H027789	02-H027790	02-H027791
Client ID		W.W.P. 1	W.W.P. 2	W.W.P. 3	W.W.P. 5
Date Sampled (y/m/d)		02/05/28	02/05/28	02/05/28	02/05/28
Date Received (y/m/d)		02/05/30	02/05/30	02/05/30	02/05/30
Analyte	Units	EQL			
Total Water Digest		-	20020603-A	20020603-B	20020603-B -
Sodium	mg/L	0.1	21.8	16.3	22.1 -
Potassium	mg/L	0.1	1.2	0.4	0.6 -
Calcium	mg/L	0.1	3.0	2.7	1.6 -
Magnesium	mg/L	0.1	2.6	2.0	1.9 -
Alkalinity (as CaCO3)	mg/L	5.	nd	9.	nd -
Sulfate	mg/L	2.	15.	15.	20. -
Chloride	mg/L	1.	32.	22.	29. -
Reactive Silica (as SiO2)	mg/L	0.5	9.7	5.8	7.1 -
Ortho Phosphate (as P)	mg/L	0.01	0.02	nd	nd -
Phosphorus	mg/L	0.1	nd	nd(0.5)	nd(0.5) -
Nitrate + Nitrite (as N)	mg/L	0.05	0.39	nd	nd -
Nitrate (as N)	mg/L	0.05	0.39	nd	nd -
Nitrite	mg/L	0.01	nd	nd	nd -
Ammonia (as N)	mg/L	0.05	nd	nd	nd -
Color	TCU	5.	12.	22.	26. -
Total Org. Carbon (by UV)	mg/L	0.5	2.7	4.8	6.3 -
Turbidity	NTU	0.1	1.3	0.4	0.2 -
Conductance (RCAp)	uS/cm	1.	150.	110.	134. -
pH	Units	-	6.6	6.4	5.7 -
Hardness (as CaCO3)	mg/L	0.1	18.2	15.0	11.8 -
Bicarbonate (as CaCO3)	mg/L	1.	nd(5.)	9.	nd(5.) -
Carbonate (as CaCO3)	mg/L	1.	nd(5.)	nd	nd(5.) -
TDS (Calculated)	mg/L	1.	90.	70.	86. -

Legend:
EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample
Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
Bluewater Road
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PSC Project Number : 0207406H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/06/06
Reported : 2002/06/06

Matrix		Water	Water	Water	Water
Philip ID		02-H027788	02-H027789	02-H027790	02-H027791
Client ID		W.W.P. 1	W.W.P. 2	W.W.P. 3	W.W.P. 5
Date Sampled (y/m/d)		02/05/28	02/05/28	02/05/28	02/05/28
Date Received (y/m/d)		02/05/30	02/05/30	02/05/30	02/05/30
Analyte	Units	EQL	(Continued from previous page)		
Cation Sum	meq/L	0.10	1.35	1.02	1.22	-
Anion Sum	meq/L	0.10	1.34	1.12	1.34	-
Ion Balance	%	-	0.16	4.37	4.65	-
Langlier Index @ 4C		-	-4.06	-4.05	-5.23	-
Langlier Index @ 20C		-	-3.66	-3.65	-4.83	-
Saturation pH @ 4C	Units	-	10.7	10.4	10.9	-
Saturation pH @ 20C	Units	-	10.3	10.0	10.5	-
Total Suspended Solids	mg/L	0.5	2.5	nd(2.)	nd(2.)	9.6
Aluminum	ug/L	10	280	240	320	-
Antimony	ug/L	2.	nd	nd	nd	-
Arsenic	ug/L	2.	nd	nd	nd	-
Barium	ug/L	5.	6.	5.	nd	-
Beryllium	ug/L	5.	nd	nd	nd	-
Bismuth	ug/L	2.	nd	nd	nd	-
Boron	ug/L	5.	19.	14.	16.	-
Cadmium	ug/L	0.3	nd	nd	nd	-
Chromium	ug/L	2.	nd	nd	2.	-
Cobalt	ug/L	1.	nd	nd	nd	-
Copper	ug/L	2.	2.	3.	2.	-
Iron	ug/L	20	170	250	190	-
Lead	ug/L	0.5	nd	nd	nd	-
Manganese	ug/L	2.	16.	29.	16.	-
Mercury	ug/L	0.05	-	-	-	nd

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 3

PSC Analytical Services
Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0207406H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/06/06
Reported : 2002/06/06

Matrix		Water	Water	Water	Water
Philip ID		02-H027788	02-H027789	02-H027790	02-H027791
Client ID		W.W.P. 1	W.W.P. 2	W.W.P. 3	W.W.P. 5
Date Sampled (y/m/d)		02/05/28	02/05/28	02/05/28	02/05/28
Date Received (y/m/d)		02/05/30	02/05/30	02/05/30	02/05/30
Analyte	**Units**	**EQL**	(Continued from previous page)		
Molybdenum	ug/L	2.	nd	nd	nd -
Nickel	ug/L	2.	nd	nd	nd -
Selenium	ug/L	2.	nd	nd	nd -
Silver	ug/L	0.5	nd	nd	nd -
Strontium	ug/L	5.	22.	18.	15. -
Thallium	ug/L	0.1	nd	nd	nd -
Tin	ug/L	2.	nd	nd	nd -
Titanium	ug/L	2.	4.	6.	2. -
Uranium	ug/L	0.1	nd	nd	nd -
Vanadium	ug/L	2.	nd	nd	nd -
Zinc	ug/L	2.	17.	5.	7. -

02-H027789 W.W.P. 2 Elevated EQL for Phosphorus due to low level method blank contamination.

02-H027790 W.W.P. 3 Elevated EQL for Phosphorus due to low level method blank contamination.

02-H027791 W.W.P. 5 TSS aliquot not refrigerated upon receipt. Analysis completed within 24 hours of receipt.

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 4

PSC Analytical Services
Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0207406H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/06/06
Reported : 2002/06/06

Certificate of Analysis

Method Summaries:

- Alkalinity: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #310.2
- Chloride: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #325.1
- Colour: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: Standard Methods, 16th Edition, 1985
- Conductance (RCAp): Electrometric @ 25 C, values >300 uS/cm diluted for validation purposes. Ref: Standard Methods 4500-H+, 19th Edition, 1995.
- Total Organic Carbon: UV Digestion/Technicon AA1 Analyser. Ref: Standard Methods, 19th Edition, 1995
- Total Recoverable Metals Digest: Homogenization/Digestion. Ref: USEPA Method #200.2
- Mercury: Digestion/Cold Vapour Atomic Absorption. Ref: USEPA Method #245.5
- NO2/NO3: Roche Cobas Fara/BMC Hitachi 911 Automated Colormetric Analyser. Ref. USEPA Method #353.1
- pH: Electrometric @ 25 C. Ref: USEPA Method #150.3
- Phosphorus: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
- Reactive Silica: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #370.1
- Sulfate: Roche Cobas Fara/BMC Hitachi 911 Automated Turbidimetric. Ref: USEPA Method #375.4
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2
- Turbidity: Nephelometric. Ref: USEPA Method #180.1
- Ortho Phosphorus: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #365.2
- Trace Metals in Aqueous Samples: Elan 5000 ICP-MS. Ref: USEPA Method #200.8
- Ammonia (NH3 plus NH4+): Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #350.1
- Nitrite. Roche Cobas/BMC Hitachi 911 Automated Colormetric Analyser. Ref: USEPA Method #354.1
- Major Metals in Aqueous Samples: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
- Total Metals in Water: Digestion/ICP-MS. Ref: USEPA 200.8

Inorganic Parameters page : 5

PSC Analytical Services
Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0207406H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/06/06
Reported : 2002/06/06

Certificate of Analysis

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PAUL BUXTON
KERN, DAVID

FAX # : 902-532-7707
Printed : 2002/06/27
Reported : 2002/06/27

PSC Project Number : 0207815H
Client Project Number :

Matrix	Water
Philip ID	02-H029192
Client ID	WWP 5-C
Date Sampled (y/m/d)	02/06/04
Date Received (y/m/d)	02/06/06

Analyte	Units	EQL	
Arsenic (Seawater)	ug/L	0.1	0.4
Cadmium (Seawater)	ug/L	0.1	nd
Chromium (Seawater)	ug/L	0.5	nd
Cobalt (Seawater)	ug/L	0.1	nd
Copper (Seawater)	ug/L	0.1	0.4
Iron (Seawater)	ug/L	1.	25.
Lead (Seawater)	ug/L	0.1	nd
Manganese (Seawater)	ug/L	1.	3.
Nickel (Seawater)	ug/L	0.5	nd
Zinc (Seawater)	ug/L	1.	1.

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

Page verified

Inorganic Parameters page : 2

SC Analytical Services
[illegible] Bluewater Road
[illegible]ord, NS Canada B4B 1G9
el (902) 420-0203
oll free (800) 565-7227
ax (902) 420-8612

Client : Eastern Canada Bioremediation PAUL BUXTON
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0207815H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/06/27
Reported : 2002/06/27

Certificate of Analysis

Method Summaries:

Trace Analysis of Cd, Co, Cu, Ni, Pb, Fe, and Zn: Chelation/PE Elan 5000 ICP-MS. Ref: USEPA Method #200.8
Trace Analysis of Mn: Chelation/PE Elan 5000 ICP-MS. Ref USEPA Method #200.8
Trace Metals in Aqueous Samples: Elan 5000 ICP-MS. Ref: USEPA Method #200.8

Deficiency - There was a sample deficiency with one or more of the samples submitted. Please see faxed Sample Integrity Form for details on which test and the sample description.

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
FAX # : 902-532-7707
PSC Project Number : 0208332H
Printed : 2002/06/21
Client Project Number :
Reported : 2002/06/21

Matrix		Water	Water	Water
Philip ID		02-H031682	02-H031683	02-H031684
Client ID		W.W.P.1-A	W.W.P.2-A	W.W.P.6(A-C)
Date Sampled (y/m/d)		02/06/13	02/06/13	02/06/13
Date Received (y/m/d)		02/06/17	02/06/17	02/06/17
Analyte	Units	EQL		
Total Water Digest		-	-	20020619-B
Sodium	mg/L	0.1	-	18.7
Potassium	mg/L	0.1	-	0.5
Calcium	mg/L	0.1	-	1.6
Magnesium	mg/L	0.1	-	1.7
Alkalinity (as CaCO3)	mg/L	5.	-	nd
Sulfate	mg/L	2.	-	15.
Chloride	mg/L	1.	-	26.
Reactive Silica (as SiO2)	mg/L	0.5	-	6.6
Ortho Phosphate (as P)	mg/L	0.01	-	nd(0.02)
Phosphorus	mg/L	0.1	-	nd
Nitrate + Nitrite (as N)	mg/L	0.05	-	nd
Nitrate (as N)	mg/L	0.05	-	nd
Nitrite	mg/L	0.01	-	nd
Ammonia (as N)	mg/L	0.05	-	nd
Color	TCU	5.	-	38.
Total Org. Carbon (by UV)	mg/L	0.5	-	9.9
Turbidity	NTU	0.1	-	0.1
Conductance (RCAp)	uS/cm	1.	-	123.
pH	Units	-	-	5.9
Hardness (as CaCO3)	mg/L	0.1	-	11.0
Bicarbonate (as CaCO3)	mg/L	1.	-	nd(5.)
Carbonate (as CaCO3)	mg/L	1.	-	nd(5.)
TDS (Calculated)	mg/L	1.	-	73.

Legend:
EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample
Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
[illegible] Bluewater Road
[illegible]ford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0

KERN, DAVID

FAX # : 902-532-7707

PSC Project Number : 0208332H
Client Project Number :

Printed : 2002/06/21
Reported : 2002/06/21

Matrix		Water	Water	Water
Philip ID		02-H031682	02-H031683	02-H031684
Client ID		W.W.P.1-A	W.W.P.2-A	W.W.P.6(A-C)
Date Sampled (y/m/d)		02/06/13	02/06/13	02/06/13
Date Received (y/m/d)		02/06/17	02/06/17	02/06/17
Analyte	Units	EQL	(Continued from previous page)	
Cation Sum	meq/L	0.10	-	-	1.05
Anion Sum	meq/L	0.10	-	-	1.15
Ion Balance	%	-	-	-	4.45
Langlier Index @ 4C		-	-	-	-5.03
Langlier Index @ 20C		-	-	-	-4.63
Saturation pH @ 4C	Units	-	-	-	10.9
Saturation pH @ 20C	Units	-	-	-	10.5
Total Suspended Solids	mg/L	0.5	4.0	nd(2.)	nd(2.)
Aluminum	ug/L	10	-	-	260
Antimony	ug/L	2.	-	-	nd
Arsenic	ug/L	2.	-	-	nd
Barium	ug/L	5.	-	-	nd
Beryllium	ug/L	5.	-	-	nd
Bismuth	ug/L	2.	-	-	nd
Boron	ug/L	5.	-	-	15.
Cadmium	ug/L	0.3	-	-	nd
Chromium	ug/L	2.	-	-	nd
Cobalt	ug/L	1.	-	-	nd
Copper	ug/L	2.	-	-	2.
Iron	ug/L	20	-	-	300
Lead	ug/L	0.5	-	-	0.6
Manganese	ug/L	2.	-	-	12.
Molybdenum	ug/L	2.	-	-	nd

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 3

SC Analytical Services
^^ Bluewater Road
:ord, NS Canada B4B 1G9
el (902) 420-0203
oll free (800) 565-7227
ax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0208332H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/06/21
Reported : 2002/06/21

Matrix		Water	Water	Water
Philip ID		02-H031682	02-H031683	02-H031684
Client ID		W.W.P.1-A	W.W.P.2-A	W.W.P.6(A-C)
Date Sampled (y/m/d)		02/06/13	02/06/13	02/06/13
Date Received (y/m/d)		02/06/17	02/06/17	02/06/17
Analyte	Units	EQL	(Continued from previous page)	
Nickel	ug/L	2.	-	- nd
Selenium	ug/L	2.	-	- nd
Silver	ug/L	0.5	-	- nd
Strontium	ug/L	5.	-	- 17.
Thallium	ug/L	0.1	-	- nd
Tin	ug/L	2.	-	- nd
Titanium	ug/L	2.	-	- nd
Uranium	ug/L	0.1	-	- nd
Vanadium	ug/L	2.	-	- nd
Zinc	ug/L	2.	-	- 5.

02-H031684 W.W.P.6(A-C) Orthophosphorous; EQL = 0.02 due to elevated method blank.

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

SC Analytical Services
00 Bluewater Road
ord, NS Canada B4B 1G9
el (902) 420-0203
oll free (800) 565-7227
ax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0208332H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/06/21
Reported : 2002/06/21

Certificate of Analysis

Method Summaries:

Alkalinity: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #310.2
Chloride: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #325.1
Colour: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: Standard Methods, 16th Edition, 1985
Conductance (RCAp): Electrometric @ 25 C, values >300 uS/cm diluted for validation purposes. Ref: Standard Methods 4500-H+, 19th Edition, 1995.
Total Organic Carbon: UV Digestion/Technicon AA1 Analyser. Ref: Standard Methods, 19th Edition, 1995
Total Recoverable Metals Digest: Homogenization/Digestion. Ref: USEPA Method #200.2
NO2/NO3: Roche Cobas Fara/BMC Hitachi 911 Automated Colormetric Analyser. Ref. USEPA Method #353.1
nH: Electrometric @ 25 C. Ref: USEPA Method #150.3
osphorus: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
Reactive Silica: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #370.1
Sulfate: Roche Cobas Fara/BMC Hitachi 911 Automated Turbidimetric. Ref: USEPA Method #375.4
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2
Turbidity: Nephelometric. Ref: USEPA Method #180.1
Ortho Phosphorus: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #365.2
Trace Metals in Aqueous Samples: Elan 5000 ICP-MS. Ref: USEPA Method #200.8
Ammonia (NH3 plus NH4+): Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #350.1
Nitrite. Roche Cobas/BMC Hitachi 911 Automated Colormetric Analyser. Ref: USEPA Method #354.1
Major Metals in Aqueous Samples: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
Total Metals in Water: Digestion/ICP-MS. Ref: USEPA 200.8

Inorganic Parameters page : 5

SC Analytical Services
[illegible] Bluewater Road
ord, NS Canada B4B 1G9
el (902) 420-0203
oll free (800) 565-7227
ax (902) 420-8612

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0

KERN, DAVID

PSC Project Number : 0208332H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/06/21
Reported : 2002/06/21

Certificate of Analysis

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
FAX # : 902-532-7707

PSC Project Number : 0208758H
Client Project Number :
Printed : 2002/07/02
Reported : 2002/07/02

Matrix	Water
Philip ID	02-H033078
Client ID	W.W.P. 7 A -C
Date Sampled (y/m/d)	02/06/20
Date Received (y/m/d)	02/06/24

Analyte	Units	EQL	
Total Water Digest		-	20020625-D
Sodium	mg/L	0.1	12.0
Potassium	mg/L	0.1	0.4
Calcium	mg/L	0.1	1.7
Magnesium	mg/L	0.1	1.4
Alkalinity (as CaCO3)	mg/L	5.	nd
Sulfate	mg/L	2.	13.
Chloride	mg/L	1.	17.
Reactive Silica (as SiO2)	mg/L	0.5	4.8
Ortho Phosphate (as P)	mg/L	0.01	nd
Phosphorus	mg/L	0.1	nd
Nitrate + Nitrite (as N)	mg/L	0.05	nd
Nitrate (as N)	mg/L	0.05	nd
Nitrite	mg/L	0.01	nd
Ammonia (as N)	mg/L	0.05	nd
Color	TCU	5.	36.
Total Org. Carbon (by UV)	mg/L	0.5	8.0
Turbidity	NTU	0.1	0.2
Conductance (RCAp)	uS/cm	1.	89.
pH	Units	-	6.4
Hardness (as CaCO3)	mg/L	0.1	10.0
Bicarbonate (as CaCO3)	mg/L	1.	nd(5.)
Carbonate (as CaCO3)	mg/L	1.	nd(5.)
TDS (Calculated)	mg/L	1.	54.

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0208758H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/07/02
Reported : 2002/07/02

Matrix	Water
Philip ID	02-H033078
Client ID	W.W.P. 7 A -C
Date Sampled (y/m/d)	02/06/20
Date Received (y/m/d)	02/06/24

Analyte	Units	EQL	(Continued from previous page)
Cation Sum	meq/L	0.10	0.74
Anion Sum	meq/L	0.10	0.85
Ion Balance	%	-	7.37
Langlier Index @ 4C		-	-4.50
Langlier Index @ 20C		-	-4.10
Saturation pH @ 4C	Units	-	10.9
Saturation pH @ 20C	Units	-	10.5
Total Suspended Solids	mg/L	0.5	nd(2.)
Aluminum	ug/L	10	220
Antimony	ug/L	2.	nd
Arsenic	ug/L	2.	nd
Barium	ug/L	5.	nd
Beryllium	ug/L	5.	nd
Bismuth	ug/L	2.	nd
Boron	ug/L	5.	14.
Cadmium	ug/L	0.3	nd
Chromium	ug/L	2.	nd
Cobalt	ug/L	1.	nd
Copper	ug/L	2.	2.
Iron	ug/L	20	130
Lead	ug/L	0.5	nd
Manganese	ug/L	2.	5.
Molybdenum	ug/L	2.	nd

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 3

PSC Analytical Services
5 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0208758H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/07/02
Reported : 2002/07/02

Matrix	Water
Philip ID	02-H033078
Client ID	W.W.P. 7 A -C
Date Sampled (y/m/d)	02/06/20
Date Received (y/m/d)	02/06/24

Analyte	Units	EQL	(Continued from previous page)
Nickel	ug/L	2.	nd
Selenium	ug/L	2.	nd
Silver	ug/L	0.5	nd
Strontium	ug/L	5.	12.
Thallium	ug/L	0.1	nd
Tin	ug/L	2.	nd
Titanium	ug/L	2.	nd
Uranium	ug/L	0.1	nd
Vanadium	ug/L	2.	nd
Zinc	ug/L	2.	6.

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample
Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 4

PSC Analytical Services
5 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0208758H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/07/02
Reported : 2002/07/02

Certificate of Analysis

Method Summaries:

- Alkalinity: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #310.2
- Chloride: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #325.1
- Colour: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: Standard Methods, 16th Edition, 1985
- Conductance (RCAp): Electrometric @ 25 C, values >300 uS/cm diluted for validation purposes. Ref: Standard Methods 4500-H+, 19th Edition, 1995.
- Total Organic Carbon: UV Digestion/Technicon AA1 Analyser. Ref: Standard Methods, 19th Edition, 1995

Total Recoverable Metals Digest: Homogenization/Digestion. Ref: USEPA Method #200.2
NO2/NO3: Roche Cobas Fara/BMC Hitachi 911 Automated Colormetric Analyser. Ref. USEPA Method #353.1
pH: Electrometric @ 25 C. Ref: USEPA Method #150.3
Phosphorus: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
Reactive Silica: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #370.1
Sulfate: Roche Cobas Fara/BMC Hitachi 911 Automated Turbidimetric. Ref: USEPA Method #375.4
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2
Turbidity: Nephelometric. Ref: USEPA Method #180.1
Ortho Phosphorus: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #365.2
Trace Metals in Aqueous Samples: Elan 5000 ICP-MS. Ref: USEPA Method #200.8
Ammonia (NH3 plus NH4+): Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #350.1
Nitrite. Roche Cobas/BMC Hitachi 911 Automated Colormetric Analyser. Ref: USEPA Method #354.1
Major Metals in Aqueous Samples: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
Total Metals in Water: Digestion/ICP-MS. Ref: USEPA 200.8

Inorganic Parameters page : 5

PSC Analytical Services
5 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0208758H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/07/02
Reported : 2002/07/02

Certificate of Analysis

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

PSC

ANALYTICAL SERVICES

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0209320H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2002/07/12
Reported : 2002/07/12

Matrix	Water
Philip ID	02-H035182
Client ID	WWP4-A-C
Date Sampled (y/m/d)	02/07/02
Date Received (y/m/d)	02/07/04

Analyte	Units	EQL	
Total Water Digest		-	20020705-A
Sodium	mg/L	0.1	17.3
Potassium	mg/L	0.1	0.7
Calcium	mg/L	0.1	3.4
Magnesium	mg/L	0.1	2.6
Alkalinity (as CaCO3)	mg/L	5.	15.
Sulfate	mg/L	2.	9.
Chloride	mg/L	1.	27.
Reactive Silica (as SiO2)	mg/L	0.5	9.3
Ortho Phosphate (as P)	mg/L	0.01	nd(0.02)
Phosphorus	mg/L	0.1	0.1
Nitrate + Nitrite (as N)	mg/L	0.05	nd
Nitrate (as N)	mg/L	0.05	nd
Nitrite	mg/L	0.01	nd
Ammonia (as N)	mg/L	0.05	nd
Color	TCU	5.	19.
Total Org. Carbon (by UV)	mg/L	0.5	4.4
Turbidity	NTU	0.1	0.2
Conductance (RCAp)	uS/cm	1.	141.
pH	Units	-	7.2
Hardness (as CaCO3)	mg/L	0.1	19.2
Bicarbonate (as CaCO3)	mg/L	1.	15.

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample
Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
300 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0209320H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/07/12
Reported : 2002/07/12

Matrix	Water
Philip ID	02-H035182
Client ID	WWP4-A-C
Date Sampled (y/m/d)	02/07/02
Date Received (y/m/d)	02/07/04

Analyte	Units	EQL	(Continued from previous page)
Carbonate (as CaCO3)	mg/L	1.	nd
TDS (Calculated)	mg/L	1.	79.
Cation Sum	meq/L	0.10	1.16
Anion Sum	meq/L	0.10	1.25
Ion Balance	%	-	3.92
Langlier Index @ 4C		-	-2.93
Langlier Index @ 20C		-	-2.53
Saturation pH @ 4C	Units	-	10.1
Saturation pH @ 20C	Units	-	9.73
Total Suspended Solids	mg/L	0.5	nd(2.)
Aluminum	ug/L	10	110
Antimony	ug/L	2.	nd
Arsenic	ug/L	2.	nd
Barium	ug/L	5.	nd
Beryllium	ug/L	5.	nd
Bismuth	ug/L	2.	nd
Boron	ug/L	5.	18.
Cadmium	ug/L	0.3	nd
Chromium	ug/L	2.	nd
Cobalt	ug/L	1.	nd
Copper	ug/L	2.	2.
Iron	ug/L	20	90
Lead	ug/L	0.5	nd
Manganese	ug/L	2.	13.

Legend:

EQL = Estimated Quantitation Limit for routine analysis
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- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 3

PSC Analytical Services
200 Bluewater Road
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Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0209320H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/07/12
Reported : 2002/07/12

Matrix	Water
Philip ID	02-H035182
Client ID	WWP4-A-C
Date Sampled (y/m/d)	02/07/02
Date Received (y/m/d)	02/07/04

Analyte	Units	EQL	(Continued from previous page)
Molybdenum	ug/L	.2.	nd
Nickel	ug/L	2.	nd
Selenium	ug/L	2.	nd
Silver	ug/L	0.5	nd
Strontium	ug/L	.5.	23.
Thallium	ug/L	0.1	nd
Tin	ug/L	2.	nd
Titanium	ug/L	2.	2.
Uranium	ug/L	0.1	0.1
Vanadium	ug/L	2.	nd
Zinc	ug/L	2.	4.

02-H035182 WWP4-A-C Elevated EQL for Potassium (< 0.2 mg/L) due to instrument precision.

02-H035182 WWP4-A-C Orthophosphorous; EQL = 0.02 due to elevated method blank.

Legend:

EQL = Estimated Quantitation Limit for routine analysis
nd = not detected above standard EQL
nd() = not detected at the elevated EQL specified due to matrix interferences or sample pre-dilution
- = Parameter not requested in Sample

Note : Soil results are expressed as air dry weight basis. Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 4

Analytical Services
100 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0209320H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/07/12
Reported : 2002/07/12

Certificate of Analysis

Method Summaries:

Alkalinity: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #310.2
Chloride: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #325.1
Colour: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: Standard Methods, 16th Edition, 1985
Conductance (RCAp): Electrometric @ 25 C, values >300 uS/cm diluted for validation purposes. Ref: Standard Methods 4500-H+, 19th Edition, 1995.
Total Organic Carbon: UV Digestion/Technicon AA1 Analyser. Ref: Standard Methods, 19th Edition, 1995
Total Recoverable Metals Digest: Homogenization/Digestion. Ref: USEPA Method #200.2
NO2/NO3: Roche Cobas Fara/BMC Hitachi 911 Automated Colormetric Analyser. Ref. USEPA Method #353.1
pH: Electrometric @ 25 C. Ref: USEPA Method #150.3
Phosphorus: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
Reactive Silica: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #370.1
Sulfate: Roche Cobas Fara/BMC Hitachi 911 Automated Turbidimetric. Ref: USEPA Method #375.4
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2
Turbidity: Nephelometric. Ref: USEPA Method #180.1
Ortho Phosphorus: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #365.2
Trace Metals in Aqueous Samples: Elan 5000 ICP-MS. Ref: USEPA Method #200.8
Ammonia (NH3 plus NH4+): Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #350.1
Nitrite. Roche Cobas/BMC Hitachi 911 Automated Colormetric Analyser. Ref: USEPA Method #354.1
Major Metals in Aqueous Samples: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
Total Metals in Water: Digestion/ICP-MS. Ref: USEPA 200.8

Inorganic Parameters page : 5

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0209320H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/07/12
Reported : 2002/07/12

Certificate of Analysis

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0210238H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2002/09/05
Reported : 2002/09/05

Matrix	Water
Philip ID	02-H038806
Client ID	W.W.P. 5-A /-C
Date Sampled (y/m/d)	02/07/17
Date Received (y/m/d)	02/07/19

Analyte	Units	EQL	
Total Suspended Solids	mg/L	0.5	19.2
Arsenic (Seawater)	ug/L	0.1	0.5
Cadmium (Seawater)	ug/L	0.1	nd
Chromium (Seawater)	ug/L	0.5	0.5
Cobalt (Seawater)	ug/L	0.1	nd
Copper (Seawater)	ug/L	0.1	0.8
Iron (Seawater)	ug/L	1.	120
Lead (Seawater)	ug/L	0.1	0.5
Manganese (Seawater)	ug/L	1.	22.
Mercury	ug/L	0.05	0.06
Nickel (Seawater)	ug/L	0.5	0.6
Zinc (Seawater)	ug/L	1.	1.

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, our instruments did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

C Analytical Services
0 Bluewater Road
dford, NS Canada B4B 1G9
1 (902) 420-0203
11 free (800) 565-7227
x (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0210238H
Client Project Number :

FAX # : 902-532-7707
Printed : 2002/09/05
Reported : 2002/09/05

Certificate of Analysis

Method Summaries:

Mercury: Digestion/Cold Vapour Atomic Absorption. Ref: USEPA Method #245.5
Trace Analysis of Cd, Co, Cu, Ni, Pb, Fe, and Zn: Chelation/PE Elan 5000 ICP-MS. Ref: USEPA Method #200.8
Trace Analysis of Mn: Chelation/PE Elan 5000 ICP-MS. Ref USEPA Method #200.8
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2
Trace Metals in Aqueous Samples: Elan 5000 ICP-MS. Ref: USEPA Method #200.8

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

WATER SAMPLE ANALYSIS

2003

PSC

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0307329H
Client Project Number :

KERN, DAVID
BUXTON, PAUL

FAX # : 902-532-7707
Printed : 2003/05/15
Reported : 2003/05/15

Matrix	Water
Philip ID	03-H025045
Client ID	WWP2-A
Date Sampled (y/m/d)	03/05/06
Date Received (y/m/d)	03/05/08

Analyte	Units	EQL	
pH	Units	-	6.7
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend
- EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
- ND = Not Detected, our instruments did not detect anything above standard EQL.
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Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0307329H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/05/15
Reported : 2003/05/15

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number: 0307T43B
Client Project Number :

BUXTON, PAUL
KEARN, DAVID
FAX # 2-1707
Printed: 03/05/22
Reported: 2003/05/22

Matrix	Water
Philip ID	03-H026697
Client ID	WWP-2 A&B
Date Sampled (y/m/d)	03/05/13
Date Received (y/m/d)	03/05/15

Analyte	Units	EQL	
pH	Units	-	7.0
Total Suspended Solids	mg/L	0.5	2.2

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, our instruments did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis unless otherwise stated.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediat[illegible]
P.O. Box 98
Annapolis Royal
NS B0S 1A0

BUXTON, PAUL

FAX # : 532-7707
PSC Project Number : 0307743H
Client Project Number :
Printed : 2003/05/22
Reported : 2003/05/22

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (p[illegible]
1 ug/L = 0.001 mg/L = 1 part per billion (p[illegible])

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Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arsenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number :
Client Project :

XERN, DAVID
BUXTON, PAUL

FAX # : 902-532-7707
Printed : 2003/05/27
Reported : 2003/05/27

Matrix	Water
Philip ID	03-H028330
Client ID	WWP-2-A & B
Date Sampled (y/m/d)	03/05/20
Date Received (y/m/d)	03/05/22

Analyte	Units	EQL	
pH	Units	-	6.8
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend
- EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
- ND = Not Detected, our instruments did not detect anything above standard EQL.
- ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- \- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified JBV

Inorganic Parameters page : 2

PSC Analytical Services
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Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0308108H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/05/27
Reported : 2003/05/27

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1
Total Suspended Solids: Gravimetric. Ref. USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

PSC

ANALYTICAL SERVICES

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0308567H
Client Project Number :

KERN, DAVID

FAX # : 532-7707
Printed : 2003/06/03
Reported : 2003/06/03

Matrix	Water
Philip ID	03-H030308
Client ID	WWP-2 A&B
Date Sampled (y/m/d)	03/05/27
Date Received (y/m/d)	03/05/29

Analyte	Units	EQL	
pH	Units	-	6.4
Total Suspended Solids	mg/L	0.5	4.2

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, our instruments did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
200 Bluewater Road
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Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0308567H
Client Project Number :

FAX # : 532-7707
Printed : 2003/06/03
Reported : 2003/06/03

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : _____
Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters page : 1

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0309288H
Client Project Number :

PAUL BUXTON
KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/06/16
Reported : 2003/06/16

Matrix		Water	Water
Philip ID		03-H033192	03-H033193
Client ID		WWP-2-A & B	WWP-3-A & B
Date Sampled (y/m/d)		03/06/05	03/06/05
Date Received (y/m/d)		03/06/09	03/06/09
Analyte	**Units**	**EQL**	
pH	Units	-	6.8	6.9
Total Suspended Solids	mg/L	0.5	10.0	2.2

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, our instruments did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
[illegible] Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation PAUL BUXTON
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0309288H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/06/16
Reported : 2003/06/16

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Inorganic Parameters:

Inorganics Manager : _____
Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0309662H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/06/18
Reported : 2003/06/18

Matrix	Water
Philip ID	03-H035030
Client ID	WWP-2-A
Date Sampled (y/m/d)	03/06/10
Date Received (y/m/d)	03/06/13

Analyte	Units	EQL	
pH	Units	-	6.6
Total Suspended Solids	mg/L	0.5	19.5

Legend
- EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
- ND = Not Detected, our instruments did not detect anything above standard EQL.
- ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- \- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

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Inorganic Parameters page : 2

Analytical Services
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Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0309662H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/06/18
Reported : 2003/06/18

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0310040H
Client Project Number :

KERN, DAVID
FAX # : 902-532-7707
Printed : 2003/06/26
Reported : 2003/06/26

Matrix			Water	Water
Philip ID			03-H036745	03-H036746
Client ID			WWP-2	WWP-5
Date Sampled (y/m/d)			03/06/17	03/06/17
Date Received (y/m/d)			03/06/19	03/06/19
Analyte	**Units**	**EQL**		
pH	Units	-	6.6	7.8
Total Suspended Solids	mg/L	0.5	7.0	38.0

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, our instruments did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified ...

Inorganic Parameters page : 2

L. Analytical Services
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ax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
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Annapolis Royal
NS B0S 1A0

PSC Project Number : 0310040H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/06/26
Reported : 2003/06/26

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Analytical Test Results

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0310040H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/06/26
Reported : 2003/06/26

Matrix	Water
Philip ID	03-H036746
Description	
Client ID	WWP-5
Date Sampled (y/m/d)	03/06/17
Date Received (y/m/d)	03/06/19

Analyte	Units	EQL	
Salinity in Water		2.	32.

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND ( ) = Not Detected, our instruments did not detect anything above EQL. Raised EQL listed in Parenthesis.
- = Dash is reported when parameter not requested in sample.
Event # = PSC Quality Control Reference number for QC samples run with your sample.
%REC = Surrogate Recovery Values are results of PSC quality control tests.
Note : Soil results are expressed on a dry weight basis.
: Food results are expressed on a wet weight basis.

page verified

Analytical Test Results page : 2

PSC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0310040H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/06/26
Reported : 2003/06/26

Certificate of Analysis

Method Summaries:

- Salinity, Electrical Conductivity Method, Standard Method for the Examination of Water and Wastewater 20th ed., 2-48, 2-49. Unitless results are consistent with past results reported using parts per thousand units.

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Industrial Chemistry Parameters:
Industrial Chemistry Manager : Robert K. Boss

ANALYTICAL SERVICES

Inorganic Parameters

lient : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0310513H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/07/02
Reported : 2003/07/02

Matrix	Water
Philip ID	03-H038586
Client ID	WWP-2-A & B
Date Sampled (y/m/d)	03/06/24
Date Received (y/m/d)	03/06/26

Analyte	Units	EQL	
pH	Units	-	6.8
Total Suspended Solids	mg/L	0.5	33.8

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, our instruments did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

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Inorganic Parameters page : 2

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ax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
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Annapolis Royal
NS B0S 1A0

PSC Project Number : 0310513H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/07/02
Reported : 2003/07/02

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0310957H
Client Project Number :

PAUL BUXTON

FAX # : 902-532-7707
Printed : 2003/07/09
Reported : 2003/07/09

Matrix	Water
Philip ID	03-H040395
Client ID	WWP-2-Aand B
Date Sampled (y/m/d)	03/07/02
Date Received (y/m/d)	03/07/04

Analyte	Units	EQL	
pH	Units	-	7.0
Total Suspended Solids	mg/L	0.5	23.3

Legend
- EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
- ND = Not Detected, instrument did not detect anything above standard EQL.
- ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- \- = Dash is reported when parameter not requested in sample.

Note
- : Soil results are expressed as air dry weight basis.
- : Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
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Client : Eastern Canada Bioremediation PAUL BUXTON
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Annapolis Royal
NS B0S 1A0

PSC Project Number : 0310957H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/07/09
Reported : 2003/07/09

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : Terry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0311369H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/07/17
Reported : 2003/07/17

Matrix	Water
Philip ID	03-H042253
Client ID	WWP-2-A and WWP-2-B
Date Sampled (y/m/d)	03/07/09
Date Received (y/m/d)	03/07/11

Analyte	Units	EQL	
pH	Units	-	6.9
Total Suspended Solids	mg/L	0.5	13.0

Legend
EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
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Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
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Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0311369H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/07/17
Reported : 2003/07/17

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0311780H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/07/24
Reported : 2003/07/24

Matrix	Water
Philip ID	03-H044168
Client ID	WWP-2-A and WWP-2-B
Date Sampled (y/m/d)	03/07/17
Date Received (y/m/d)	03/07/18

Analyte	Units	EQL	
pH	Units	-	7.2
Total Suspended Solids	mg/L	0.5	14.0

Legend
EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
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Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

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Inorganic Parameters page : 2

Analytical Services
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Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0311780H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/07/24
Reported : 2003/07/24

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
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Approval of Inorganic Parameters:

Inorganics Manager : _____
Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0312243H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/07/31
Reported : 2003/07/31

Matrix		Water	Water
Philip ID		03-H046216	03-H046217
Client ID		WWP-2-A&B	WWP-8-A&B
Date Sampled (y/m/d)		03/07/23	03/07/23
Date Received (y/m/d)		03/07/25	03/07/25
Analyte	**Units**	**EQL**	
pH	Units	-	6.5	6.2
Total Suspended Solids	mg/L	0.5	14.2	27.5

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
00 Bluewater Road
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ax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0312243H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/07/31
Reported : 2003/07/31

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Approval of Inorganic Parameters:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0312541H
Client Project Number :

BUXTON, PAUL

FAX # : 902-532-7707
Printed : 2003/08/07
Reported : 2003/08/07

Matrix	Water
Philip ID	03-H047615
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	03/07/29
Date Received (y/m/d)	03/07/31

Analyte	Units	EQL	
Total Water Digest		-	20030801-C
Sodium	mg/L	0.1	24.2
Potassium	mg/L	0.1	2.2
Calcium	mg/L	0.1	6.5
Magnesium	mg/L	0.1	4.5
Alkalinity (as CaCO3)	mg/L	5.	59.
Sulfate	mg/L	2.	20.
Chloride	mg/L	1.	26.
Reactive Silica (as SiO2)	mg/L	0.5	10.
Ortho Phosphate (as P)	mg/L	0.01	0.02
Phosphorus	mg/L	0.1	nd
Nitrate + Nitrite (as N)	mg/L	0.05	nd
Nitrate (as N)	mg/L	0.05	nd
Nitrite	mg/L	0.01	nd
Ammonia (as N)	mg/L	0.05	0.21
Color	TCU	5.	130
Total Org. Carbon (by UV)	mg/L	0.5	18.2
Turbidity	NTU	0.1	4.4
Conductance (RCAp)	uS/cm	1.	177.

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
200 Bluewater Road
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Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation BUXTON, PAUL
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0312541H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/08/07
Reported : 2003/08/07

Matrix	Water
Philip ID	03-H047615
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	03/07/29
Date Received (y/m/d)	03/07/31

Analyte	Units	EQL	(Continued from previous page)
pH	Units	-	7.6
Hardness (as CaCO3)	mg/L	0.1	34.8
Bicarbonate (as CaCO3)	mg/L	1.	59.
Carbonate (as CaCO3)	mg/L	1.	nd
TDS (Calculated)	mg/L	1.	129.
Cation Sum	meq/L	0.10	1.82
Anion Sum	meq/L	0.10	2.33
Ion Balance	%	-	12.4
Langlier Index @ 4C		-	-1.66
Langlier Index @ 20C		-	-1.26
Saturation pH @ 4C	Units	-	9.26
Saturation pH @ 20C	Units	-	8.86
Total Suspended Solids	mg/L	0.5	5.2
Aluminum	ug/L	10	360
Antimony	ug/L	2.	nd
Arsenic	ug/L	2.	nd
Barium	ug/L	5.	12.
Beryllium	ug/L	2.	nd
Bismuth	ug/L	2.	nd
Boron	ug/L	5.	21.
Cadmium	ug/L	0.3	nd

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 3

PSC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
(902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation BUXTON, PAUL
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0312541H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/08/07
Reported : 2003/08/07

Matrix	Water
Philip ID	03-H047615
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	03/07/29
Date Received (y/m/d)	03/07/31

Analyte	Units	EQL	(Continued from previous page)
Chromium	ug/L	2.	2.
Cobalt	ug/L	1.	5.
Copper	ug/L	2.	3.
Iron	ug/L	50	4500
Lead	ug/L	0.5	0.7
Manganese	ug/L	2.	2000
Molybdenum	ug/L	2.	nd
Nickel	ug/L	2.	2.
Selenium	ug/L	2.	nd
Silver	ug/L	0.5	nd
Strontium	ug/L	5.	43.
Thallium	ug/L	0.1	nd
Tin	ug/L	2.	nd
Titanium	ug/L	2.	6.
Uranium	ug/L	0.1	nd
Vanadium	ug/L	2.	3.
Zinc	ug/L	5.	nd

03-H047615 WWP-2-A&B Cation sum does not include contribution from Fe and Mn.

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 4

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation BUXTON, PAUL
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0312541H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/08/07
Reported : 2003/08/07

Certificate of Analysis

Method Summaries:

- Alkalinity: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #310.2
- Chloride: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #325.1
- Colour: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: Standard Methods, 16th Edition, 1985
- Conductance (RCAp): Electrometric @ 25 C, values >300 uS/cm diluted for validation purposes. Ref: Standard Methods 4500-H+, 19th Edition, 1995.
- Total Organic Carbon: UV Digestion/Technicon AA1 Analyser. Ref: Standard Methods, 19th Edition, 1995
- Total Recoverable Metals Digest: Homogenization/Digestion. Ref: USEPA Method #200.2
- NO2/NO3: Roche Cobas Fara/BMC Hitachi 911 Automated Colormetric Analyser. Ref. USEPA Method #353.1
- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Phosphorus: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
- Reactive Silica: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #370.1
- Sulfate: Roche Cobas Fara/BMC Hitachi 911 Automated Turbidimetric. Ref: USEPA Method #375.4
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2
- Turbidity: Nephelometric. Ref: USEPA Method #180.1
- Ortho Phosphorus: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #365.1 SOP 2160 V1R2 / 2165 V1R1
- Trace Metals in Aqueous Samples: Elan 5000 ICP-MS. Ref: USEPA Method #200.8
- Ammonia (NH3 plus NH4+): Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA 350.1 Determination of Ammonia (Colorimetric, Automated Phenate) Revision 2.0, 1993. SOP 2100 V1R2 / 2105 V1R2
- Nitrite. Roche Cobas/BMC Hitachi 911 Automated Colormetric Analyser. Ref: USEPA Method #354.1
- Major Metals in Aqueous Samples: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7
- Total Metals in Water: Digestion/ICP-MS. Ref: USEPA 200.8

Inorganic Parameters page : 5

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation BUXTON, PAUL
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0312541H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/08/07
Reported : 2003/08/07

Certificate of Analysis

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Inorganic Parameters:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0313038H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/08/14
Reported : 2003/08/14

Matrix			Water	Water
Philip ID			03-H049594	03-H049595
Client ID			WWP-2-A&B	WWP-8-A&B
Date Sampled (y/m/d)			03/08/05	03/08/05
Date Received (y/m/d)			03/08/08	03/08/08
Analyte	**Units**	**EQL**		
pH	Units	-	7.0	6.6
Total Suspended Solids	mg/L	0.5	7.8	12.0

Legend
- EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
- ND = Not Detected, instrument did not detect anything above standard EQL.
- ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- \- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0313038H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/08/14
Reported : 2003/08/14

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0313399H
Client Project Number :

KERN, DAVID
FAX # : 902-532-7707
Printed : 2003/08/22
Reported : 2003/08/22

Matrix		Water	Water
Philip ID		03-H051086	03-H051087
Client ID		WWP-2-A,B	WWP-8-A,B
Date Sampled (y/m/d)		03/08/12	03/08/12
Date Received (y/m/d)		03/08/14	03/08/14
Analyte	Units	EQL	
Total Water Digest	-	-	20030818-C
Sodium	mg/L	0.1	10.4
Potassium	mg/L	0.1	0.4
Calcium	mg/L	0.1	1.5
Magnesium	mg/L	0.1	1.1
Alkalinity (as CaCO3)	mg/L	5.	nd
Sulfate	mg/L	2.	nd(10)
Chloride	mg/L	1.	12.
Reactive Silica (as SiO2)	mg/L	0.5	7.6
Ortho Phosphate (as P)	mg/L	0.01	nd(0.02)
Nitrate + Nitrite (as N)	mg/L	0.05	nd
Ammonia (as N)	mg/L	0.05	nd
Iron	mg/L	0.02	0.32
Manganese	mg/L	0.01	0.01
Copper	mg/L	0.01	nd
Zinc	mg/L	0.05	nd
Color	TCU	5.	72.
Total Org. Carbon (by UV)	mg/L	0.5	12.4
Turbidity	NTU	0.1	0.5

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expresned on a wet weight basis unless otherwise stated.

page verified /

Inorganic Parameters page : 2

C Analytical Services
0 Bluewater Road
. rd, NS Canada B4B 1G9
1 (902) 420-0203
ll free (800) 565-7227
x (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
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Annapolis Royal
NS B0S 1A0

PSC Project Number : 0313399H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/08/22
Reported : 2003/08/22

Matrix		Water	Water
Philip ID		03-H051086	03-H051087
Client ID		WWP-2-A,B	WWP-9-A,B
Date Sampled (y/m/d)		03/08/12	03/08/12
Date Received (y/m/d)		03/08/14	03/08/14

Analyte	Units	EQL		(Continued from previous page)
Conductance (RCAp)	uS/cm	1.	-	66.
pH	Units	-	6.6	6.4
Hardness (as CaCO3)	mg/L	0.1	-	8.3
Bicarbonate (as CaCO3)	mg/L	1.	-	nd(5.)
Carbonate (as CaCO3)	mg/L	1.	-	nd(5.)
TDS (Calculated)	mg/L	1.	-	46.
Cation Sum	meq/L	0.10	-	0.63
Anion Sum	meq/L	0.10	-	0.65
Ion Balance	%	-	-	1.40
Langlier Index @ 4C		-	-	-4.55
Langlier Index @ 20C		-	-	-4.15
Saturation pH @ 4C	Units	-	-	10.9
Saturation pH @ 20C	Units	-	-	10.5
Total Suspended Solids	mg/L	0.5	7.5	nd(2.)

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
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Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 3

C Analytical Services
0 Bluewater Road
dford, NS Canada B4B 1G9
1 (902) 420-0203
11 free (800) 565-7227
x (902) 420-8612

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0

KERN, DAVID

PSC Project Number : 0313399H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/08/22
Reported : 2003/08/22

Certificate of Analysis

Method Summaries:

Alkalinity: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #310.2
Chloride: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #325.1
Colour: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: Standard Methods, 16th Edition, 1985
Conductance (RCAp): Electrometric @ 25 C, values >300 uS/cm diluted for validation purposes. Ref: Standard Methods 4500-H+, 19th Edition, 1995.
Total Organic Carbon: UV Digestion/Technicon AA1 Analyser. Ref: Standard Methods, 19th Edition, 1995
Total Recoverable Metals Digest: Homogenization/Digestion. Ref: USEPA Method #200.2
?/NO3: Roche Cobas Fara/BMC Hitachi 911 Automated Colormetric Analyser. ..ef. USEPA Method #353.1
pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Reactive Silica: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #370.1
Sulfate: Roche Cobas Fara/BMC Hitachi 911 Automated Turbidimetric. Ref: USEPA Method #375.4
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2
Turbidity: Nephelometric. Ref: USEPA Method #180.1
Ortho Phosphorus: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #365.1 SOP 2160 V1R2 / 2165 V1R1
Ammonia (NH3 plus NH4+): Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA 350.1 Determination of Ammonia (Colorimetric, Automated Phenate) Revision 2.0, 1993. SOP 2100 V1R2 / 2105 V1R2
Major Metals in Aqueous Samples: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7

Inorganic Parameters page : 4

C Analytical Services
0 Bluewater Road
dford, NS Canada B4B 1G9
1 (902) 420-0203
ll free (800) 565-7227
x (902) 420-8612

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0

KERN, DAVID

FAX # : 902-532-7707
PSC Project Number : 0313399H
Printed : 2003/08/22
Client Project Number : Reported : 2003/08/22

Certificate of Analysis

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0313852H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/08/27
Reported : 2003/08/27

Matrix	Water
Philip ID	03-H052990
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	03/08/19
Date Received (y/m/d)	03/08/21

Analyte	Units	EQL	
pH	Units	-	7.1
Total Suspended Solids	mg/L	0.5	13.5

Legend
EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0313852H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/08/27
Reported : 2003/08/27

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0314448H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/09/10 (Event 503)
Reported : 2003/09/10

Matrix			Water	Water
Philip ID			03-H055936	03-H055937
Client ID			WWP-2 A&B	WWP-8 A&B
Date Sampled (y/m/d)			03/08/27	03/08/27
Date Received (y/m/d)			03/08/29	03/08/29
Analyte	**Units**	**EQL**		
Total Water Digest		-	20030904-B	20030904-B
Sodium	mg/L	0.1	17.2	12.3
Potassium	mg/L	0.1	1.6	0.8
Calcium	mg/L	0.1	4.0	2.1
Magnesium	mg/L	0.1	2.7	1.6
Alkalinity (as CaCO3)	mg/L	5.	28.	10.
Sulfate	mg/L	2.	nd(5.)	14.
Chloride	mg/L	1.	16.	13.
Reactive Silica (as SiO2)	mg/L	0.5	7.8	6.4
Ortho Phosphate (as P)	mg/L	0.01	nd	0.03
Nitrate + Nitrite (as N)	mg/L	0.05	nd	nd
Ammonia (as N)	mg/L	0.05	0.29	0.09
Iron	mg/L	0.02	5.22	0.45
Manganese	mg/L	0.01	1.48	0.09
Copper	mg/L	0.01	0.01	nd
Zinc	mg/L	0.05	nd	nd
Color	TCU	5.	90.	35.
Total Org. Carbon (by UV)	mg/L	0.5	16.6	8.8
Turbidity	NTU	0.1	5.8	0.6

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
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Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

SC Analytical Services
10 Bluewater Road
rd, NS Canada B4B 1G9
el (902) 420-0203
oll free (800) 565-7227
ax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0314448H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/09/10 E503
Reported : 2003/09/10

Matrix		Water	Water
Philip ID		03-H055936	03-H055937
Client ID		WWP-2 A&B	WWP-8 A&B
Date Sampled (y/m/d)		03/08/27	03/08/27
Date Received (y/m/d)		03/08/29	03/08/29
Analyte	Units	EQL	(Continued from previous page)
Conductance (RCAp)	uS/cm	1.	117. 84.
pH	Units	-	6.9 6.4
Hardness (as CaCO3)	mg/L	0.1	21.1 11.8
Bicarbonate (as CaCO3)	mg/L	1.	28. 10.
Carbonate (as CaCO3)	mg/L	1.	nd nd
TDS (Calculated)	mg/L	1.	72. 57.
Cation Sum	meq/L	0.10	1.23 0.80
Anion Sum	meq/L	0.10	1.12 0.86
Ion Balance	%	-	4.81 3.77
Langlier Index @ 4C		-	-2.88 -4.11
Langlier Index @ 20C		-	-2.48 -3.71
Saturation pH @ 4C	Units	-	9.78 10.5
Saturation pH @ 20C	Units	-	9.38 10.1

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 3

C Analytical Services
0 Bluewater Road
dford, NS Canada B4B 1G9
1 (902) 420-0203
11 free (800) 565-7227
x (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0314448H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/09/10 E503
Reported : 2003/09/10

Certificate of Analysis

Method Summaries:

Alkalinity: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #310.2
Chloride: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #325.1
Colour: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: Standard Methods, 16th Edition, 1985
Conductance (RCAp): Electrometric @ 25 C, values >300 uS/cm diluted for validation purposes. Ref: Standard Methods 4500-H+, 19th Edition, 1995.
Total Organic Carbon: UV Digestion/Technicon AA1 Analyser. Ref: Standard Methods, 19th Edition, 1995
Total Recoverable Metals Digest: Homogenization/Digestion. Ref: USEPA Method #200.2
2/NO3: Roche Cobas Fara/BMC Hitachi 911 Automated Colormetric Analyser. ..ef. USEPA Method #353.1
pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Reactive Silica: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #370.1
Sulfate: Roche Cobas Fara/BMC Hitachi 911 Automated Turbidimetric. Ref: USEPA Method #375.4
Turbidity: Nephelometric. Ref: USEPA Method #180.1
Ortho Phosphorus: Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA Method #365.1 SOP 2160 V1R2 / 2165 V1R1
Ammonia (NH3 plus NH4+): Roche Cobas Fara/BMC Hitachi 911 Automated Colorimetric Analyser. Ref: USEPA 350.1 Determination of Ammonia (Colorimetric, Automated Phenate) Revision 2.0, 1993. SOP 2100 V1R2 / 2105 V1R2
Major Metals in Aqueous Samples: PE Optima 3000 ICP-OES. Ref: USEPA Method #200.7

Inorganic Parameters page : 4

L Analytical Services
0 Bluewater Road
dford, NS Canada B4B 1G9
l (902) 420-0203
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x (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
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Annapolis Royal
NS B0S 1A0
PSC Project Number : 0314448H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/09/10 E503
Reported : 2003/09/10

Certificate of Analysis

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:
Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0314658H
Client Project Number :

PAUL BUXTON
KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/09/10 (Event 690)
Reported : 2003/09/10

Matrix	Water
Philip ID	03-H056835
Client ID	WWP-2-A and B
Date Sampled (y/m/d)	03/09/02
Date Received (y/m/d)	03/09/04

Analyte	Units	EQL	
pH	Units	-	7.3
Total Suspended Solids	mg/L	0.5	nd(10)

Legend
EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation PAUL BUXTON
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0314658H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/09/10 E69
Reported : 2003/09/10

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:
Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0315233H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/09/18 (Event 394)
Reported : 2003/09/18

Matrix	Water
Philip ID	03-H059665
Client ID	WWP-2A and B
Date Sampled (y/m/d)	03/09/10
Date Received (y/m/d)	03/09/12

Analyte	Units	EQL	
pH	Units	-	6.8
Total Suspended Solids	mg/L	0.5	3.0

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

. . Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0315233H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/09/18 E394
Reported : 2003/09/18

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:
Inorganics Manager : Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0315731H
Client Project Number :

PAUL BUXTON

FAX # : 902-532-7707
Printed : 2003/09/25 (Event 402)
Reported : 2003/09/25

Matrix	Water
Philip ID	03-H061666
Client ID	WWP-2A and 2B
Date Sampled (y/m/d)	03/09/17
Date Received (y/m/d)	03/09/19

Analyte	Units	EQL	
pH	Units	-	7.0
Total Suspended Solids	mg/L	0.5	7.5

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
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Fax (902) 420-8612

Client : Eastern Canada Bioremediation PAUL BUXTON
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NS B0S 1A0

PSC Project Number : 0315731H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/09/25 E40:
Reported : 2003/09/25

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:

Inorganics Manager : _____
Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0316060H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/10/07 (Event 669)
Reported : 2003/10/02

Matrix	Water
Philip ID	03-H063126
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	03/09/23
Date Received (y/m/d)	03/09/25

Analyte	Units	EQL	
pH	Units	-	7.1
Total Suspended Solids	mg/L	0.5	5.0
03-H063126 WWP-2-A&B		Due to a power outage associated with Hurricane Juan, TSS sample aliquot exceeded the maximum recommended storage temperature for approximately twelve hours.	

REVISED REPORT

Legend
- EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
- ND = Not Detected, instrument did not detect anything above standard EQL.
- ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- \- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
Bluewater Road
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Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0316060H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/10/07 E66
Reported : 2003/10/02

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

REVISED REPORT

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0316467H
Client Project Number :

PAUL BUXTON
KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/10/10 (Event 402)
Reported : 2003/10/10

Matrix	Water
Philip ID	03-H064890
Client ID	WWP-2-A and B
Date Sampled (y/m/d)	03/10/01
Date Received (y/m/d)	03/10/03

Analyte	Units	EQL	
pH	Units	-	7.2
Total Suspended Solids	mg/L	0.5	nd(5.)

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
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Client : Eastern Canada Bioremediation PAUL BUXTON
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Annapolis Royal
NS B0S 1A0
PSC Project Number : 0316467H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/10/10 E402
Reported : 2003/10/10

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0316908H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/10/17 (Event 388)
Reported : 2003/10/17

Matrix	Water
Philip ID	03-H066602
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	03/10/08
Date Received (y/m/d)	03/10/10

Analyte	Units	EQL	
pH	Units	-	7.4
Total Suspended Solids	mg/L	0.5	2.5

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

SC Analytical Services
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Client : Eastern Canada Bioremediation KERN, DAVID
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Annapolis Royal
NS B0S 1A0

PSC Project Number : 0316908H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/10/17 E388
Reported : 2003/10/17

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:

Inorganics Manager : _____
Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0317239H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/10/24 (Event 406)
Reported : 2003/10/24

Matrix	Water
Philip ID	03-H067873
Client ID	WWP-2A&B
Date Sampled (y/m/d)	03/10/15
Date Received (y/m/d)	03/10/17

Analyte	Units	EQL	
pH	Units	-	7.4
Total Suspended Solids	mg/L	0.5	4.0

Legend
- EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
- ND = Not Detected, instrument did not detect anything above standard EQL.
- ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- \- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

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ll free (800) 565-7227
x (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0317239H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/10/24 E406
Reported : 2003/10/24

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:
Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0317681H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/10/31 (Event 700)
Reported : 2003/10/31

Matrix	Water
Philip ID	03-H069829
Client ID	WWP-2-A and B
Date Sampled (y/m/d)	03/10/22
Date Received (y/m/d)	03/10/24

Analyte	Units	EQL	
pH	Units	-	6.9
Total Suspended Solids	mg/L	0.5	27.8

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0317681H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/10/31 E700
Reported : 2003/10/31

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:

Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0318121H
Client Project Number :

KERN, DAVID
BUXTON, PAUL

FAX # : 902-532-7707
Printed : 2003/11/07 (Event 601)
Reported : 2003/11/07

Matrix			Water	Water
Philip ID			03-H071861	03-H071862
Client ID			WWP-2-A&B	WWP-8-A&B
Date Sampled (y/m/d)			03/10/29	03/10/29
Date Received (y/m/d)			03/10/31	03/10/31
Analyte	**Units**	**EQL**		
pH	Units	-	6.7	6.2
Total Suspended Solids	mg/L	0.5	3.5	5.5

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
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Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

FAX # : 902-532-7707
PSC Project Number : 0318121H Printed : 2003/11/07 E60
Client Project Number : Reported : 2003/11/07

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:
Inorganics Manager : Jerry Arenovich

ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0318542H
Client Project Number :

PAUL BUXTON
KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/11/17 (Event 656)
Reported : 2003/11/17

Matrix	Water
Philip ID	03-H073429
Client ID	WWP-2A and 2B
Date Sampled (y/m/d)	03/11/05
Date Received (y/m/d)	03/11/07

Analyte	Units	EQL	
pH	Units	-	6.8
Total Suspended Solids	mg/L	0.5	2.8

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified ___

Inorganic Parameters page : 2

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Client : Eastern Canada Bioremediation PAUL BUXTON
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0318542H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/11/17 E656
Reported : 2003/11/17

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:

Inorganics Manager : _____
Gerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0318870H
Client Project Number :

KERN, DAVID
BUXTON, PAUL

FAX # : 902-532-7707
Printed : 2003/11/21 (Event 495)
Reported : 2003/11/21

Matrix	Water
Philip ID	03-H074796
Client ID	WWP-2-A
Date Sampled (y/m/d)	03/11/12
Date Received (y/m/d)	03/11/14

Analyte	Units	EQL	
pH	Units	-	6.7
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
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Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

FAX # : 902-532-7707
PSC Project Number : 0318870H
Client Project Number :
Printed : 2003/11/21 E495
Reported : 2003/11/21

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:
Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0319264H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/11/28 (Event 685)
Reported : 2003/11/28

Matrix	Water
Philip ID	03-H076594
Client ID	WWP-2A&B
Date Sampled (y/m/d)	03/11/19
Date Received (y/m/d)	03/11/21

Analyte	Units	EQL	
pH	Units	-	6.8
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

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Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0319264H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/11/28 E68
Reported : 2003/11/28

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0319742H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/12/05 (Event 499)
Reported : 2003/12/05

Matrix		Water	Water
Philip ID		03-H078413	03-H078414
Client ID		WWP-2-A & B	WWP-8-A & B
Date Sampled (y/m/d)		03/11/26	03/11/26
Date Received (y/m/d)		03/11/28	03/11/28
Analyte	**Units**	**EQL**	
pH	Units	-	6.8	6.4
Total Suspended Solids	mg/L	0.5	nd(2.)	3.2

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0319742H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/12/05 E49
Reported : 2003/12/05

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

Analyses reviewed by:

Inorganics Manager : Terry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0320218H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/12/15 (Event 402)
Reported : 2003/12/15

Matrix	Water
Philip ID	03-H080262
Client ID	WWP-2 A & B
Date Sampled (y/m/d)	03/12/04
Date Received (y/m/d)	03/12/08

Analyte	Units	EQL	
pH	Units	-	6.7
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend
EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

: Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0 FAX # 902-532-7707
PSC Project Number : 0320218H Printed : 2003/12/15 E40
Client Project Number : Reported : 2003/12/15

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:
Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0320719H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/12/22 (Event 393)
Reported : 2003/12/22

Matrix	Water
Philip ID	03-H082398
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	03/12/11
Date Received (y/m/d)	03/12/15

Analyte	Units	EQL	
pH	Units	-	6.8
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend
EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

SC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0320719H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/12/22 E3
Reported : 2003/12/22

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0321073H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2003/12/23 (Event 597)
Reported : 2003/12/23

Matrix	Water
Philip ID	03-H084041
Client ID	WWP-2 A&B
Date Sampled (y/m/d)	03/12/17
Date Received (y/m/d)	03/12/19

Analyte	Units	EQL	
pH	Units	-	6.4
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

. Analytical Services
00 Bluewater Road
edford, NS Canada B4B 1G9
el (902) 420-0203
oll free (800) 565-7227
ax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0321073H
Client Project Number :

FAX # : 902-532-7707
Printed : 2003/12/23 E597
Reported : 2003/12/23

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0321455H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2004/01/07 (Event 388)
Reported : 2004/01/07

Matrix			Water	Water
Philip ID			03-H086013	03-H086014
Client ID			WWP-2-A&B	WWP-8-A&B
Date Sampled (y/m/d)			03/12/24	03/12/24
Date Received (y/m/d)			03/12/30	03/12/30
Analyte	**Units**	**EQL**		
pH	Units	-	7.0	5.8
Total Suspended Solids	mg/L	0.5	nd(2.)	nd(2.)

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

: Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0321455H
Client Project Number :

FAX # : 902-532-7707
Printed : 2004/01/07 E38
Reported : 2004/01/07

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:
Inorganics Manager : Jerry Arenovich

WATER SAMPLE ANALYSIS

2004

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0400023H
Client Project Number :

KERN, DAVID
BUXTON, PAUL

FAX # : 902-532-7707
Printed : 2004/01/08 (Event 593)
Reported : 2004/01/08

Matrix	Water
Philip ID	04-H000072
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	04/01/01
Date Received (y/m/d)	04/01/05

Analyte	Units	EQL	
pH	Units	-	6.2
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend
- EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
- ND = Not Detected, instrument did not detect anything above standard EQL.
- ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- \- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0400023H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2004/01/08 E593
Reported : 2004/01/08

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : _____
Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0400273H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2004/01/15 (Event 595)
Reported : 2004/01/15

Matrix	Water
Philip ID	04-H000904
Client ID	WWP-2-A&B
Date Sampled (y/m/d)	04/01/07
Date Received (y/m/d)	04/01/09

Analyte	Units	EQL	
pH	Units	-	6.5
Total Suspended Solids	mg/L	0.5	2.5

Legend
EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

SC Analytical Services
10 Bluewater Road
Edford, NS Canada B4B 1G9
el (902) 420-0203
oll free (800) 565-7227
ax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

FAX # : 902-532-7707
PSC Project Number : 0400273H Printed : 2004/01/15 E595
Client Project Number : Reported : 2004/01/15

Certificate of Analysis

Method Summaries:

pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:
Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0407341H
Client Project Number :

PAUL BUXTON
KERN, DAVID

FAX # : 902-532-7707
Printed : 2004/05/13 (Event 623)
Reported : 2004/05/13

Matrix			Water	Water	Water
Philip ID			04-H028141	04-H028142	04-H028143
Client ID			WWP-1-A and B	WWP-2-A and B	WWP-8-A and B
Date Sampled (y/m/d)			04/05/05	04/05/05	04/05/05
Date Received (y/m/d)			04/05/07	04/05/07	04/05/07
Analyte	**Units**	**EQL**			
pH	Units	-	6.4	6.4	5.9
Total Suspended Solids	mg/L	0.5	2.2	nd(2.)	nd(2.)

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation PAUL BUXTON
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0407341H
Client Project Number :

FAX # : 902-532-7707
Printed : 2004/05/13 E623
Reported : 2004/05/13

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

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Analyses reviewed by:

Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0407839H
Client Project Number :

KERN, DAVID

FAX # : 902-532-7707
Printed : 2004/05/20 (Event 688)
Reported : 2004/05/20

Matrix	Water
Philip ID	04-H030226
Client ID	WWP-2A&B
Date Sampled (y/m/d)	04/05/11
Date Received (y/m/d)	04/05/13

Analyte	Units	EQL	
pH	Units	-	6.7
Total Suspended Solids	mg/L	0.5	nd(2.)

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0

PSC Project Number : 0407839H
Client Project Number :

FAX # : 902-532-7707
Printed : 2004/05/20 E688
Reported : 2004/05/20

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : Jerry Arenovich

PSC ANALYTICAL SERVICES

Inorganic Parameters

Client : Eastern Canada Bioremediation
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0410132H
Client Project Number :

KERN, DAVID
FAX # : 902-532-7707
Printed : 2004/06/17 (Event 605)
Reported : 2004/06/17

Matrix			Water	Water
Philip ID			04-H038168	04-H038169
Client ID			WWP-2-A&B	WWP-8-A&B
Date Sampled (y/m/d)			04/06/09	04/06/09
Date Received (y/m/d)			04/06/11	04/06/11
Analyte	**Units**	**EQL**		
pH	Units	-	7.0	6.5
Total Suspended Solids	mg/L	0.5	3.0	14.4

Legend EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
ND = Not Detected, instrument did not detect anything above standard EQL.
ND ( ) = Not Detected at the elevated EQL specified, due to matrix interferences or sample pre-dilution.
\- = Dash is reported when parameter not requested in sample.

Note : Soil results are expressed as air dry weight basis.
: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified

Inorganic Parameters page : 2

PSC Analytical Services
200 Bluewater Road
Bedford, NS Canada B4B 1G9
Tel (902) 420-0203
Toll free (800) 565-7227
Fax (902) 420-8612

Client : Eastern Canada Bioremediation KERN, DAVID
P.O. Box 98
Annapolis Royal
NS B0S 1A0
PSC Project Number : 0410132H
Client Project Number :

FAX # : 902-532-7707
Printed : 2004/06/17 E605
Reported : 2004/06/17

Certificate of Analysis

Method Summaries:

- pH: Electrometric @ 25 C. Ref: USEPA Method #150.1 SOP 1007 V1R1 / 1011 V1R2
- Total Suspended Solids: Gravimetric. Ref: USEPA Method #160.2

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm)
1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager : _____
Jerry Arenovich

** TOTAL PAGE.03 **

WATER SAMPLE ANALYSIS

2005

Maxxam Analytics Inc

Eastern Canadian Bioremediation
PO Box 98
Annapolis Royal, NS
CANADA B0S 1A0

Attention: David Kern

Report Date: 2005/07/26

ANALYTICAL REPORT

MAXXAM JOB #: A567738
Received: 2005/07/19, 9:23

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury (Total)	3	N/A	2005/07/21	3425_1_2	CVAA

MAXXAM ANALYTICS INC.

TROY MACKAY
Project Manager

TMA/mke
encl.

Total cover pages: 1

Maxxam Analytics Inc

Maxxam Job #: A567738
Report Date: 2005/07/26

Eastern Canadian Bioremediation
Client Project #:
Project name:
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		H24241	H24242	H24243		
Sampling Date		2005/07/14 13:00	2005/07/14 13:00	2005/07/14 13:00		
	Units	**WWP-2**	**WWP-5 SEDWATER**	**WWP-8**	**DL**	**QC Batch**
Elements						
Total Mercury (Hg)	ug/L	ND	ND	ND	0.05	784320

ND = Not detected
QC Batch = Quality Control Batch
Please check for attached comments

Maxxam Analytics Inc

Maxxam Job #: A567738
Report Date: 2005/07/26

Eastern Canadian Bioremediation
Client Project #:
Project name:
Sampler Initials:

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics Inc

Eastern Canadian Bioremediation
Attention: David Kern
Client Project #:
P.O. #:
Project name:

Quality Assurance Report

Maxxam Job Number: DA567738

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
784320	SSI	MATRIX SPIKE	Total Mercury (Hg)	2005/07/21		96	%	80 - 120
		QC STANDARD	Total Mercury (Hg)	2005/07/21		103	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2005/07/21		101	%	80 - 120
		Method Blank	Total Mercury (Hg)	2005/07/21	ND, DL=0.05		ug/L	
		RPD	Total Mercury (Hg)	2005/07/21	NC		%	25

ND = Not detected
NC = Non-calculable
RPD = Relative Percent Difference
QC Standard = Quality Control Standard
SPIKE = Fortified sample

Bedford: 200 Bluewater Road Bedford NS B4B 1G9 Telephone(902)420-0203 FAX(902)420-8612

Attention: Paul Buxton
Bilcon of Nova Scotia
305 Hwy 303 Suite 3
PO Box 2113
Digby, NS
B0V 1A0

Report Date: 2006/07/20

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A668779
Received: 2006/07/11, 10:56

Sample Matrix: Leachate
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Tot ICPMS Metals in Leachates	1	N/A	2006/07/19	ATL SOP 00024	Based on EPA6020A

Sample Matrix: Solid Waste
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
CGSB extraction - Init and Final pH	1	N/A	2006/07/19	SOP 4091_1_1	CGSB 164-GP-1 MP
CGSB extraction - volume of extractant	1	N/A	2006/07/19	SOP 4091_1_1	CGSB 164-GP-1 MP
CGSB extraction - Dry Weight	1	N/A	2006/07/19	SOP 4091_1_2	CGSB 164-GP-1 MP
Moisture	1	N/A	2006/07/14		MOE Handbook 1983

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIE MCNAIR, Project Manager
Email: marie.mcnair.reports@maxxamanalytics.com
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Total cover pages: 1

Maxxam Job #: A668779
Report Date: 2006/07/20

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

ATLANTIC CGSB LEACHATE+ METALS (LEACHATE)

Maxxam ID		N03377	
Sampling Date			
	Units	**BASALT SAMPLE**	**RDL**
Elements (ICP-MS)			
Leachable Aluminum (Al)	ug/L	130	100
Leachable Antimony (Sb)	ug/L	ND	20
Leachable Arsenic (As)	ug/L	ND	20
Leachable Barium (Ba)	ug/L	67	50
Leachable Beryllium (Be)	ug/L	ND	20
Leachable Boron (B)	ug/L	ND	500
Leachable Cadmium (Cd)	ug/L	ND	3
Leachable Chromium (Cr)	ug/L	ND	20
Leachable Cobalt (Co)	ug/L	14	10
Leachable Copper (Cu)	ug/L	21	20
Leachable Iron (Fe)	ug/L	84000	500
Leachable Lead (Pb)	ug/L	ND	5
Leachable Lithium (Li)	ug/L	ND	20
Leachable Manganese (Mn)	ug/L	2900	20
Leachable Molybdenum (Mo)	ug/L	ND	20
Leachable Nickel (Ni)	ug/L	2200	20
Leachable Selenium (Se)	ug/L	ND	20
Leachable Silver (Ag)	ug/L	ND	5
Leachable Strontium (Sr)	ug/L	290	50
Leachable Thallium (Tl)	ug/L	ND	1
Leachable Tin (Sn)	ug/L	ND	20
Leachable Uranium (U)	ug/L	ND	1
Leachable Vanadium (V)	ug/L	ND	20
Leachable Zinc (Zn)	ug/L	65	50

ND = Not detected
RDL = Reportable Detection Limit

200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Maxxam Job #: A668779
Report Date: 2006/07/20

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

ATLANTIC CGSB LEACHATE+ METALS (SOLID WASTE)

Maxxam ID		N03377	
Sampling Date			
	Units	**BASALT SAMPLE**	**RDL**
CONVENTIONALS			
Final pH	N/A	4.8	N/A
Initial pH	N/A	10	N/A
INDUSTRIAL			
Dry Weight	g	50	0.01
INORGANICS			
Volume of Acetic Acid	mL/L	39	N/A
INORGANICS			
Moisture	%	1	1

RDL = Reportable Detection Limit

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Maxxam Job #: A668779
Report Date: 2006/07/20

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

GENERAL COMMENTS

Results relate only to the items tested.

200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Attention: Josephine Lowry
Bilcon of Nova Scotia
305 Hwy 303 Suite 3
PO Box 2113
Digby, NS
B0V 1A0

Report Date: 2006/10/13

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A6A3801
Received: 2006/09/28, 10:12

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Elements by ICPMS (FIAS) (1)	3	N/A	2006/10/04	ATL SOP 00024	Based on EPA6020A
Acid Rock Drain. in S (Sub from Bedford) (2)	3	2006/10/02	2006/10/13		

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bedford
(2) This test was performed by Bedford to RPC Subcontract

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

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Email: marie.mcnair.reports@maxxamanalytics.com
Phone# (902) 420-0203

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Total cover pages: 1

Maxxam Job #: A6A3801
Report Date: 2006/10/13

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

RESULTS OF ANALYSES OF SOIL

Maxxam ID		O56860	O56870	O56875	
Sampling Date		2006/09/28	2006/09/28	2006/09/28	
	Units	**NS-02-01**	**NS-02-02**	**NS-02-03**	**RDL**
MISCELLANEOUS					
Subcontract Parameter	N/A	COMMENT	COMMENT	COMMENT	N/A

RDL = Reportable Detection Limit

200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Maxxam Job #: A6A3801
Report Date: 2006/10/13

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		O56860	O56870	O56875	
Sampling Date		2006/09/28	2006/09/28	2006/09/28	
	Units	**NS-02-01**	**NS-02-02**	**NS-02-03**	**RDL**
Elements (ICP-MS)					
Available Aluminum (Al)	mg/kg	18000	19000	10000	10
Available Antimony (Sb)	mg/kg	ND	ND	ND	2
Available Arsenic (As)	mg/kg	ND	3	ND	2
Available Barium (Ba)	mg/kg	89	8	20	5
Available Beryllium (Be)	mg/kg	ND	ND	ND	2
Available Boron (B)	mg/kg	ND	ND	ND	5
Available Cadmium (Cd)	mg/kg	ND	ND	ND	0.3
Available Chromium (Cr)	mg/kg	52	25	25	2
Available Cobalt (Co)	mg/kg	13	9	6	1
Available Copper (Cu)	mg/kg	39	230	91	2
Available Iron (Fe)	mg/kg	20000	20000	13000	50
Available Lead (Pb)	mg/kg	0.6	0.5	2.1	0.5
Available Manganese (Mn)	mg/kg	110	140	160	2
Available Molybdenum (Mo)	mg/kg	8	7	14	2
Available Nickel (Ni)	mg/kg	70	45	90	2
Available Selenium (Se)	mg/kg	ND	ND	ND	2
Available Silver (Ag)	mg/kg	ND	ND	ND	0.5
Available Strontium (Sr)	mg/kg	43	36	23	5
Available Thallium (Tl)	mg/kg	ND	ND	ND	0.1
Available Uranium (U)	mg/kg	0.1	0.2	0.2	0.1
Available Vanadium (V)	mg/kg	36	53	20	2
Available Zinc (Zn)	mg/kg	16	22	16	5

ND = Not detected
RDL = Reportable Detection Limit

200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Maxxam Job #: A6A3801
Report Date: 2006/10/13

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

GENERAL COMMENTS

Antimony recovery in the applicable digested reference material is 20% for worksheet # 1069942.

Results relate only to the items tested.

200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Your C.O.C. #: B 18467

Attention: Josephine Lowry
Bilcon of Nova Scotia
305 Hwy 303 Suite 3
PO Box 2113
Digby, NS
B0V 1A0

Report Date: 2006/10/25

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A6B0331
Received: 2006/10/16, 14:25

Sample Matrix: LIQUID
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Tot ICPMS Metals in Leachates (1)	3	N/A	2006/10/24	ATL SOP 00024	Based on EPA6020A

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
CGSB extraction - Init and Final pH (1)	3	N/A	2006/10/24	SOP 4091_1_1	CGSB 164-GP-1 MP
CGSB extraction - volume of extractant (1)	3	N/A	2006/10/24	SOP 4091_1_1	CGSB 164-GP-1 MP
CGSB extraction - Dry Weight (1)	3	N/A	2006/10/24	SOP 4091_1_2	CGSB 164-GP-1 MP
Moisture (1)	3	N/A	2006/10/19		MOE Handbook 1983

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bedford

Encryption Key

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MARIE MCNAIR, Project Manager
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Phone# (902) 420-0203

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Total cover pages: 1

Maxxam Job #: A6B0331
Report Date: 2006/10/25

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

ATLANTIC CGSB LEACHATE+ METALS (LIQUID)

Maxxam ID		O87412	O87419	O87421	
Sampling Date		2006/09/28	2006/09/28	2006/09/28	
COC Number		B 18467	B 18467	B 18467	
	Units	**NS-02-01 (O56860)**	**NS-02-02 (O56870)**	**NS-02-03 (O56875)**	**RDL**
Elements (ICP-MS)					
Leachable Copper (Cu)	ug/L	ND	480	35	20

ND = Not detected
RDL = Reportable Detection Limit

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Maxxam Job #: A6B0331
Report Date: 2006/10/25

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

ATLANTIC CGSB LEACHATE+ METALS (SOIL)

Maxxam ID		O87412	O87419	O87421	
Sampling Date		2006/09/28	2006/09/28	2006/09/28	
COC Number		B 18467	B 18467	B 18467	
	Units	**NS-02-01 (O56860)**	**NS-02-02 (O56870)**	**NS-02-03 (O56875)**	**RDL**
CONVENTIONALS					
Final pH	N/A	4.9	4.9	4.9	N/A
Initial pH	N/A	9.7	9.7	9.6	N/A
INDUSTRIAL					
Dry Weight	g	50	50	50	0.01
INORGANICS					
Volume of Acetic Acid	mL/L	46	20	10	N/A
INORGANICS					
Moisture	%	2	ND	ND	1

ND = Not detected
RDL = Reportable Detection Limit

200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Maxxam Job #: A6B0331
Report Date: 2006/10/25

Bilcon of Nova Scotia
Client Project #:
Project name:
Sampler Initials:

GENERAL COMMENTS

Results relate only to the items tested.

200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

4.2 EIS Format

EIS Reference: EIS Volume IV, Chapter 4, Section 4.2

INDEX OF COMMENTS

4.0 Standards and Format

4.2 EIS Format

4.2 EIS Format

WP 1452 - Joint Review Panel
EIS Format

It is unfortunate that the Proponent did not follow the structure of the EIS Guidelines as issued by the Panel in March 2005. The proposed format was to begin by describing the Project and proceed to describing the existing environment. Where there was potential for interaction between an environmental component and Project component, the potential effects were to be assessed. Mitigation, monitoring and management were then to be presented collectively to limit repetition and recognize the interrelated nature of both the environmental components and the Project components.

This suggested format would have allowed the Panel to verify the information gaps more efficiently in its review of the EIS and to better understand the Proponent's opinions concerning the potential of the Project to cause environmental effects.

To assist the Panel in this regard, at this stage of the process, the Proponent is instructed to provide an environmental component (VEC)/ Project component matrix that will clearly demonstrate where components of the Project may interact with the environment to cause effects. Ensure that all phases of the proposed Project are included.

For examples from other assessments, see the web site of the Canadian Environmental Assessment Agency. Two instructive examples have been reproduced in this document as Appendix 1 and Appendix 2 for illustration only.

The Proponent's analysis of VECs mixes ecosystem components and project effects. It omits some species identified by government authorities as potentially of concern. It omits ecosystems like the coastal bog which it has identified as playing an important role in managing effluent from the site. It omits consideration of human environment components. Clarify the VECs.

RESPONSE

In response to the Panel's request, an issue scoping/pathway analysis summary matrix has been generated. This is presented in the attached Table 1. The table lists Environmental Components of Concern (ECC) and identifies whether there is a potential that these components could interact with the Project. The Environmental Components of Concern have been based on the team's understanding of the site and its local and regional context and public and regulator input and concerns. Interactions are based on the proposed Project works and activities. The potential interactions have been identified by the Bilcon's study team based on professional judgment and experience with comparable projects. Wherever a plausible interaction has been identified, the ECC was determined to be a Valued Ecosystem Component (VEC). VECs were used in the EIS to focus the assessment on key issues.

4.2 EIS Format

The issue scoping/pathway analysis summary matrix clarifies the approach to the establishment of the VECs as well as the rationale. Table 2 clarifies the final VEC list through a summary listing of what has been considered a VEC in the EA process.

"Light" and "Noise and Vibration", although often addressed in the EA process as effects rather than VECs have been treated as VECs since the EIS Guidelines ask explicitly for a description of the project's effects on these factors (EIS Guideline Section 10.1.6 and 10.1.7).

Species of concern are addressed in either the "Species at Risk" VEC or the "Marine Species at Risk". The coastal bog is included in the "Wetland" VEC.

Human Environment components have been addressed by the VECs related to Heritage Resources, Aboriginal Land and Resource Use, Aesthetics, Transportation, Economy, Human Health and Wellness and Socio-Cultural Environment.

A summary listing of the resulting VECS is presented in Table 2.

4.2 EIS Format

Table 1: Issue Scoping/Pathway Analysis Summary Matrix Valued Environmental Components (VECs)

Environment/ Resource	Environmental Components of Concern (ECC)	Pathway of Concern/ Project-Environment Interaction		Possible Pathways/Project-Environment Interactions	Determined to be a VEC?		Key Rationale for Inclusion/Exclusion as Valued Environmental (VEC)
		Yes	No		Yes	No	
Climate	Greenhouse Gases Microclimate	X		Construction and Operation: • Exhaust emissions from operation of heavy equipment • Exhaust emissions from and truck and marine traffic • Change in the microclimate of the area due to the vegetation removal (site clearing, quarry face preparation).	X		• Protected by statute/regulation • Significant public concern • Required under the EIS guidelines
Geology and Hydrogeology	Basalt Rock	X		Operation: • Removal of part of basalt rock resource	X		• Significant public concern • Required under the EIS guidelines
	Residential Well Water Yields	X		Operation: • Blasting effects on well stability • Effects of blasting, dewatering and groundwater withdrawal on groundwater flow and quantity	X		• Protected by statute/regulation • Significant public concern • Required under the EIS guidelines
	Residential Well Water Quality	X		Operation: • Migration of blasting residues into groundwater • Effects of blasting on well water turbidity and chemistry	X		See above
Surficial Geology and Soils	Soil	X		Operation: • Effects of soil recycling and site reclamation work on soil quality and nutrient levels	X		See above
Surface Water (Freshwater)	Little River Watershed	X		Construction and Operation: • Impairment of surface water quality through run-off from Quarry lands located within the watershed • Loss of groundwater to north branch of Little River	X		See above

4.2 EIS Format

Environment/ Resource	Environmental Components of Concern (ECC)	Pathway of Concern/ Project-Environment Interaction		Possible Pathways/Project-Environment Interactions	Determined to be a VEC?		Key Rationale for Inclusion/Exclusion as Valued Environmental (VEC)
		Yes	No		Yes	No	
	On-site surface water drainage/wetlands	X		Construction and Operation: • Change of on-site drainage pattern and water-regime of on-site wetland (coastal bog)	X		See above
	On-site surface water quality	X		Construction and Operation: • Impairment of water quality in on and off-site receiving environment (incl. marine) from on-site drainage and discharges	X		See above
Marine Environments & Physical oceanography	Turbidity	X		Construction: • Increased turbidity from marine terminal construction	X		See above
	Tides and currents	X		Operation: • Alteration of near-shore currents and sediment transport	X		See above
Air Quality	Dust levels (Visibility, Nuisance Soiling)			Construction and Operation: • Fugitive particulate from site preparation, earthwork, blasting, crushing, screening, stockpiling and loading	X		See above
	Odours		X	• None identified		X	• No source and interaction identified
Noise and Vibration	Noise	X		Construction • Operation of heavy equipment during construction of marine terminal. Operation: • Blasting and crushing noise from operation of quarry.	X		• Municipal Bylaw; • Provincial noise guidelines • Required under the EIS guidelines
	Concussion and ground vibration	X		Operation: • Blasting activities are associated with concussions and ground vibration		X	• Considered an effect rather than a VEC. Addressed by other VECs (VECs of Hydrogeology, Terrestrial and Marine Environments)
Light		X		Construction and Operation: • Attraction of birds to lights associated with the marine terminal and quarry.	X		• Significant public concern • Required under the EIS guidelines

4.2 EIS Format

Environment/ Resource	Environmental Components of Concern (ECC)	Pathway of Concern/ Project-Environment Interaction		Possible Pathways/Project-Environment Interactions	Determined to be a VEC?		Key Rationale for Inclusion/Exclusion as Valued Environmental (VEC)
		Yes	No		Yes	No	
Terrestrial Ecology	Habitat , Flora, Fauna	X		Construction and Operation: • Initial site clearing and on-going quarry face development will cause removal of existing vegetation/habitat • Noise will exclude sensitive fauna from on-site and near-by habitat • Incremental and final quarry reclamation will establish new habitat/vegetation	X		• Protected by statute/regulation • Significant public concern • Required under the EIS guidelines
	Wetlands	X		Operation: • Alteration of water regime of on-site wetland (coastal bog) • Incremental and final quarry reclamation will establish new wetland habitat	X		See above
	Migratory Birds	X		Construction and Operation: • lighting could adversely affect migratory bird species	X		See above
	Species at Risk	X		Construction and Operation: • Habitat loss, noise and lighting could adversely affect species at risk using or passing over the site	X		See above
Aquatic Environment (Freshwater)	Fish habitat (freshwater)		X	Construction and Operation: • Habitat alteration off-site (Little River Watershed) due to change in on-site surface water drainage.		X	See above
	Fish species (freshwater)		X	Construction and Operation: • Effects on fish species in off-site environments (Little River Watershed) due to Project induced habitat alteration.		X	See above

4.2 EIS Format

Environment/ Resource	Environmental Components of Concern (ECC)	Pathway of Concern/ Project-Environment Interaction		Possible Pathways/Project-Environment Interactions	Determined to be a VEC?		Key Rationale for Inclusion/Exclusion as Valued Environmental (VEC)
		Yes	No		Yes	No	
Aquatic Environment (Marine)	Marine fish habitat (Intertidal, nearshore)	X		Construction: • HADD resulting from construction of berthing, ship loader and conveyor supports • Potential for increase in Total Suspended Solids (TSS) Construction and Operation: • Accidental spills on-site and/or at marine terminal Operation • Marine water quality impairment due to storm water and waste water discharges to marine environment • Marine water quality impairment and/or introduction of invasive species due to ballast water discharges	X		• Protected by statute/regulation • Significant public concern • Required under the EIS guidelines
	Marine mammals (incl. NARW)	X		Operation: • Whale– vessel collisions can injure or kill whale individuals	X		See above
	American lobster	X		Construction and Operation: • HADD (see above) can reduce or displace lobster population	X		See above
	Marine waterbirds	X		Construction and Operation: • Activities at the marine terminal can disturb and displace water birds	X		See above

4.2 EIS Format

Environment/ Resource	Environmental Components of Concern (ECC)	Pathway of Concern/ Project-Environment Interaction		Possible Pathways/Project-Environment Interactions	Determined to be a VEC?		Key Rationale for Inclusion/Exclusion as Valued Environmental (VEC)
		Yes	No		Yes	No	
	Marine species at risk (fish, mammals, reptiles, waterfowl)	X		Construction and Operation: • Whale– vessel collisions may cause whale injury or mortality • Activities at the marine terminal and blasting at the site can disturb and displace water birds Operation: • Marine terminal may disrupt migration route of iBoF Atlantic Salmon • Blasting and water quality effects on iBoF Atlantic Salmon • Vessel collisions with Right Whale may cause injury or mortality • Whale behavioral change, injury or mortality resulting from blast event	X		See above
	Water Quality (Marine)	X		Construction and Operation: • Accidental spills on-site and/or at marine terminal • Marine water quality impairment due to storm water and waste water discharges to marine environment	X		See above
Heritage Resources	Marine Archaeology	X		Construction: • Disruption of archaeological features (shipwreck, artifacts)	X		See above
	Land Archaeology	X		Construction and Operation: • Disruption or archaeological features (e.g., foundations, artifacts, human remains)	X		See above
	Heritage Properties	X		Construction and Operation: • Impairment of heritage value of heritage properties as a result of direct effects (site development) or indirect effects (impairment of visual quality within offsite viewshed)	X		See above

4.2 EIS Format

Environment/ Resource	Environmental Components of Concern (ECC)	Pathway of Concern/ Project-Environment Interaction		Possible Pathways/Project-Environment Interactions	Determined to be a VEC?		Key Rationale for Inclusion/Exclusion as Valued Environmental (VEC)
		Yes	No		Yes	No	
	Site History	X		Construction and Operation: • Disruption ofhistoric features (e.g., foundations, artifacts, human remains)	X		• Some aspects protected by statute/regulation • Significant public concern • Required under the EIS guidelines
Aboriginal land and resource use		X		Construction and Operation: • Potential for disruption of traditional land and resource uses and impairment of resources (as discussed through other VECs)	X		• Significant public concern • Significant concern of First Nations • Required under the EIS guidelines
Aesthetics	On-shore (HWY #217)	X		Construction and Operation: • Change of visual landscape character • Impairment of near-site recreation and tourism • Potential for improved visual qualities resulting from site reclamation	X		• Significant public concern • Required under the EIS guidelines
	Bay of Fundy	X		Construction and Operation: • Change of visual coastal character • Impairment of marine-based recreation and tourism • Potential for improved visual qualities resulting from site reclamation	X		See above
Transportation	Land	X		Construction and Operation: • Increase in traffic on HWY #217	X		• Protected by statute/regulation • Significant public concern • Required under the EIS guidelines
	Sea	X		Operation: • Increase in vessel traffic near Project site • Potential for interference with other marine traffic (fishing vessels, whale watching tour boats)	X		See above
Economy	Employment	X		Construction and Operation: • Provision of new employment opportunities	X		• Significant public concern • Required under the EIS guidelines
	GDP	X		Construction and Operation: • Increase in local Gross Domestic Product	X		See above

4.2 EIS Format

Environment/ Resource	Environmental Components of Concern (ECC)	Pathway of Concern/ Project-Environment Interaction		Possible Pathways/Project-Environment Interactions	Determined to be a VEC?		Key Rationale for Inclusion/Exclusion as Valued Environmental (VEC)
		Yes	No		Yes	No	
	Taxes	X		Construction and Operation: • New federal, provincial and municipal tax payments	X		See above
	Fishery - Aquaculture	X		Operation: • Underwater noise effects from blasting may affect productivity	X		See above
	Fishery -Intertidal	X		Construction and Operation: • Decreased land-based access to intertidal zone may impact opportunities fro harvesting periwinkle and dulse	X		See above
	Fishery - Nearshore	X		Construction and Operation: • Disruption of fishing activities (lobster and gill net herring fishing) during vessel approach and departure	X		See above
	Tourism	X		Operation: • Impairment of tourism due to impairments of the visual quality of surrounding landscape and coastal environment/ change in landscape or coastal character	X		See above
	Land Value	X		Operation: • Decrease in property value within site vicinity as a result of actual and perceived effects	X		See above
	Recreation	X		Operation: • Reduced opportunities for land access to coast • Reduced enjoyment of outdoors based on actual and perceived effects	X		See above
Socio-cultural Environment	Quality of Life	X		Construction and Operation: • Potential impairments as a result of actual and/or perceived environmental degradation (key factor for Quality of Life)	X		See above
	Social Capital	X		Construction and Operation: • Controversy about the Project may affect trust, social cohesion, social support and civic engagement	X		See above

4.2 EIS Format

Environment/ Resource	Environmental Components of Concern (ECC)	Pathway of Concern/ Project-Environment Interaction		Possible Pathways/Project-Environment Interactions	Determined to be a VEC?		Key Rationale for Inclusion/Exclusion as Valued Environmental (VEC)
		Yes	No		Yes	No	
	Commercial Patterns	X		Construction and Operation: • The proposed works and activities may affect current commercial activities such as near-shore fishing and tour boat operations	X		See above
	Community Infrastructure; Institutional Capacity	X		Construction and Operation: • Potential for improved infrastructure due to increase in municipal tax base and local employment opportunities.	X		See above
	Education, Training, Skills	X		Construction and Operation: • Increase in training opportunities and local skills set with employment opportunities at the quarry	X		See above
Human Health and Wellness	Drinking Water Quality	X		Operation: • Health effects through impaired well water quality at near-by residences	X		• Protected by statute/regulation • Significant public concern • Required under the EIS guidelines
	Marine Contaminants	X		Operation: • Health effects through consumption of marine biota with elevated contaminant concentrations	X		See above
	Land Contaminants	X		Operation: • Health effects through consumption of terrestrial biota with elevated contaminant concentrations	X		See above
	Country Foods	X		Operation: • Health effects through consumption of terrestrial biota with elevated contaminant concentrations	X		See above

4.2 EIS Format

Table 2 Valued Environmental Components Assessed (Please see tables in Section 8.1 Methods)

Table	VEC	Table	VEC
3.1	**Climate**	3.13	**Aboriginal Land and Resource Use**
3.2	**Geology & Hydrogeology**	3.14	**Aesthetics**
	Basalt Rock		On-shore (HWY #217)
	Residential Well Water Yields		Bay of Fundy
	Residential Well Water Quality	3.15	**Transportation**
3.3	**Surficial Geology and Soils**		Land
3.4	**Surface Water**		Sea
	Little River Watershed	3.16	**Economy**
	On-site Surface Water Drainage/Wetlands		Employment
	On-site Surface Water Quality		GDP
3.5	**Physical Oceanography**		Municipal Taxes
	Turbidity		Economy – Fishery (/Aquaculture)
	Tides and currents		Economy – Fishery/Intertidal
3.6	**Air Quality**		Economy – Fishery/Nearshore
3.7	**Noise and Vibration**		Economy – Tourism
3.8	**Light**		Economy – Land Value
3.9	**Terrestrial Ecology**		Recreation
	Habitat (incl. plants, wildlife)	3.17	**Human Health, Wellness and Socio-Cultural Environment**
	Wetlands		Drinking Water Quality
	Migratory Birds		Marine Contaminants
	Species at Risk		Land Contaminants
3.10	**Aquatic Ecology – Freshwater**		Country Foods
	Fish habitat		Quality of Life
	Fish Species		Social Capital
3.11	**Aquatic Ecology - Marine**		Commercial Patterns
	Marine Fish Habitat (Intertidal, nearshore)		Community Infrastructure; Institutional Capacity
	Marine Mammals (incl. NARW)		Education, Training, Skills
	American Lobster		
	Marine Waterbirds		
	Marine Species at Risk (fish, mammals, reptiles, waterfowl)		
3.12	**Heritage Resources**		
	Marine Archaeology		
	Land Archaeology		
	Heritage Properties and Site History		
	Please see tables in Section 8.1 Impact Assessment Methodology		

4.2 EIS Format

WP 1498 - NS Department of Environment and Labour
John Drage – Hydrogeologist
The EIS is well organized, well written and well presented...

RESPONSE
Comment noted.

WP 1524 - Transport Canada
1)Proponent to ensure any changes made in EIS are carried through the document where applicable and that changes are reflected in the Plain Language Summary....

RESPONSE
Comment noted.

WP 1525 - Natural Resources Canada
Comments from Reviewer 3:
...the information in the documents was not particularly well organized and as a result, some significant pieces of information may have been missed...

RESPONSE
Comment noted.

Comments from Reviewer 4:
Title of Vol. VI, section 9.1.7
...the title should be changed to Marine Environments and Physical Oceanography to reflect the contents.

RESPONSE
Comment noted and change made. Please refer to Bilcon's response in Section 9.1.5, Marine Environment and Physical Oceanography.

WP 1542 - Health Canada
The project EIS report includes many pictures and maps; unfortunately, many processes that will be used have not been described schematically...

RESPONSE
Please refer to Section 7.0 Revised Project Description and Section 9.1.6 Air Quality.

1625 – Partnership for Sustainable Development
Deficiency Statement 14
EIS Guidelines
4.2 – EIS Format – "For clarity and ease of reference, present the EIS in the same general order as the Guidelines." "Write the EIS in the clearest language possible." "Produce maps

4.2 EIS Format

using a limited number of common scales in order to permit inter-comparison and overlay of mapped features."

EIS

The EIS was not presented in the same order as the EIS Guidelines, requiring the reader to search through previous sections to try to find relevant reference sources. It would have been more user friendly to have the figures showing geology, hydrogeology, existing and future topography, locations of monitoring wells and residential wells, etc. on identical scales so that they could have been more easily compared.

RESPONSE

Comment noted. Please refer to Bilcon's response to Panel in this Section.

Deficiency Statement 15

EIS Guidelines

4.2 - EIS Format - 'A key subject index, glossary of technical terms and acronyms, and detailed table of contents are required."

EIS

The EIS does not include a Key Subject Index, as required by the Guidelines. This omission has the effect of hampering the reviewer's search of key topics and issues with the EIS, and should be rectified.

RESPONSE

Comment noted.

Deficiency Statement 16

EIS Guidelines

4.2 – EIS Format - 'Write the EIS in the clearest language possible." 'Produce maps using a limited number of common scales in order to permit inter-comparison and overlay of mapped features."

EIS

Metric units are only occasionally and inconsistently used. For example, Section 7.3 makes use of length measurements in inches and volume measurements in acre/feet. This is particularly confusing when describing units of mass in tons, as it is unclear if metric or imperial units are being used.[44] *The Proponent should revise the EIS to ensure that metric units should be used consistently throughout document. Information is repeated in multiple places, and lots of irrelevant information is provided, all of which obfuscates the useful content, and makes the EIA more difficult to assess.*

RESPONSE

Comment noted. Please refer to Bilcon's response to the Panel in this section.

5.0 Concordance Table

EIS Reference: Volume IV, Chapter 5

INDEX OF COMMENTS

5.0 Concordance Table

5.0 Concordance Table

WP 1431 Panel
IR-2
Chapter 5, Concordance Table, is described as a cross reference of issues and concerns raised and where they are dealt with in the EIS. Two sources of issues and concerns do not appear to have been included namely, government department submissions and the public registry.

Explain the omission of government department submissions and public registry information from the Concordance Table. Supply this information if applicable.

RESPONSE
The concordance table contains all references to meetings and interviews. Appendix Volume 3, Tab 11 contains all references to written submissions.

Any government submission received about this project is included in the CEAA public registry (i.e. #1314 and #1323).

A list of submissions on the CEAA public registry including the date of submission, the CEAA reference number, the individual or organization that submitted the comment, to whom the issue(s) was addressed (e.g. Department of Fisheries) and the issue(s) raised is found in Appendix Volume 3, Tab 11. Each of the submissions including the issues raised in them has been reviewed by the Bilcon EIS team, is addressed within the EIS and can be found under the appropriate chapter heading (e.g. issues related to impact on whales can be found in section 9.2.13; impacts on fisheries and tourism can be found in 9.3.10 and 9.3.14 respectively).

For ease of reading, a sixth column has been added to Appendix Volume 3, Tab 11 that shows where in the EIS information can be found related to the written issue or comment raised.

5.0 Concordance Table

List of Submissions on CEAA Registry (excluding acknowledgement letters, proponent submissions, provincial and federal departments' correspondences and interested parties letters requesting delays)

Date	CEAA Ref. #	From	To	Issue	Section Addressed
25/03/2003	30	Interested party	Department of Fisheries and Oceans	Quality of life Access to navigable waters Effect on residential construction	9.1.8-9.1.12, 9.3.7, 9.3.17-9.3.22, Ref. Vol. IV, Tab 23 9.3
25/03/2003	31	Interested party	Department of Fisheries and Oceans	Destruction of the environment Impact on fisheries and tourism Noise and light pollution Ballast water	9.0 (destruction of environment) 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 (fish), 9.3.14 (tourism) 9.1.9-9.1.12, 9.2.9- 9.2.12, 9.3.22.3, Ref. Vol. V, Tab 31 Ref. Vol. VI, Tab 34 9.2.14
20/03/2003	32	Interested party	Department of Fisheries and Oceans	Impact of marine terminal on other users of navigable waters (fisheries, whale watching, eco-tourism, kayaks, etc.)	9.3.16, 9.3.14
20/03/2003	33	Interested party	Department of Fisheries and Oceans	Ship mooring Fisheries Pollution	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.1.8 (air quality), 9.3.17-9.3.21
27/03/2003	34	Interested party	Department of Fisheries and Oceans	Impact of wharf on whales, fish and tourism and fisheries.	9.3.16, 9.3.14
27/03/2003	35	Interested party	Department of Fisheries and Oceans	Impact on whales Quality of life Environmental impact	9.2.11, 9.2.13 9.1.8-9.1.12, 9.3.7, 9.3.17-9.3.22, Ref. Vol. IV, Tab 23 9.0
17/03/2003	36	Interested party	Department of Fisheries and Oceans	Project notice	Ref. Vol. IV, Tab 21, Tab 22, Tab 23 8.2, Appendix Vol. II, 6.05, 6.7, 8.0
17/03/2003	37	Interested party	Department of Fisheries and Oceans	DFO approval process Quarry proposal detail Navigation routes Marine tourism	6.0, 7.0 9.2.13 9.3.14
24/03/2003	38	Interested party	Department of Fisheries and Oceans	Quarry proposal detail Navigation routes	6.0. 7.0 9.2.13
14/03/2003	39	Interested party	Department of Fisheries and Oceans	Fisheries	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
17/03/2003	40	Interested party	Department of Fisheries and Oceans	Navigation routes Fisheries Whales	9.2.13 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.2.11, 9.2.13

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
24/03/2003	41	Bay of Fundy Inshore Fisherman Association	Department of Fisheries and Oceans	Ballast water	9.2.14
21/03/2003	42	West Nova Fishing Coalition	Department of Fisheries and Oceans	Ballast water	9.2.14
14/03/2003	43	Interested party	Department of Fisheries and Oceans	Navigation routes	9.2.13
17/03/2003	44	Interested party	Department of Fisheries and Oceans	Quarry proposal detail	6.0, 7.0
31/03/2003	45	Professor, Université Sainte-Anne	Department of Fisheries and Oceans	Fisheries Tourism	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.14
27/03/2003	46	Interested party	Department of Fisheries and Oceans	Navigation route	9.2.13
17/03/2003	47	Interested party	Department of Fisheries and Oceans	Fisheries Outdoors activities Whale watching Noise Loss of Employment	9.3.10-9.3.16 9.3.14 9.1.9-9.1.11, 9.2.9-9.2.12, 9.3.22.3 Ref. Vol. V, Tab 31, Ref. Vol. VI, Tab 34 9.3.22 -9.3.23
15/03/2003	48	Interested party	Department of Fisheries and Oceans	Navigation Ballast water Fish habitat	9.2.13 9.2.14 9.2.29
14/03/2003	49	Interested party	Department of Fisheries and Oceans	Navigation Fisheries, loss of gear and access to traditional fisheries grounds	9.2.13 9.3.10-9.3.13, 9.2
27/03/2003	50	Interested party	Department of Fisheries and Oceans	Environmental Effects	9.0
18/03/2003	51	Interested party	Department of Fisheries and Oceans	Navigation Fisheries and local residents livelihood Quality of life	9.2.13 9.3 9.1.8-9.1.12, 9.3.7, 9.3.17-9.3.22, Ref. Vol. IV, Tab 23
27/03/2003	52	Interested Party	Department of Fisheries and Oceans	Fisheries Navigation	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
14/03/2003	53	Interested Party	Department of Fisheries and Oceans	Fisheries	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
31/03/2003	54	Interested Party	Department of Fisheries and Oceans	Fisheries Navigation	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
10/03/2003	55	Interested Party	Department of Fisheries and Oceans	Fisheries Navigation	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
10/03/2003	56	Interested Party	Department of Fisheries and Oceans	Fisheries Navigation	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
10/03/2003	59	Interested Party	Department of Fisheries and Oceans	Fisheries Navigation Whales Quarry proposal detail	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.2.13 9.2.11, 9.2.13 6.0, 7.0
11/03/2003	61	Interested Party	Department of Fisheries and Oceans	Navigation Fisheries and local residents' Livelihood	9.2.13 9.3
03/03/2003	63	Interested Party	Department of Fisheries and Oceans	Sense of place Fisheries Adjacent properties	9.3 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.25
04/03/2003	65	Interested Party	Department of Fisheries and Oceans	Quality of Life Environmental impact	9.1.8-9.1.12, 9.3.7, 9.3.17-9.3.22, Ref. Vol. IV, Tab 23 9.0
10/03/2003	67	Interested Party	Department of Fisheries and Oceans	Quality of Life Tourism Fisheries	9.1.8-9.1.12, 9.3.7, 9.3.17-9.3.22, Ref. Vol. IV, Tab 23 9.3.14 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
14/04/2005	68	Interested Party	Nova Scotia Department of Natural Resources	Adjacent land use – plan to build cottage	9.3.15 (land value), 9.3.25
03/04/2005	71	Interested Party	Department of Fisheries and Oceans	No particular issue raised	
14/04/2003	72	Partnership for Sustainable Development of Digby Neck	Nova Scotia Department of Natural Resources	Traditional rights	3.1, 9.3.3
21/04/03	75	Interested party	Steve Chapman (CEAA)	Access to documents	6.0
No date	1005	Interested party	Steve Chapman (CEAA)	Traditional knowledge	Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
No date	1007	Interested party	Steve Chapman (CEAA)	Traditional knowledge	Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3
08/05/2003	1008	Interested party	Steve Chapman (CEAA)	Approval Process	6.4
14/08/03	1009	Interested party	Steve Chapman (CEAA)	Fisheries Whales Ballast water Quality of life, increased traffic Runoff and effect on water quality	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13, 9.2.11, 9.2.13 9.2.14 9.1.8 -9.1.12, 9.3.7, 9.3.17-9.3.22 Ref. Vol. IV, Tab 23 9.3.17-9.3.19
14/08/03	1010	Interested party	Nova Scotia Department of Environment and Labour	No specific comment	
22/08/03	1011	Interested party	Steve Chapman (CEAA)	Political issues Royalties	11.8
24/08/03	1013	Interested party	Steve Chapman (CEAA)	Panel-Review members selection	3.2
26/08/03	1017	Interested party	Steve Chapman (CEAA)	Quality of life Environmental Impact Characteristics of Digby Neck	9.1.8-9.1.12, 9.3.7, 9.3.17-9.3.22, Ref. Vol. IV, Tab 23 9.0 9.3.2, 9.3.4, 9.3.5, Ref. Vol. IV, Tab 23
26/08/03	1018	Interested party	Steve Chapman (CEAA)	Landscape Fisheries American Interests	9.3.6, 9.3.14, 9.3.6, 9.3.14 9.3.6.2, 9.1.12, 7.10 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 6.1, 6.01
28/08/03	1019	Interested party	Steve Chapman (CEAA)	Landscape Tourism American interests Effect on marine life	9.3.6, 9.3.14, 9.3.6, 9.3.14 9.3.6.2, 9.1.12, 7.10 6.1, 6.01 9.2, 9.3.10-9.3.13
28/08/03	1020	Roger Hunka; Native Council of Nova Scotia	Steve Chapman (CEAA)	Natural resources preservation Scope of assessment	9.1, 9.2 6.0, 7.0, 8.0
28/08/03	1021	Interested party	Steve Chapman (CEAA)	Definition of environmental effect Land use	6.7 7.4
29/08/03	1022	Interested party	Steve Chapman (CEAA)	Landscape Way of life	9.3.6, 9.3.14, 9.3.6, 9.3.14 9.3.6.2, 9.1.12, 7.10

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
30/09/03	1023	Interested party	Nova Scotia Department of Environment and Labour	Environmental devastation	9.0
02/09/03	1024	Interested party	Nova Scotia Department of Environment and Labour and CEAA	Impact on land and sea	9.0
04/09/03	1025	Interested party	Steve Chapman (CEAA)	Traditional knowledge	Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3
06/09/03	1029	Emily McMillan: Sierra Club of Canada	Steve Chapman (CEAA)	Effect on communities and their economies Effect on wildlife Effect on tourism	9.3.9-9.3.15, 9.3.22 9.2 9.3.14
08/09/03	1030	Interested party	Nova Scotia Department of Environment and Labour and CEAA	Scope of environmental assessment	6.0, 7.0, 8.0
08/09/03	1031	Interested party	Nova Scotia Department of Environment and Labour and CEAA	Environmental assessment process	6.0, 7.0, 8.0
08/09/03	1032	Kemp Stanton; Partnership for sustainable development of Digby Neck and Island Society	Nova Scotia Department of Environment and Labour and CEAA	Environmental issues and draft guidelines	9.0 6.0
08/09/03	1033	Arthur Bull; Digby Neck Community Development Association	Nova Scotia Department of Environment and Labour and CEAA	Scope of environmental assessment	6.0, 7.0, 8.0
09/09/03	1034	Interested party	Steve Chapman (CEAA)	Environmental impact Traditional knowledge Ecotourism	9.0 Ref. Vol. II, Tab 23, 8.2, 8.3, 9.2, 9.3 9.3.14
09/09/03	1036	Interested party	Steve Chapman (CEAA)	Scope of environmental assessment	6.0, 7.0, 8.0
09/09/03	1037	Interested party	Steve Chapman (CEAA)	Environmental impact Fisheries Tourism Navigation Ballast water Blasting fish	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.14 9.2.14 9.2.9, Appendix Vol. III, Tab 9
10/09/03	1038	Interested party	Nova Scotia Department of Environment and Labour	Public hearing process	8.2, Ref. Vol. IV, Tabs 21, 22 & 23 Appendix Vol. II
10/09/03	1041	Interested party	Steve Chapman (CEAA)	Employment Tourism Royalties Fisheries Ballast water Pollution Traffic	9.3.14 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13, 11.8 9.2.14 Impact Summary Table 2 11.2

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Fish and marine mammals Social and economic well-being Employment	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13, 9.2.11 9.3.9-9.3.15
10/09/03	1042 & 1043	Interested party	Steve Chapman (CEAA)	Democracy and public hearings	8.2 Ref. Vol. IV Tab 21 Tab 22 Tab 23 Appendix Vol. II
10/09/03	1044	Interested party	Steve Chapman (CEAA)	Democracy and public hearings	8.2 Ref. Vol. IV Tab 21 Tab 22 Tab 23 Appendix Vol. II
10/09/03	1045	Interested party	Steve Chapman (CEAA)	Spirituality on the Neck Use of non renewable resources	9.3.2, 9.3.4, 9.3.5, Ref. Vol. IV, Tab 23 Impact Summary Table 2
11/09/03	1048	Interested party	Steve Chapman (CEAA)	Environmental protection	9.1, 9.2
				Provincial government environmental policies	6.5
11/09/03	1049	Interested party	Steve Chapman (CEAA)	Environmental effects Democracy	9.0 8.2
11/09/03	1050	Interested party	Steve Chapman (CEAA)	No specific comments	
11/09/03	1051	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
11/09/03	1052	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
11/09/03	1053	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
11/09/03	1054	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
11/09/03	1055	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
11/09/03	1056	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
11/09/03	1057	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
11/09/03	1058	Interested party	Steve Chapman (CEAA)	Environmental assessment process Way of life	6.0, 7.0, 8.0
12/09/03	1059	Interested party	Steve Chapman (CEAA)	Fisheries Whale watching Tourism industry Local communities Quarry expansion	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.14, 9.3.25 9.3.14 9.3.7, 9.3.22 Ref. Vol. IV, Tab 23 Ref. Vol. VI, Tab 34 6.6.1, 7.3, 9.3.15
12/09/03	1060	Interested party	Steve Chapman (CEAA)	Tourism	9.3.14
12/09/03	1062	Interested party	Steve Chapman (CEAA)	Environmental assessment process and guidelines scope	6.0, 7.0, 8.0
12/09/03	1063	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
13/09/03	1064	Interested party	Steve Chapman (CEAA)	Environmental assessment process Traditional knowledge Loss of access to Whites Cove	6.0, 7.0, 8.0 Ref. Vol.II, Tab 23, 8.2, 9.1-9.3 Ref. Vol. II, Tab 23
14/09/03	1065 & 1067	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
				Economic and environmental sustainability	3.3
14/09/03	1066	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
14/09/03	1068	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
15/09/03	1070	Interested party	Nova Scotia Department of Environment and Labour	Socio-economic impacts on tourism and fisheries due to environmental degradation	9.3.14 9.3.10
15/09/03	1071	Interested party	Nova Scotia Department of Environment and Labour	Destruction	7.10
15/09/03	1073	Interested party	Steve Chapman (CEAA)	Traffic Navigation Impact on marine and terrestrial habitat Noise, dust, light pollution Employment in fisheries and tourism Cultural impact	11.2 9.2.13 9.2 9.1.8-9.1.12 9.3.10, 9.3.14 9.3

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
15/09/03	1074	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
15/09/03	1075	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
15/09/03	1076	David Golden; Assistant director of the American Maritimes Academy of Art	Steve Chapman (CEAA)	Environmental degradation Tourism Fisheries	9.1, 9.2 9.3.14 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
15/09/03	1077	Gisèle Thibault; Director of the French immersion Department at Université Saint-Anne	Steve Chapman (CEAA)	Marine life Regional economy Traffic Quality of life Birds	9.2,11.2 9.1.8-9.1.12, 9.3.7, 9.3.17-9.3.22, Ref. Vol. IV, Tab 23 9.2.12
16/09/03	1079	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
16/09/03	1080	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
16/09/03	1081	Dan Earle; President of the Tusket River Environmental Protection Association	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
16/09/03	1082	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
16/09/03	1083	Cathy Merriman; conservation Biologist for the World Wildlife Fund	Steve Chapman (CEAA)	Environmental assessment process North Atlantic Right Whale	6.0, 7.0, 8.0 9.2.13
16/09/03	1084	Interested party	Steve Chapman (CEAA)	Effects on fresh water supply	9.1.3, 9.2.2, 9.1.5, 9.1.6
16/09/03	1085	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
17/09/03	1087	Harold Jr. Theriault, MLA Digby-Annapolis	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
17/09/03	1088	Interested party	David Anderson, P.C., M.P.	Environmental assessment process	6.0, 7.0, 8.0
17/09/03	1090	Interested party	Steve Chapman (CEAA)	Social, cultural and economic impact Dust, noise, light pollution Ballast water	9.3 9.1.8-9.1.12 9.2.14
17/09/03	1093	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
17/09/03	1094	Harold Jr. Theriault; MLA Digby-Annapolis	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
17/09/03	1095	Interested party	Steve Chapman (CEAA)	Environmental assessment process Blasting Water and air pollution Fishing Whales Ecotourism	6.0, 7.0, 8.0 9.2.11, 9.2.13 9.3.14
17/09/03	1096	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
17/09/03	1097	Interested party	Steve Chapman (CEAA)	Tourism Fisheries Royalties Heritage site	9.3.14, 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.1-9.3.5
17/09/03	1098	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
17/09/03	1099	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
17/09/03	1100	Interested party	Steve Chapman (CEAA)	Provincial and federal environmental policies	6.5
18/09/03	1101	Interested party	Nova Scotia Department of Environment and Labour	Environmental and economic impact Marine life Fisheries Tourism	9.2.0 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.14
18/09/03	1104	Interested party	Nova Scotia Department of Environment and Labour	Environmental and economic impact Fisheries Tourism	9.0 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.14
18/09/03	1105	Interested party	Nova Scotia Department of Environment and Labour	Effects on live and livelihood of residents Aesthetics	9.3 9.3.6
18/09/03	1106	Interested party	Steve Chapman (CEAA)	Site of significance for Mi'kmaqs	9.3.3-9.3.5
18/09/03	1107	David Millar: Marine Conservation Coordinator: Canadian Parks and Wilderness Society	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
19/09/03	1108	John Belbin; president; Clean Annapolis River Project	Steve Chapman (CEAA)	Environmental assessment process Proliferation of quarry sites	6.0, 7.0, 8.0
19/09/03	1110	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
19/09/03	1111	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
30/09/03	1112 & 1113	Peter G. Terauds; Warden	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
03/10/03	1115	Interested party	Steve Chapman (CEAA)	Risks and benefits of Project Environmental assessment process	 6.0, 7.0, 8.0

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
03/10/03	1116	Interested party	Steve Chapman (CEAA)	Loss of water Ballast water Site runoff Traffic Noise, dust and light pollution Socio-economic impact (fisheries, tourism, cultural).	9.1.3, 9.2.2, 9.1.5, 9.1.6 9.2.14 9.1.6 11.2 9.1.8-9.1.12 9.3.10, 9.3.14
04/10/03	1117	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
	1118	Kemp Stanton; chair: Sustainable Development of Digby Neck & Islands Society	Ron Russell; N.S. Minister of Environment & Labour	Erosion and sediments controls	9.1
10/10/03	1121	Interested party	Steve Chapman (CEAA)	Blasting Loss of water Impact on seasonal residents' activities Whale watching Walking to beaches	9.2.9-9.2.12; Appendices, Vol. III, Tab 9 9.1.3, 9.2.2, 9.1.5, 9.1.6 9.3 9.3.14, 9.2.11, 9.2.13 9.3.12.3
14/10/03	1124 & 1125	Interested party	Steve Chapman (CEAA)	Blasting and explosive used	9.2.9-9.2.12; ; Appendices, Vol. III, Tab 9
14/10/03	1126	Interested party	Steve Chapman (CEAA)	Environmental impact Tourism Fisheries Aesthetic issues	9.3.14 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.6.3
14/10/03	1127	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0
16/10/03	1128	Interested party	Nova Scotia Department of Environment and Labour	Marine impacts Site remediation (rehabilitation)	7.10
20/10/03	1129	Interested party	Steve Chapman (CEAA)	Impact on freshwater aquifer Fisheries Marine mammals Socio-economic effects Employment Mi'kmaq heritage	9.2; Appendices, Vol. IV, tab 42 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.2.11 9.3.9-9.3.15 9.3.23, 7.6, 9.3.13, Ref. Vol. IV, Tab 21, 9.3.23, 7.6, 9.3.6, 9.3.10, 9.3.11, 9.3.12, 9.3.13, 9.3.23, Commitments Table-Vol. IV, Executive Summary 9.3.3-9.3.5
21/10/03	1130	Martin R. Haase: Friends of Nature Conservation Society	Nova Scotia Department of Environment and Labour	Navigation Right whales Democracy	9.2.13

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
22/10/03	1131	Interested Party	Steve Chapman (CEAA)	Impact on water table Right whale Marine traffic Impact on fishing grounds Economic benefits Loss of jobs in fisheries and tourism	Appendices, Vol. IV, Tab 42 9.2.13 9.2.13 9.2.5, 9.2.6, 9.2.9 9.3.9 -9.3.15 9.3.14
22/10/03	1132	Interested party	Steve Chapman (CEAA)	Local opposition Economic loss Physical dangers	9.3.22 9.3.9-9.3.15 10.0-11.2
27/10/03	1134	Interested party	Steve Chapman (CEAA)	Traditional knowledge Economic survival Tourism Fisheries Landscape Environmental Assessment Process	Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 9.3.14 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 6.0
No date	1140	Interested party	Steve Chapman (CEAA)	Ownership of company	6.1
No date	1144	Interested party	Steve Chapman (CEAA)	Environmental Assessment Process	6.0, 7.0, 8.0
No date	1145	Interested party	Steve Chapman (CEAA)	Project benefits Tourism Fisheries Employment	9.3.9, 9.3.10, 9.3.11, 9.3.12, 9.3.13 9.3.14, 9.3.15 Ref. Vol. VI, Tab 32 Ref. Vol. VI, Tab 32 Ref. Vol. VI, Tab 32 9.3.14 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.6, 9.3.10, 9.3.11, 9.3.12, 9.3.13, 9.3.23, Commitments Table Vol. IV, Executive Summary
17/06/04	1175	Interested party	Steve Chapman (CEAA)	Ownership of company	6.1
10/12/04	1176	Interested party	Steve Chapman (CEAA)	Aesthetic	9.6.3
14/12/04	1178	Interested party	Steve Chapman (CEAA)	Employment benefits	9.3.6, 9.3.10, 9.3.11, 9.3.12, 9.3.13 9.3.23 Commitments Table- Vol. IV Executive Summary
07/12/04	1196	Cindy Nesbitt: Chair of the Community Liaison Committee	Steve Chapman (CEAA)	CLC role	8.2

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
21/12/04	1198	Peter A. Newton: Warden	Steve Chapman (CEAA)	Project study area	6.0
23/12/04	1199	Interested party	Steve Chapman (CEAA)	Wildlife Beauty of place Sense of place Community health issues	9.2.4, 9.2.7, 9.2.8, 9.2.11, 9.2.12, 9.2.13, 9.2.15, 9.1.6, 9.2.13 9.3.2, 9.3.4, 9.3.5 Ref. Vol. IV, Tab 23 9.3.17-9.3.21
13/12/04	1204	Interested party	Steve Chapman (CEAA)	Environmental impact Beauty of place Blasting	9.0 9.2.9-9.2.12
01/12/04	1205	Interested party	Steve Chapman (CEAA)	General environmental concerns	9.0
30/12/04	1206	Interested party	Steve Chapman (CEAA)	Environmental assessment process and guidelines	6.0, 7.0, 8.0
14/12/04	1208	Interested party	Steve Chapman (CEAA)	Environmental impact Quality of life Traditional employment and lifestyle Fisheries Whales Tourism Blasting Royalties	9.0 9.3.7, 9.3.22 Ref. Vol. IV, Tab 23 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.2.11, 9.2.13 9.3.14 9.2.9-9.2.12; ; Appendices, Vol. III, Tab 9 11.8
13/01/05	1209	Interested party	Steve Chapman (CEAA)	Impact to adjacent properties Way of life	9.3
21/12/04	1211	Peter G. Terauds (Warden)	Steve Chapman (CEAA)	Project study area	6.0
22/12/04	1212	Evelyn-Harvey Denton Defense Fund	Steve Chapman (CEAA)	Public involvement Individual being sued over identification of issues	3.2
29/12/04	1214	Interested party	Steve Chapman (CEAA)	Traditional knowledge Heritage	Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3
09/01/05	1215	Interested party	Steve Chapman (CEAA)	Environmental assessment process	6.0, 7.0, 8.0

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
09/01/05	1216	Interested party	Steve Chapman (CEAA)	Ballast water	9.2.14
09/01/05	1217	Interested party	Steve Chapman (CEAA)	Other examples of large size quarries Fisheries mitigation	 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
09/01/05	1218	Interested party	Joint Review Panel	Various quotes	
09/01/05	1219	Interested party	Joint Review Panel	Fisheries	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
09/01/2005	1220	Interested party	Joint Review Panel	Environmental impact Beauty of place Ecotourism	9.0 9.3.14
10/01/2005	1221	Dr. John Janmaat	Joint Review Panel	Existing value of environment Spiritual/community/lifestyle Measurement of non-use values	9.0 9.3.22 9.3.22 Ref. Vol. IV, Tab 23 9.3 Quality of Life
10/01/2005	1222	Interested party	Joint Review Panel	Comments on draft EIA Guidelines	6.0
06/01/2005	1223	Ashraf Mahtab	Joint Review Panel	Comments on draft EIA Guidelines The project The Proponent Purpose and need for the project Alternative means of carrying out the project Blasting design Groundwater	6.0 6.1 6.1 6.2 7.2 9.2.9-9.2., Appendix, Vol. III, Tab 9 9.1.3, 9.2.2, 9.1.5, 9.1.6
06/01/2005	1224	Interested Party	Joint Review Panel	Comments on draft EIA Guidelines The project The proponent The purpose and need for the project Alternative means of carrying out the project Geology Groundwater Aquatic species and habitat Blasting design Surface water Climate conditions	 6.0 6.1 6.2 7.2 9.1.2 9.1.3, 9.2.2, 9.1.5, 9.1.6 9.2 9.2.9-9.2.12, Appendix Vol. III,Tab 9 9.1.3, 9.2.2, 9.1.5, 9.1.6 9.1.1

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Noise levels	9.1.9-9.1.11
06/01/2005	1225	Partnership for the Sustainable Development of Digby Neck & Islands Society	Joint Review Panel	Comments on draft EIA Guidelines Application for investigation regarding uncontrolled flow of water containing sediments	6.0 9.1.6, 7.7.1 Ref. Vol. III, Tab 19
06/01/2005	1227	Lawrence Outhouse	Joint Review Panel	Comments on draft EIA Guidelines Traditional Knowledge	6.0 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3
06/01/2005 &	1228 & 1270	Marilyn Stanton	Joint Review Panel	Comments on draft EIA Guidelines	6.0
18/01/2005				Environmental Assessment Process Traditional knowledge The Project The Proponent Boundaries Public Consultation Study strategy and methodology Existing environment VECs Effects prediction, mitigation measures and significance of residual effects	6.0, 7.0, 8.0 Ref. Vol. II, Tab 23, 8.2, 8.3, 9.2, 9.3 6.0 6.1 8.4 8.2, Ref. Vol. IV, Tabs 21,22 and 23, Appendix Vol. II 6.7 9.0 8.3 11.5, 11.7
06/01/2005	1230, 1233 & 1243	Harold Rowe	Joint Review Panel	Tourism Recreation	9.3.14 9.3.16
06/01/2005	1231	Andy Sharpe	Joint Review Panel	Comments on draft EIA Guidelines Sustainable development and precautionary principle Need for the project	6.0 3.3 7.1
07/01/2005	1232	Tim Wilson	Joint Review Panel	Comments on draft EIA Guidelines (The Last Weir: a documentary by Tim Wilson)	6.0
08/01/2005	1234	Tourism Industry Association of Nova Scotia	Joint Review Panel	Comments on draft EIA Guidelines Tourism impacts	6.0 9.3.14
08/01/2005	1235	North Mountain Preservation Group	Joint Review Panel	Comments on draft EIA Guidelines	6.0

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Cumulative effects	10.0, 7.8, 10.9, 10.10, 10.12, 10.13, 9.1.3
09/01/2005	1236	Tom Haynes-Paton	Joint Review Panel	Comments on draft EIA Guidelines Greenhouse gas emissions Entrance and exit routes and procedures of the 620 foot ships	6.0 9.1.1 11.2
09/01/2005	1237	René Belliveau	Joint Review Panel	Comments on draft EIA Guidelines Regional setting Nearer sources of basalt Whales Fishery Aboriginal rights Sustainability The marine terminal The quarry Trustworthiness' of the proponent	6.0 6.3 9.1.2 9.2.11, 9.2.13 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.3 3.3 7.0 9.3.15 6.1
09/01/2005	1239	N/A	Joint Review Panel	Comments on draft EIA Guidelines	6.0
09/01/2005	1242	L. Wayne Spinney (West Nova Fishing Coalition)	Joint Review Panel	Comments on draft EIA Guidelines Environmental issues Social impacts Environmental impacts Opposition to vessel transportation	6.0 9.0 9.3 9.1-9.2 11.2
11/01/2005	1245	Tusket River Environmental Protection Association	Joint Review Panel	Comments on draft EIA Guidelines Traditional knowledge Significant adverse environmental effects Groundwater American eel Monitoring and mitigation	6.0 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 9.0 9.1.3, 9.2.2, 9.1.5, 9.1.6; Appendices, Vol. IV, Tab 42 9.2, 11.4, 11.5
11/01/2005	1246	Peter Duinker	Joint Review Panel	Comments on draft EIA Guidelines Public Participation VEC's Boundaries Environmental protection plan Existing environment Effects prediction Socio-economic effects Monitoring	6.0 8.2 8.3 8.4 11.3 9.0 2.0 9.3 11.4
12/01/2005	1247	David Millar	Joint Review Panel	Comments on draft EIA Guidelines Justification for the project	6.0 7.1

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Marine transportation Oceanographic process Aquatic species and habitat Climate conditions	11.2 9.1.7 9.2.2-9.2.4 9.1.1
14/12/2004	1248	Robert B. Gibson	Joint Review Panel	Comments on draft EIA Guidelines	6.0
				The contribution to sustainability test Application of the precautionary principle Attention to enhancement/mitigation opportunities Attention to bridging effects	Chapter 3 Sustainability 3.5, 8.5 11, ECM and ECM 2 3.3 Sustainable Development
07/01/2005	1250	Joseph G. Jarvis	Joint Review Panel	Comments on draft EIA Guidelines Fishery Seals Salmon Unearthed materials for road maintenance	6.0 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.2.11 9.2.6 7.10 Decommissioning and Reclamation
13/01/2005	1251 & 1252	Carol Littleton	Joint Review Panel	Comments on draft EIA Guidelines Human health	6.0 9.3.17-9.3.21
13/01/2005	1253	Sarah Gowin	Joint Review Panel	Peace and quiet Jobs	9.3.22 9.3.9-9.3.15
14/01/2005	1254	Ken Woodman	Joint Review Panel	Jobs Population demographics Positive impacts Tourism	9.3.9-9.3.15 9.3.7.1.3 9.3.23 9.3.14
16/01/2005	1255	John Dickinson	Steve Chapman (CEAA)	Spiritual Issues	9.3.22 Ref. Vol. IV, Tab 23
16/01/2005	1256	Carol Mahtab	Joint Review Panel	Comments on draft EIA Guidelines Preparation and review of the EIA Panel Report The EIA as a basis for public review Consideration of Traditional Knowledge Preparation and Presentation of the EIA Part II the introduction (ALL) Boundaries Project description Existing environment Effects Prediction, Mitigation Measures and significance of residual effects	6.0 6.0, 7.0, 8.0 1.2 3.2, 8.2 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 6.0, 7.0, 8.0 6.0,7.0 8.4 6.0, 6.3, 11.5, 11.7

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
14/01/2005	1257	Guy and Cornelia Melville	Joint Review Panel	Excursion of Digby neck and Islands, the view Marine ecosystem	9.3.25 9.0
15/01/2005	1258	Robert Keagle	Joint Review Panel	Comments on draft EIA Guidelines Environment Quality of life Health concerns Loss of aquatic habitat Right whales Jobs Expansion	6.0 9.0 9.3.7, 9.3.22 Ref. Vol. IV, Tab 23 9.3.17-9.3.21 9.2 9.2.13 9.3.9-9.3.15 7.3, 9.3.15, 6.6.1
16/01/2005	1259	Brian Meeson	Joint Review Panel	Comments on draft EIA Guidelines Identity of the proponent Capitalization Project employment Compensatory provisions	6.0 6.1 6.1, 6.01 9.3.23, 7.6, 9.3.3 Ref. Vol. IV, Tab 21 Commitments Table- Vol. IV Executive Summary 9.3.6, 9.3.10, 9.3.11, 9.3.12, 9.3.13
				Inflow specifics	6.6, 7.0, 9.2.14
11/01/2005	1260	Danny Mills	Joint Review Panel	Concern for the people and support their issues regarding the project	8.2, 6.1, 6.01
20/01/2005 and 17/01/2005	1261 & 1335	Kemp L. Stanton	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Night operations Security Regulations, laws, guidelines, voluntary guidelines Adjacent properties Quality, quantity or availability of fresh water Analysis of samples from site Alterations to the project in the future Fishing families (past)	6.0 7.3, P.31 7.3, P31 6.5 9.3.15, 11.8 9.1.3, 9.2.2, 9.1.5, 9.1.6 9.1.2, page 19 7.3, 9.3.15, 6.6.1 9.3.4, 9.3.10 Ref. Vol. IV, Tab 23
06/01/2005	1263	Scoping meeting #1	Joint Review Panel	Submissions	

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
07/01/2005	1264	Scoping meeting #2	Joint Review Panel	Submissions	
08/01/2005	1265	Scoping meeting #3	Joint Review Panel	Submissions	
09/01/2005	1266	Scoping meeting #4	Joint Review Panel	Submissions	
18/01/2005	1267	Pat Hudson (Vice president Barrington	Steve Chapman (CEAA)	Run-off and silt deposits in the oceans and inland waterways Invasion of foreign species	9.1.6, 7.7.1 9.2.14
17/01/2005	1268	'		Removing a nonrenewable resource Proponent to demonstrate that the majority of Little River residents support the project Corporate identity The timelines VEC's Mental Health The already successful local economy	Impact Summary Table 2 N/A. further reference – Attitude Survey, Tab 3 6.1 2.4 8.3 9.3 9.3.9-9.3.15
18/01/2005	1269	Margaret Nicholson, Bruce Sparks	Steve Chapman (CEAA)	Environmental Impact Physical, emotional and economic health of the region Fishery Tourism Quality of life	9.0 9.0 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.14 9.3.7, 9.3.22 Ref. Vol. IV, Tab 23
18/01/2005	1271	Brier Island W hale and Seabird Cruises Ltd.	Steve Chapman (CEAA)	Tourism Environmental issues Commercial fishing Whales	9.3.14 9.0 9.3.10-9.3.13 9.2.11, 9.2.13
16/01/2005	1272	Susan Davis	Steve Chapman (CEAA)	Loss of artistic inspiration	9.3.6
19/01/2005	1273	Michaele Kustudic	Steve Chapman (CEAA)	Loss of spiritual refreshment	9.3.22.1, Tab 23,
19/01/2005 & 21/01/2005	1274 & 1325	Christine Callaghan	Steve Chapman (CEAA)	Maintenance of perception of the area Mitigation of mental anguish Lobster fishing Tourism Whales East coast ecosystems	7.8 11.5 9.2.10 9.3.14 9.2.11, 9.2.13 9.2.13

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Human Health Summer residents	9.0 9.3.17-9.3.21 9.3
19/01/2005	1275	Laurence Outhouse	Steve Chapman (CEAA)	The history of the project proceedings The marine terminal and the environmental problems Environmental catastrophe The proponent and their relationship to other companies involved in the project Boundaries	1.1 7.0, 9.0 11.2 6.1 8.4
19/01/2005 & 19/01/2005	1276 & 1331	Robert Ogilvie, NS Department of Heritage, Tourism and Culture	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Archaeological and historic sites and remains Botanical and zoological concerns	6.0 9.3.1-9.3.5 9.2
19/01/2005	1277	The Freeport Community Development Association	Steve Chapman (CEAA)	Fisheries Tourism Change in way of life Competence of the company	9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 9.3.14 9.3 6.1
19/01/2005	1278	Joanne Morehouse	Steve Chapman (CEAA)	Ecological and social impacts	9.0
19/01/2005 &	1279 & 1340	The Bay of Fundy Inshore Fishermen's Association, Christopher Hudson	Steve Chapman (CEAA)	Representing 238 members Comments on draft EIA Guidelines Scientific study of the biomass Ongoing monitoring of biomass Navigable waters study Insurance of proponent Study of marine fish migratory patterns Full disclosure of ballast Environmental impact of bilge water	 6.0 9.2 9.2 11.4 Appendix 26 and 26A 9.2 9.2 9.2.14
19/01/2005	1280	Richard Gould MD MHSc FRCPC - Medical Officer of Health	Steve Chapman (CEAA)	Contaminants and potential human health impacts	9.3.17-9.3.21
19/01/2005	1282	Doreen A. Evenden	Steve Chapman (CEAA)	Issue of accountability and performance guarantees Relevant experience of the parent company	6.1 6.1
20/01/2005	1283 & 1337	Natalie Robichaud	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Social and economic study	6.0 9.3
20/01/2005	1284	Partnership for the Sustainable Development of Digby Neck and Islands Society	Joint Review Panel	Comments on draft EIA Guidelines Sustainable development and precautionary principle Need for the project VEC's and methodology	6.0 3.3 7.1 6.7

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
20/01/2005	1285	Jerry Ackerman	Joint Review Panel	Requirements for disclosure Unspoiled beauty and sustained well being	6.5 3.3
20/01/2005	1286	Jim Cormier, Transport Canada	Steve Chapman (CEAA)	Invasive species Description of vessels NWPA authorization requirements TERMPOL process	9.2.14 7.0 6.4, 6.5 6.4, 6.5
20/01/2005	1287	Clean Annapolis River Project	Steve Chapman (CEAA)	Spatial boundaries Temporal boundaries Cumulative effects Collaboration with other groups	8.4 8.4 10.0, 7.8, 10.9, 10.10, 10.12, 10.13, 9.1.3 9.3.22.1, P147
20/01/2005	1288	Klaus and Shirley Langpohl	Steve Chapman (CEAA)	Full disclosure of corporate profile Full list of charitable contributions The company and its subsidiaries that are involved in the transportation and disposal of waste materials	6.5 6.1 6.1
20/01/2005	1289	Mary Scott	Steve Chapman (CEAA)	Private property issue	9.3.15, 11.8
20/01/2005	1290	Rev. Tom Haynes-Paton	Steve Chapman (CEAA)	Economic effects on tourism Effects of migration patterns of tourists Complete list of draft and final guidelines be made available to the public Dynamite issues Glossary of Terms Detailed public Consultation report List of political contribution made in Canada Noise Greenhouse gases Remedial pay back (provide green space) Submit results of scientific studies Use fishermen as experts Use common knowledge of fishermen Hold funds for accidents/compensation	9.3.14 9.3.14 EIS Vol. II and http://www.ceaa-acee.gc.ca Appendix #9, 9A, 9B, 9C, 9D, 9.1.9, 9.2.9-9.2.12 Vol. IV Appendix 2, Tab 2; Appendix 3, Tab 3,6,7; appendix 4, Tab 30, 34 N/A 9.1.9-9.1.11 9.1.1, -6.6.2 11.5 Reference documents, Tabs 1-48 Ref. Vol. II, Tabs 8 – 13, Ref. Vol. III, Tabs 14 – 20, Ref. Vol. V Tab 25, Tab 27 11.2
14/01/2005	1291	Yvonne Addington	Steve Chapman (CEAA)	Enjoyment of the landscape and wildlife Peace and quiet	9.2.4, 9.2.7, 9.2.8, 9.2.11, 9.2.12, 9.2.13, 9.2.15, 9.1.6 9.3.22

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Loss of well water	Tab 42
11/01/2005	1292	Frances Cleveland	Steve Chapman (CEAA)	lifestyle	9.3.22
18/01/2005	1293	Joanne W hitenect	Steve Chapman (CEAA)	Loss of sense of peace and	9.3.22
				contentment Fishery Tourism Impacts on the environment	(fish) 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 (tourism) 9.3.14
20/01/2005	1294	John Sollows	Steve Chapman (CEAA)	Presenters at the 4 session were against the quarry Involve local stakeholders VEC's Importance of the submissions Boundaries Credibility of the consultants Compensation for damage to way of life and renewable resources Methodology Limited time and access to information	 3.2 8.3 This document 8.4 Tab 1 11.2, 11.8 6.7 2.4
21/01/2005	1295	Dianne Theriault	Steve Chapman (CEAA)	Tourism Whales Traditional knowledge Baseline description Climate conditions Other undertaking in the area	9.3.14 9.2.11, 9.2.13 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 6.0 9.1.1 7.3, 9.3.15, 6.6.1
20/01/2005	1296	Scott D. Kraus and Amy R. Knowlton	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Right whale protection	6.0 9.2.13
20/01/2005	1297	Sarah Robicheau	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Right whale protection Marine species protection Further quarries Traditional Ecological Knowledge Spiritual connection to the land	6.0 9.2.13 9.2 7.3, 9.3.15, 6.6.1 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 9.3.22 Ref. Vol. IV, Tab 23

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Need for the project	7.1
20/01/2005	1298	Allen Walker	Steve Chapman (CEAA)	Comments on draft EIA Guidelines The project Biophysical environment Surface water Groundwater Wetlands Aquatic species and habitat Noise levels Economy Marine Transportation	6.0 6.0 9.2 9.1.3, 9.2.2, 9.1.5, 9.1.6. Appendix, Vol. IV, Tab 42,9.1.3, 9.2.2, 9.1.5, 9.1.6,,9.1, 9.2,,9.2.2-9.2.4,9.1.9-9.1.11 9.3.9-9.3.15 11.2
20/01/2005	1299	Judith Peach	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Study strategy and methodology The project The proponent Spatial boundaries and scale Project description Site preparation	6.0 6.7 6.0 6.1 8.4 6.0 6.3
				Operation and maintenance Existing environment Effects prediction, mitigation measures and significance of residual effects Monitoring and follow up	7.8 6.3, 9.0 11.7 11.4
20/01/2005	1300	Ben Robicheau	Steve Chapman (CEAA)	Comments on draft EIA Guidelines History of the proponent	6.1
21/01/2005	1301	Lynn Marie Steinmayer	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Tourism Right Whale	6.0 9.3.14, 9.2.13
21/01/2005	1302	Fred Ganley	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Noise Dust Freshwater Contaminated water Danger from Navigation Marine Terminal Contaminated soil runoff Bird Migration Tourism	 6.0 9.1.9-9.1.11 9.1.8.1, 9.1.8.2, 9.1.8.3, 9.1.8.4, 9.1.8.5, 9.3.2.1, 9.3.22.3 9.1.3, , 9.1.3, 9.2.2, 9.1.5, 9.1.6; Appendicex, Vol. IV, Tab 42 9.1.3, 9.2.2, 9.1.5, 9.1.6 9.2.13, 11.2 7.0 9.1.6, 7.7.1 9.2.12 9.3.14

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
21/01/2005	1304	Markus Feiel and Katherine Feiel	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Discharge of Ballast Water on Maine life Run-off and spills Disposal of sludge Amount of water required Effects of shipping on whales, fisheries and tourism	6.0 9.2.14 7.7.1, 9.1.5, 9.1.6, 9.2.2 9.1.6, 7.7.1 9.2.14 7.0 9.2.11, 9.2.13, 9.3.14, 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
21/01/2005	1305	The Digby Neck Community Development Association	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Traditional Ecological Knowledge The proponent Effects prediction, mitigation measures and significance of residual effects Commercial fisheries Recreation and tourism Human Health	6.0 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 6.1 11.7, 9.3.10-9.3.13 9.3.16, 9.3.14 9.3.17-9.3.21
21/01/2005	1306	Mary Lynyak	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Opposition to the project mitigation	6.0 11.5
21/01/2005	1307	Dr. Warren Paton, President of Enviro-Clare	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Effects on wetlands	6.0 9.1, 9.2
20/01/2005	1308	Canadian Right W hale Recovery Team Co chairs	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Impacts on right whales	6.0 9.2.13
21/01/2005	1309	Chris Miller, Ph.D.	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Value of wetlands (paleoecological) Effects on wetlands	6.0 9.1, 9.2 9.1, 9.2
21/01/2005	1310	Darrell Taylor	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Surface water	6.0 9.1.3, 9.2.2, 9.1.5, 9.1.6
21/01/2005	1311	Daniel Earle, President, TREPA	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Impacts at all levels	6.0 Table 2, Table CEM-2
21/01/2005	1312	John Drage	Joint Review Panel	Comments on draft EIA Guidelines Groundwater and wells Hydrological description Surrounding Aquifer Modeling	6.0 9.1.3, 9.2.2, 9.1.5, 9.1.6 Appendices, Vol. IV,Tabs 42, 45 & 47 9.1.3
21/01/2005	1313	Paula Dodaro	Steve Chapman (CEAA)	Financial accountability	6.0,7.0,11.2

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
21/01/2005	1314	John Drage, NS Department of Environment and Labour	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Groundwater and wells Hydrological description Surrounding Aquifer Modeling	6.0 9.1.3, 9.2.2, 9.1.5, 9.1.6; Appendices, Vol. IV, Tab 42, 45 and 47 9.1.3 9.1.3 9.1.3
21/01/2005	1315	Don Mullin, M.A., M.I.R., C.H.R.P.,CD	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Land ownership Precautionary principle Safety Considerations Panel Decision Making Strategy Requirement for information by the public Traditional Knowledge VEC's Spatial boundaries and scale Temporal boundaries Existing environment Terrestrial species and habitat Climate conditions including air quality Socio-economic condition Marine Transportation Human Health Monitoring and follow up	6.0 9.3.15, 6.1, 11.8, 9.3.15 8.5 11.0, 11.2 1.2 EIS, Vol. II Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 8.3 8.4 8.4 9.0 9.2.1 9.1.1 9.3 11.2 9.3.17-9.3.21 11.4
21/01/2005	1316	World Wildlife Fund Canada	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Scale of the work Impact on adjacent ecosystems Alternatives to the project Assessment of special or sensitive area	6.0 7.0 9.0 7.1-7.2 9.0
21/01/2005	1317	Sierra Club of Canada	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Project justification The environment The environment VEC's Effects prediction, mitigation measures and significance of residual effects Public involvement Cumulative effects assessment NAFTA	6.0 7.1 9.0 8.3 11.7 8.2 10.0, 7.8, 10.9, 10.10, 10.12, 10.13, 9.1.3 6.6.1
21/01/2005	1318	Patrick Gaudio	Joint Review Panel	Comments on draft EIA Guidelines Alternate plans	6.0 7.1-7.2

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Traditional ecological knowledge	Ref. Vol. II, Tab 23
					8.2, 8.3, 9.1, 9.2, 9.3
				Public consultation reporting	3.2, 8.2
				Use of existing information	Ref. Vol. II, Tab 23, 8.2, 8.3, 9.1, 9.2, 9.3
				Area of potential impact	7.3,7.4, 7.5
				Legal ramifications	6.5
				Purpose and need for the project	7.1
				Who responsible for adverse health effects	9.3.17-9.3.21
				Transportation of explosives	9.1.9, Appendix #9, 9A, 9B, 9C, 9D
				The social sphere vs. the economic sphere	9.3
				Noise/effects of blasting	9.1.9-9.1.11
21/01/2005	1320	Stratton Bull	Joint Review Panel	Comments on draft EIA Guidelines	6.0
				Opposed to the project	8.2
				Fragile nature of the environment	9.0
20/01/2005	1322	Nora Tomlinson Peach and Fred Peach	Steve Chapman (CEAA)	Comments on draft EIA Guidelines	6.0
				Permits	6.5
				Timelines	2.4
				Public involvement	8.2
				Part III of the document	7.1
21/01/2005	1323	Phil Zamora, Fisheries and Oceans Canada	Steve Chapman (CEAA)		
				Comments on draft EIA Guidelines	6.0
				Effects of fish and marine mammals	9.2.11, 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13
21/01/2005	1324	Tourism Industry Association of Nova Scotia	Steve Chapman (CEAA)	Comments on draft EIA Guidelines	6.0
				Tourism concerns	9.3.14
21/01/2005	1326	Trudy Bengivenni	Steve Chapman (CEAA)	Comments on draft EIA Guidelines	6.0
				Boundaries	8.4
				Aboriginal Land and Resource Use	9.3.3
				Physical and Cultural heritage resources	9.3.1-9.3.5
				Effects prediction and establishing of VEC's	8.3
21/01/2005	1327	Partnership for Sustainable Development of Digby Neck and Islands Society	Steve Chapman (CEAA)	VEC's	8.3
13/12/2004	1328	Mary Lynyak	Steve Chapman (CEAA)	Comments on draft EIA Guidelines	6.0
				Questions about the quarry	6.0,7.1
06/01/2005	1329	Cheryl Denton	Steve Chapman (CEAA)	Comments on draft EIA Guidelines	6.0
19/01/2005	1330	D.J. Carrigan	Steve Chapman (CEAA)	Comments on draft EIA Guidelines	6.0

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Date	CEAA Ref. #	From	To	Issue	Section Addressed
19/01/2005	1332	Dr. Warren Paton, President of Enviro-Clare	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Effects on wetlands	6.0 9.1, 9.2
19/01/2005	1333	Mary McCarthy	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Detailed descriptions Site preparation and pre-construction activities Studies should follow the highest standards Studies should be clearly documented Studies should provide sufficient details to the public Study results vs. traditional knowledge Meaningful public consultation	6.0 6.0 7.0 Reference Volumes, Tabs 1-35 8.2 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 8.2
17/01/2005	1336	Keith Joyce	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Contaminated bilge water	6.0 9.2.14
20/01/2005	1337	Nathalie Robichaud	Joint Review Panel	Comments on draft EIA Guidelines Social and economic study	6.0 9.3.9-9.3.15, 9.3.22
20/01/2005	1338	Klaus and Shirley Langpohl	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Corporate profiles	6.0 6.1, 6.0.1, 8.2
20/01/2005	1339	Deanna and Edgar Frost	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Value of the area	6.0 6.3
21/01/2005	1341	Enviro-Clare	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Youth consultation component Value of youth VEC	6.0 8.2 9.3.22.2
21/01/2005	1342	Mark TeKamp, Gretchen Fitzgerald, Ecology Action Center, Halifax, Nova Scotia	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Environmental review Process Consideration of Traditional Ecological Knowledge Community Identity as VEC Document emotions and sentiments of local people Risk of introducing invasive species International regulations	6.0 Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3 9.3.22.2 8.2 9.2.14 6.5
21/01/2005	1343	Janet Larkman, Executive Director, Western Valley Development Agency	Steve Chapman (CEAA)	Comments on draft EIA Guidelines Jobs	6.0 9.3.9-9.3.15

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
				Ecotourism Fisheries Real Estate Future Plans	9.3.14 9.2.1-9.2.6, 9.2.15, 9.3.11-9.3.13 11.8 7.3, 9.3.15, 6.6.1
21/01/2005	1345	Mary Lynyak	Steve Chapman (CEAA)	Comments on draft EIA Guidelines	6.0
15/02/2005	1346	Interested party	Steve Chapman (CEAA)	Unique ecological beauty Destroy whale touring business Decimate the fishing industry Damage the ecosystem including potable water	9.0 9.2.11, 9.2.13 9.3.10-9.3.13 9.1.3
27/10/2004	1347	Interested party	Stéphane Dion, Minister of the Environment	Opposition to the project	8.2
09/02/2005	1350	Interested party	Steve Chapman (CEAA)	Maintaining the Natural Beauty of the Area Opposition to the project	9.0 8.2
23/02/2005	1351	Elizabeth Pugh	Steve Chapman (CEAA)	Land Based Transportation	9.3.8
19/03/2005	1353	Interested party	Steve Chapman (CEAA)	Lease agreement	Appendix Vol. IV, Tab 25
15/03/2005	1360	Interested party	Steve Chapman (CEAA)	Concerns related to the project	9.3.14
05/04/2005	1361	Letter of opposition to the project	Steve Chapman (CEAA)	Opposition to the project Impacts on environment Temporary fix to a suffering economy	8.2 9.0 9.3.9-9.3.15
25/04/2005	1363	Interested party	Steve Chapman (CEAA)	Spatial boundaries for the project VEC's of the neighbourhood Implications of NAFTA Responsible for security at site	8.4 9.3.22 6.6.1 7.3
22/04/2005	1364	Interested party	Joint Review Panel	Pit run gravel	7.0
26/04/2005	1365	Interested party	Steve Chapman (CEAA)	Traditional knowledge	Ref. Vol. II, Tab 23 8.2, 8.3, 9.1, 9.2, 9.3
13/05/2005	1367	Interested party	Steve Chapman (CEAA)	Lease agreement	Appendix Vol. IV, Tab 25

5.0 Concordance Table

Date	CEAA Ref. #	From	To	Issue	Section Addressed
14/05/2005	1370	Interested party	Steve Chapman (CEAA)	Comments of EIA guidelines	6.0
26/05/2005	1371	Partnership for Sustainable Economic Development	Joint Review Panel, Dr. Robert Fournier, Chair	Timing of public hearings	2.4

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EIS Reference: EIS Volume IV, Chapter 6

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WP 1461-Department of Foreign Affairs and International Trade Sustainable Development Division

Thank you for being in touch with Foreign Affairs and International Trade Canada in regards to the White Points Quarry and Marine Terminal Project. You asked us to provide a response with respect to how international agreements such as the NAFTA and Kyoto Protocol could affect the project or its environmental effects.

With regards to the Kyoto Protocol – We note that the Protocol, like other treaties, imposes obligations on States, not individuals. Therefore, the short answer is that there are no implications under the Koyoto Protocol for this project, in the sense that the Protocol has commitments that the project proponents would have to meet.

With respect to the information on climate change and the Protocol provided by the project proponent (Part 6.6.2), this is generally accurate. I would note that the 11th paragraph, third sentence, has a reference to China and India that could be misinterpreted. The sentence states that China and India (not named) have "not signed on" to the Protocol. China and India have ratified the Protocol and so are Parties; they do not have emissions reductions obligations. I would also note that the information may now be dated.

With regards to the North American Free Trade Agreement (NAFTA) – The current text in the EIS is generally fine. We have the following two comments:

1. *Page 72, 3rd paragraph: The sentence: "Likewise, it is important to note that the tribunal must be guided by NAFTA as a whole rather than being restricted to only the terms of Chapter 11 or, more restrictively to only Article 1110 itself" is not accurate. Please refer to NAFTA Art 1112(1).*
2. *Page 72, last paragraph: Reference to "Article 12" should be changed to Article 1114 (2).*

With respect to the International Boundary Waters Treaty Act (IBWTA) – We have been advised that, based on the information contained in the EIS, the IBWTA does not apply to this project.

RESPONSE

Bilcon agrees that the reference to China and India could be misinterpreted, where it states that they "have not signed on" to the Protocol. There is a distinction between signed on and being parties to the Protocol. China and India ratified the agreement and are therefore parties to the agreement. Where parties have "ratified the protocol" by instrument of ratification, acceptance, approval, or accession, they are bound by the Protocol's commitments. The Convention divides countries into three main groups according to differing commitments

(see attached description of the main groups). China and India are non-annex I members. China signed on May 29, 1998, approved it on August 30, 2002 and entry into force was February 16, 2005; India accepted on August 26, 2002 and entry into force was February 16, 2005.

Bilcon disagrees with Foreign Affair's comment that on page 72, the 3rd paragraph is not accurate. This reads "Likewise, it is important to note that the tribunal must be guided by NAFTA as a whole rather than being restricted to only the terms of Chapter 11 or, more restrictively to only Article 1110 itself." Foreign Affairs makes a reference back to Article 1112 (1) in support of the comment that the sentence is inaccurate.

Article 1112(1) reads:

Article 1112: Relation to Other Chapters

1. In the event of any inconsistency between this Chapter and another Chapter, the other Chapter shall prevail to the extent of the inconsistency.

It is Bilcon's opinion that article 1112(1) supports the statement above that a tribunal is guided by NAFTA as a whole rather than being restricted to the provision of Chapter 11 or Article 1110. We would also note that the third paragraph in question also refers to Article 1131, which states that Chapter 11 must be interpreted in accordance with the applicable rules of international law. It reads:

Article 1131: Governing Law

1. A Tribunal established under this Section shall decide the issues in dispute in accordance with this Agreement and applicable rules of international law.

Foreign Affairs' final point was that the reference to Article 12 in the last paragraph of page 72 should be changed to Article 1114(2). We agree. This appears to have been a typographical/ dictation error that originated in our correspondence.

Annex I Parties include the industrialized countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States.

Annex II Parties consist of the OECD members of Annex I, but not the EIT Parties. They are required to provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention and to help them adapt to adverse effects of climate change. In addition, they have to "take all practicable steps" to promote the development and transfer of environmentally friendly technologies to EIT Parties and developing countries. Funding provided by Annex II Parties is channeled mostly through the Convention's financial mechanism.

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Non-Annex I Parties are mostly developing countries. Certain groups of developing countries are recognized by the Convention as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures. The Convention emphasizes activities that promise to answer the special needs and concerns of these vulnerable countries, such as investment, insurance and technology transfer.

The 48 Parties, classified as **least developed countries** (LDCs) by the United Nations, are given special consideration under the Convention on account of their limited capacity to respond to climate change and adapt to its adverse effects. Parties are urged to take full account of the special situation of LDCs when considering funding and technology-transfer activities.

WP 1498 - Nova Scotia Department of Environment and Labour
Environmental Monitoring and Compliance Division
Bruce Arthur – Acting District Manager, Scott Lister - Hydrogeologist

1. Chapter 6.1 discusses that a permit (approval) was issued by NSEL for a quarry of less than four hectares in size. However, what is not mentioned is that this approval is no longer valid. Chapter 6.5.5 then discusses the various permits and approvals required for the project. The only approval discussed as required by NSEL is a water extraction approval. However, the proponent will also be required to obtain an Industrial Approval pursuant to 13(f) of the Activities Designation Regulations. This Industrial Approval would also include the bulk solids handling loadout facility pursuant to 16(2) (h) of those regulations. In addition the proponent would be required to obtain an approval for either an on-site sewage disposal system or for a sewage treatment and disposal (outfall) facility.

RESPONSE

Bilcon is aware of the requirement for an Industrial Approval. Preliminary discussions were held with NSDEL in 2006 with respect to an application for an Industrial Approval and it was agreed that the application would follow the Environmental Assessment Process. Bilcon also recognizes the requirement to obtain a permit for either an on-site sewage disposal system or for sewage treatment and disposal (out-fall) facility.

WP 1524 - Transport Canada

2. *Proponent is encouraged to complete, in conjunction with Transport Canada Marine Safety Group, a Port Procedures Manual (Manual). Manual should be completed at least six (6) months in advance of the arrival of the first ship.*

RESPONSE

Bilcon will complete a Port Procedures Manual at least six (6) months in advance of the arrival of the first ship, in conjunction with the Transport Canada Marine Safety Group.

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3. *In regards to mandatory pilotage at the proposed project site, under the present rules, there will be no mandatory pilotage, however, in order to determine if mandatory pilotage may be necessary the Atlantic Pilotage Authority must conduct a Pilotage Risk Assessment Methodology.*

RESPONSE

On the completion of the Environmental Assessment Process, Bilcon will request that the Atlantic Pilotage Authority conducts a Pilotage Risk Assessment Methodology.

4) Vol. I Page 8 – Proponent to clarify Transport Canada's role in the proposed Project as described above.

RESPONSE

The following paragraph is added to Volume I, Plain Language Summary, under 4.0 - Environmental Assessment Process for Whites Point Quarry and Marine Terminal:

"On March 29, 2004, responsibility for the NWPA Program was transferred from Fisheries and Oceans Canada to Transport Canada, and Transport Canada, as of this date, became a Responsible Authority. Transport Canada is responsible inter-alia for marine safety and pilotage."

8. *Vol. IV – Table ECM – 2 Page 4 – Environmental Component for Transportation – Marine states that no regulatory requirement exists NWPA applies to "works" in any navigable waterway in Canada and is a regulatory requirement.*

RESPONSE

Agreed, the NWPA applies to "works" in any navigable waterway in Canada and is a regulatory requirement in context of the proposed development of the marine terminal (since has been acknowledged in Table 6A – Government of Canada, presented in EIS Volume IV, Chapter 6.5). The statement in Table ECM-2, page 4 refers to the monitoring requirements, for which no explicit regulatory requirement was identified.

11. *Vol. IV – Table CI-1 – Page 2 Commitments Table should indicate exact permits/authorizations required. (i.e. TC-NWPA).*

RESPONSE

This was not the intent of Table CI-1. Applicable regulatory approvals and guidelines have been presented in Chapter 6.5.5, Table 6B

12. *Vol. IV – Section 6.4.2 – Page – 36 – List of Key Events should include TC becoming an RA via the NWPA program transfer.*

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RESPONSE

Volume IV, Section 6.4.2, Page 36 - The following paragraph is added to Section 6.4.2 – Key Elements, Milestones and Actions:

"On March 29, 2004, responsibility for the NWPA program was transferred from Fisheries and Oceans Canada to Transport Canada and, as of that date, Transport Canada became a Responsible Authority."

14. Vol. IV – Table 6A – Page 48 – TC is the sole responsible federal department for NWPA (DFO no longer has any involvement).

RESPONSE

It is noted that Fisheries and Oceans Canada no longer has any involvement with NWPA and DFO should be removed under the Agency column.

15. Vol. IV – Table 6B – Page 51 – TC is the sole responsible federal department for NWPA (DFO, CCG no longer has any involvement)

RESPONSE

It is noted that neither DFO nor CCG have any involvement with NWPA and that TC is the sole responsible department with respect to permitting for construction within navigable waters.

16. Vol. IV – Table 6B – Page 51 – Explosives Transportation Permit is not a CEAA EA trigger therefore remove TC reference as an RA for this.

RESPONSE

Agreed. In accordance with the CEAA Law List Regulation, the Explosives Transportation Permit required by the Transport of Dangerous Good Regulation does not function as a CEAA trigger. In Table 6B, the use of the abbreviation "RA" is misleading. It has been amended to read simply "Agency".

20. Vol. VI – Section 9.2.13.4 – Page – 133 – Which existing TC regulatory requirements are being referred to in this section?

RESPONSE

The existing TC regulatory requirements Bilcon referred to in this section can be found in the *Canada Shipping Act* – Eastern Canada Vessel Traffic Services Zone Regulations.

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23. *Vol. VII – Table ECM – 2 – Page 4 – Component for Transportation – Marine states that no regulatory requirement exists. NWPA applies to "works" in any navigable waterway in Canada and is a regulatory requirement.*

RESPONSE
Comment noted.

WP 1541 - Fisheries and Oceans Canada

The Department of Fisheries and Oceans (DFO), has determined under the Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements of the Canadian Environmental Assessment Act that we are a Responsible Authority (RA) under the Canadian Environmental Assessment Act (CEAA) for the environmental assessment of this project. In addition to being an RA, DFO is also in possession of expert information on the environmental assessment for this project.

Volume IV – Chapter 1

Page i – DFO should be Fisheries and Oceans Canada, not Department of Fisheries and Oceans

RESPONSE
Comment noted.

Volume IV – Chapter 6

Table 6A – Page 47 ...DFO should be included as one of the Agencies in addition to Environment Canada.

RESPONSE
Comment noted. Fisheries and Oceans Canada has been added to Table 6 on Page 47 as one of the agencies in addition to Environment Canada

Page 48 – Navigable Waters Protection Act is administered by Transport Canada only

RESPONSE
Comment noted.

Table 6A – Relevant Legislation – This section does not mention the Fisheries Act. Also that Environment Canada is responsible for Pollution Prevention Provisions of Fisheries Act.

RESPONSE
Comment noted.

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Page 51 – The item in Table 6B "The Release from EA Environment Act EC and Regulations" is not clear. Also the Review Panel is not a responsible authority under CEAA.

RESPONSE

Comment noted.

Page 51 – Table 6B – The column, "When Required" repeats the information in the first column and does not indicate when these regulatory permits or approvals are required.

RESPONSE

Comment noted. Please refer to revised Table 6B below:

TABLE 6B (Revised): Regulatory Approvals

#	Regulation/Act	Agency	Activity	Approval	When required
	Name and section number of the applicable Regulation and the Legislative authority (Act)	*Title of Regulatory Agency*	*Description of the activity that requires the permit or approval*	*Name of the approval*	*Timing*
	Municipality of the District of Digby				
1	Digby By-law chapter 21 Building Permits; Building Code Act, C 46 RSNS, 1989 Sec 4.1	Municipality of the District of Digby By-law	Approval under the National Building Code of Canada and other codes adopted by NS	Building Permit	Design & construction
	Province of Nova Scotia				
2	NS Public highways Act Sec 22.1	NS Department of Transportation and Public Works	Permit for access road linking to NS public highway.	Ministers consent for building access to property	Access road design stage prior to construction
3	NS Public highways Act Sec 47.1	NS Department of Transportation and Public Works	Permit for access road construction linking to NS public highway	Breaking soil of Highways	Access road design stage prior to construction
4a	NS Environment Act,	NS Environment	Environmental assessment of	Environmental	In progress at

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#	Regulation/Act	Agency	Activity	Approval	When required
	Name and section number of the applicable Regulation and the Legislative authority (Act)	*Title of Regulatory Agency*	*Description of the activity that requires the permit or approval*	*Name of the approval*	*Timing*
	Part V Approvals , Sec 50 (1) & (2)	and Labour	the project	assessment approval *Note* in this particular case the EA is by Joint Federal / Provincial review Panel ,EIS sec 6.4	concept development stage.
5	NS Environment Act RSNS 1994-95, Chapter 1, Activities Designation Regulations sec 5.1	NS Environment and Labour	Watercourse alteration activity if required	Water Approval: Watercourse Alteration	At time of proposed activity
6	Environment Act, RSNS, 1994-95, Chapter 1, Activities Designation Regulations and Approvals Procedure Regulations	NS Environment and Labour	To use a watercourse or water resource by: 1. withdrawing or diverting more than 23,000 litres per day; 2. constructing or maintaining a dam; 3. storing more than 25,000 cubic meters of water.	Water Approval: Water Allocation	At time of proposed activity
7	NS Environment Act On-Site Sewage Disposal Systems Regulations sec 4 & subsequent	NS Environment and Labour	On-Site Sewage Disposal	Sewage Disposal (On-Site) Permit	Prior to construction
8	NS Environment Act Office of the Fire Marshal, Fire Safety Act, RSNS , 2002, Chapter 6, and Fire Safety Regulations, (Part 2, General Fire Safety Provisions) and Fire Safety Provisions.	NS Environment and Labour	Construction or alteration of the building or facility	Building Plans Approval	Prior to construction
9	NS Environment Act, Crane Operators and Power Engineers Act, Chapter 23 of the Acts of 2000 , sec 11	NS Environment and Labour	Mechanical Equipment Safety	Various for pressure vessels, elevators, mechanical equipment etc	Prior to operation
10	Nova Scotia Occupational Health and Safety Act, General Blasting	NS Environment and Labour	Quarry Blasting operations	Blaster's Certification	Prior to operation

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#	Regulation/Act	Agency	Activity	Approval	When required
	Name and section number of the applicable Regulation and the Legislative authority (Act)	*Title of Regulatory Agency*	*Description of the activity that requires the permit or approval*	*Name of the approval*	*Timing*
	Regulations sec 19				
11	NS Environment Act and Regulations s 50(2), Activities Designation part 2 sec 13f	NS Environment and Labour	Overriding approval authorization required for the Quarry, related facilities and Marine Terminal operations. This is a key approval defining operational parameters such as operating hours, traffic restrictions, blasting procedures, dust, noise, and vibration restrictions, effluent discharge limits, compensation for project related environmental injury or inconvenience; site reclamation program and bonding, project surety requirements etc	Industrial Plant / Facilities Approval	Prior to operation
12	NS Environment Act sec 57and Regulations Sec 13 to 19 , Pit and Quarry guidelines	NS Environment and Labour	Assessed and held by NSDEL as security for the performance of agreed site reclamation as a condition of approval	Reclamation Bond	Prior to operation
13	NS Environment Act and Regulations, Chapter 1, Petroleum Management Regulations sec 6.1 & subsequent	NS Environment and Labour	Petroleum Storage Tank	Petroleum Storage Tank Installer Certificate	Prior to operation
14	Crown Lands Act, RSNS 1989, Chapter 114, Section 16(1)(a)	NS Natural Resources	Assigns ownership of submerged land in coastal waters to permit the construction of large wharves, causeways, infill or breakwaters	Crown Lands Deed or Grant: Water Lot Grant	In advance of construction
15	Crown Lands Act, RSNS 1989, Chapter 114, Sections 5, 38 and 39.	NS Natural Resources	To place a permanent or semi-permanent mooring on submerged Crown land	Mooring Permit - Submerged Crown Land	Prior to construction
16	NS Environment Act and Regulations Section 66	NS Environment and Labour	Alteration to a wetland	Wetland Alteration Approval	Prior to construction

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#	Regulation/Act	Agency	Activity	Approval	When required
	Name and section number of the applicable Regulation and the Legislative authority (Act)	*Title of Regulatory Agency*	*Description of the activity that requires the permit or approval*	*Name of the approval*	*Timing*
	Government of Canada				
4b	Canadian Environmental Assessment Act. (CEAA) para 21(b)	Environment Canada; Transport Canada; Nova Scotia Department of Environment and Labour	Environmental assessment of the project	Environmental assessment approval *Note* in this particular case the EA is by Joint Federal / Provincial review Panel, EIS sec 6.4	In progress at concept development stage.
17	Navigable Waters Protection Act , Sec 5.1	Fisheries & Oceans Canada / Coast Guard	Construction of works in navigable waters	The work and the site and plans require approved by the Minister.	Prior to the commencement of Marine works
18	Fisheries Act (R.S., 1985, c. F-14) Sec 35.1	Fisheries & Oceans Canada	Works or undertakings affecting fish habitat	Authorization for Works or Undertakings Affecting Fish Habitat	Prior to the commencement of Marine works
19	*Species at Risk Act* *2002, c. 29, sec 73.1*	*Parks Canada, Fisheries & Oceans Canada*	*An activity affecting a listed wildlife species, any part of its critical habitat or the residences of its individuals.*	*A permit - authorizing the person to engage in an activity affecting a listed wildlife species*	*Prior to the activity*

Table 6B – Page 51 – Remove DFO and replace with Transport Canada in section on "Permit for Construction with Navigable Waters"

RESPONSE

Comment noted.

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WP 1542 - Health Canada

Regulatory Environment

Section 6.5 Regulatory Environment – Canada Health Act – The use of the Canada Health Act in this context is incorrect. The Canada Health Act is an "Act relating to cash contributions by Canada and relating to criteria and conditions in respect of insured health services and extended health care services" (Canada Health Act, 1984). The correct Act that gives the Minister of Health the power to ensure the protection of human health in Canada and to conduct research in areas related to human health protection and promotion is the Department of Health Act (1996) (Section 4).

In addition, Health Canada and Environment Canada are jointly responsible for administering the Canadian Environmental Protection Act (1999), including the assessment and management of risks associated with existing and new substances. Under CEPA (1999), the Minister of Health is also responsible for conducting research on the role of substances in illness and other health problems.

Under CEAA, Health Canada's legislated role is typically as a Federal Authority to provide expert information and knowledge on health issues when requested by other federal departments carrying out environmental assessments under CEAA. Health Canada is also a Responsible Authority for projects it proposes or funds, such as nursing stations and treatment centres for First Nations people. In the case of this project, Health Canada is a Federal Authority and can provide expert advice on any of the following areas (if asked):

- *Drinking water and sewage management;*
- *Air, water, food and soil quality guidelines/standards;*
- *Impacts of noise on human health;*
- *Community health (First Nations);*
- *Radiation protection (ionizing and non-ionizing);*
- *Environmental and occupational toxicology;*
- *Health promotion in the workplace;*
- *Epidemiology; and*
- *Health risk assessment and risk management. "*

RESPONSE

Please refer to correspondence, File: OF6-3-65-1, from Allison Denning, Regional Environmental Assessment Coordinator, Health Canada – Atlantic Region to Debra Myles, Panel Manager, Whites Point Quarry and Marine Terminal Project - Joint Review Panel dated August 4, 2006. On page 13 of that letter, Ms. Denning points out and clarifies an

inaccurate statement relative to the role and responsibilities of Department of Health Act as follows:

" Section 6.5 Regulatory Environment – Canada Health Act – The use of the Canada Health Act in this context is incorrect. The Canada Health Act is an "*Act relating to cash contributions by Canada and relating to criteria and conditions in respect of insured health services and extended health care services*" (Canada Health Act, 1984). The correct Act that gives the Minister of Health the power to ensure the protection of human health in Canada and to conduct research in areas related to human health protection and promotion is the *Department of Health Act (1996)* (Section 4).

WP 1625 – Partnership for Sustainable Development
EIS Guidelines – Section 6.0 – Introduction to the EIS
Deficiency Statement 18
EIS Guidelines
6.1 – The Proponent – "Provide summary information on the nature of the management structures and organizational accountability for designing, constructing, operating and modifying the Project; implementing environmental mitigation measures and environmental monitoring; and managing potential adverse environmental effects."
EIS
6.1.1 – Management Structure – The EIS provides only one name for management and accountability for all aspects of the design, construction, operation, modification, mitigation, and management of adverse effects. At a minimal level, to meet the requirements of section 6.1 of the EIS Guidelines the EIS should provide an organizational structure for the management of this Project, which includes identification of middle management positions for the above noted areas.

RESPONSE
The sole responsibility for management and accountability of all aspects of the design, construction, operation, modification, mitigation, and management of adverse effects lies with the Operations Manager, as set out in the EIS. The Operations Manager will delegate, at his discretion, elements of work to consultants or future staff, but will retain sole responsibility.

Deficiency Statement 19
EIS Guidelines
6.1 – The Proponent – "Provide a record of the environmental performance....:"
EIS
6.1.2 – Environmental Performance and Capability – The EIS does not include a record of environmental performance. A few statements that broadly cover activities that the Company

has engaged in, such as promoting research, do not constitute a record of environmental performance. A record of environmental performance should include:

- *A history and description of Environmental Management System(s) used by the Proponent;*
- *Past evidence and future commitments of specific, measurable environmental improvements;*
- *Past evidence and future commitments of public outreach, including identification and response to community concerns, and performance reporting; and*
- *A record of sustained compliance with environmental requirements, certification of current compliance, and commitment to maintain compliance.*

RESPONSE

Bilcon rests on the statement that it has an excellent record of environmental management and environmental compliance, and an excellent record of identifying and responding to community concerns. All of these are a matter of public record in the various locations where Bilcon's parent company has operations.

Deficiency Statement 20
EIS Guidelines
6.1 – The Proponent - 'Indicate the environmental record of key sub-contractors (e.g. shipping contractors)."

6.1 - The Proponent - The EIS fails to provide environmental record of contractors. In the event that contractors have not yet been selected, the EIS should identify the minimum standards for environmental performance, marine safety etc that will be required. In the case of foreign registered vessels, these standards should meet or exceed Canadian standards.
The voyage in question is an international movement (as opposed to a cabotage movement). This means that there is no theoretical restriction on the registration of the vessel, or indeed on the nationalities of the officers and crew. The EIS speaks of ensuring that the ships are operated by responsible owners. This is, however, quite general, and more specificity should be provided as to how this is to be accomplished, and how the quality of ownership is to be assessed, (including for example whether any restrictions are expected to be placed on where the ship operating company is incorporated, where its 'mind and management is located, where its ships are classified, insured, etc.).
To meet the requirements of section 6.1 of the EIS Guidelines, the Proponent could provide environmental records for key subcontractors the Proponent and related companies. This approach would demonstrate an effort on the part of the Proponent to meet the requirements of the EIS Guidelines rather than dismissing the requirement.

RESPONSE

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As noted in the EIS, Bilcon has not appointed contractors or sub-contractors and hence cannot provide the environmental record of these groups. Bilcon will appoint experienced, competent contractors and subcontractors to carry out the various elements of the work.

Deficiency Statement 21
EIS Guidelines
6.1 – The Proponent – Provide a record of the environmental performance and capability of the Proponent..."
EIS
6.1.2 – Environmental Performance and Capability – The EIS states, "The companies have had no incidents leading to major violations of New Jersey Regulations with respect to the Environment or Safety."[52] *The use of the term major is subjective in nature and does not provide an objective representation of environmental performance. To meet the requirements of section 6.1 of the EIS Guidelines all violations should be included in the EIS.*
EIS
6.1.2 – Environmental Performance and Capability – The EIS states, "The Clayton Companies are continually evaluating new technologies with respect to dust collection, concrete recycling, solar power, etc., and operate recycling operations."[53] *The EIS does not contain any detail or even a description of the new technologies referenced. There is no objective demonstration of environmental performance as required by the EIS Guidelines.*

RESPONSE
Please refer to Bilcon's response to Statement #19.

Deficiency Statement 22
EIS Guidelines
6.5 – Regulatory Environment – 'Describe the existing regulatory environment (federal, provincial, municipal) including all permitting, licensing and regulatory requirements...that apply to all phases of the Project and associated infrastructure."
EIS
The EIS fails to account for the application of the NSDEL Pit and Quarry Guidelines to the formerly approved 3.9 ha quarry. The Pit and Quarry Guidelines require adequate environmental protection and appropriate rehabilitation to be carried out even where an approval has expired. Furthermore, the NSDEL is required to monitor activity at the site and ensure that Guideline requirements are met.

RESPONSE
The 3.9 hectare quarry site has been monitored on a continuous basis, and funds for rehabilitation of this site are currently on hand with the NSDEL.

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Deficiency Statement 23

EIS Guidelines

6.5 – Regulatory Environment – "List each regulatory approval required in a table with the following details: activity requiring approval and when it is required; regulatory agency; name of approval or permit; and associated legislation.

EIS

6.5 – Regulatory Environment - Table 6B Regulatory Approvals and Guidelines – The Table does not provide the information required by section 6.5 of the EIS Guidelines. The Table is inconsistent in its detail.

At a minimum the EIS Table should provide the detail demonstrated in the following example to meet the requirements of the EIS Guidelines:

Regulation/Act	**RA**	**Activity**	**Approval**	**When required**
Name and section number of the applicable Regulation and the Legislative authority (Act)	**Title of Regulatory Agency**	**Description of the activity that requires the permit or approval**	**Name of the approval**	**Timing**
Environment Act, s.50(2) Activities Designation Regulations, s. 13(f)	NSDEL	Development and operation of quarry	Industrial approval	Prior to quarry activity

Table 6B in the EIS does not include a column for the approval name. The name of the approval is inconsistently provided under the column "Regulation/Act" or "Activity". The Table inconsistently provides the names and section numbers of the applicable regulation. Several required approvals are not included in the Table. For example, the provincial industrial approval (described in the sample table above) and water approvals for alteration of wetlands and watercourses are not included. To meet the requirements of section 6.5 of the EIS Guidelines the Table must be consistently presented with all the required information and every regulatory approval required for the Project.

RESPONSE

Please refer to revised Table 6B in this document.

Deficiency Statement 24

EIS Guidelines

6.5 – Regulatory Environment – "Describe the existing regulatory environment (federal, provincial, and municipal) including all permitting, licensing and regulatory requirements...that apply to all phases of the Project and associated infrastructure."

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EIS

6.5.2 – Municipality of Digby – The EIS states that, "The Municipality of Digby advises that bylaws dealing with Building and Noise are enforced." This is the only reference in the EIS to bylaws addressing noise. The EIS fails to meet the requirements of section 6.5 of the EIS Guidelines because it does not describe the regulatory requirements for noise abatement and control.

RESPONSE

The EIS states that "The Municipality of Digby advises that By-Laws dealing with Building and Noise will be enforced". The By-Law referred to is the Orderly and Peaceful Conduct By-Law cited as the Orderly Conduct By-Law or Noise By-Law. Paragraph 5 sets out the standards as follows: "No person shall generate, or cause or permit to be generated, a noise or sound that is measurable in A-weighted sound pressure level at a point of reception. A) In excess of 55 dBA, before 0700 or after 2200; B) In excess of 65 dBA, at all other times." Further information on this By-Law can be found at the Municipality of the District of Digby's website www.municipalities.com.

Deficiency Statement 25

EIS Guidelines

6.5 – Regulatory Environment – "Describe the existing regulatory environment (federal, provincial, and municipal) including all permitting, licensing and regulatory requirements...that apply to all phases of the Project and associated infrastructure."

EIS

6.5 – Regulatory Environment – Sections 6.5.3, 6.5.4, 6.5.6, read like Environmental Law 101, but they provide very little relevant information on how the described statutes and regulations apply to the proposed Project. To meet the requirements of section 6.5 of the EIS Guidelines the information provided in the EIS on federal and provincial legislation must be linked directly to the Project and associated infrastructure. The reader should not be required to guess how these regulatory requirements apply. For example, the EIS includes several paragraphs describing the Guideline for the Release of Ammonia Dissolved in Water Found in Wastewater effluents. The information is entirely generalized. This information is useless unless the EIS answers the following question; Will the Proponent be required to take some form of action as a result of this Guideline? Why or why not? This level of detail is critical to an examination of the environmental management of the proposed Project and yet it is not included in the EIS. The same statement can be made for many of the references in these sections of the EIS.

RESPONSE

The EIS specifically states that Bilcon is required to comply with all federal and provincial legislation pertinent to the operation of the quarry and marine terminal.

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EIS Reference: Volume V, Chapter 7.0 and Section 7.0 Revised Project Description

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Joint Review Panel letter dated December 19, 2006 – Re: Information Requests IR-1 to IR10

The Whites Point Quarry and Marine Terminal Joint Review Panel has reviewed the Revised Project Description (November 2006) and submits the attached ten information requests for your response. These information requests represent specific deficiencies in certain aspects of the Revised Project Description and are not meant to form an exhaustive list. I remind you that a complete Project Description realized in an appropriate level of detail is required by the Joint Review Panel at the earliest possible date. I refer you to our July 28, 2006, EIS Information Request in this regard.

Moreover, as detailed in our July 28, 2006, information request to you (Item 7.1), the Joint Review Panel had intended to determine if further information would be required to support the assessment of alternative means of undertaking the Project after we received the revised Project Description. In the interest of efficiency, the Panel now requests that a consideration of the technically and economically feasible alternative means of carrying out the project and the environmental effects of these alternative means be included in or with the Project Description. Refer to section 7.2 of the EIS Guidelines (March 2005) for further instructions.

RESPONSE

Section 7.2 of the EIS Guidelines (March 2005) requires an identification of the technically and economically feasible ways that the Project can be carried out and the potential environmental impacts associated with them. In accordance with the Guidelines the alternative means have been discussed for a number of Project works and activities:

- Aggregate sites
  - White Point Site
  - Other sites in Nova Scotia and Atlantic Provinces
- Extraction methods
  - Surface quarry operation
  - Underground mining operation
- Rock fragmentation
  - Use of explosions
  - Ripping
  - Plasma torching / water cutting
- Rock processing (beneficiation)
  - No on-site beneficiation
  - On-site beneficiation
- Waste materials management and utilization
  - Recycling (sediments, vegetation/topsoil)
  - Off-site transport and disposal/recycling

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- Waste water treatment (sanitary)
  - Use of municipal system
  - Use of on-site treatment system
- Process water treatment / management
  - Supply by well and discharge to surface water
  - Recycling
- Transportation modes
  - Land-based transportation (truck)
  - Land-based transportation (pipeline)
  - Marine-based transportation
- Transportation routes (marine)
  - Shortest route to designated shipping channel
  - Other routes to destination
- Ship loading methods
  - Conveyor belt loading
  - Loading with crane & clam shell
  - Trucking to other marine terminal
- Terminal Construction
  - Pipe pile construction
  - Construction methods using caisson, crib, fill and other techniques
- Timing & Scheduling (quarry operation)
  - 10 months operation, 2 months maintenance
  - Seasonal operation
- Reclamation Timing
  - Incremental reclamation
  - Upon completion of quarry activities
- Reclamation Objectives
  - Natural succession based/ minimal interference
  - Managed reclamation / active habitat management
- Decommissioning
  - Removal of all site infrastructure and developments
  - Partial removal of site infrastructure and developments

The decision to proceed with the alternative means as described in the Project description was based on their evaluation against the following evaluation criteria:

- **Technical feasibility**, which considers the means with respect to its suitability, reliability, and safety; and
- **Economic feasibility**, which includes an assessment of the cost (development and operating costs), the commercial viability, and the commercial risk.

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The determination of the most appropriate (preferred) alternative Project works and activities has been conducted on the basis of a screening process. If an alternative was deemed to be technically unfeasible, the economic feasibility and environmental effects were not considered. If the alternative was considered technically feasible but not economically feasible, environmental effects (i.e., economic, social, health and ecological) were also not investigated. The environmental effects were evaluated when the alternative was considered both, technically and economically feasible.

If for a particular Project work/component only one alternative was considered feasible (technically and economically), it became part of the Project description and was subjected to a detailed assessment of its environmental effects as part of the EA process. In those cases where two or more alternatives were deemed feasible, key environmental effects were considered for each alternative. Where the environmental advantages of one versus another alternative were considered obvious, the environmentally more beneficial alternative was selected as the preferred. This alternative then was subjected to the detailed environmental assessment in the EA report.

If the environmental advantages of one versus another alternative would have not been immediately apparent, both alternative means would have been subjected to a full assessment in the EA process, at the end of which the preferred alternative would have been determined. This full environmental assessment of two or more technically and economically feasible alternative means became not necessary. In all cases the team was able to determine the preferred alternative based on technical and economic feasibility and a coarse initial consideration of environmental implications. The results of the screening are presented in Table 1 along with a summary of the initial technical, economic and environmental considerations.

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TABLE 1: Alternative Means

#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
1	**Aggregate Sites**				
	Whites Point	Technically feasible: • Suitable site (rock characteristics; land and marine access; engineering feasibility, land availability, size of land base)	Economically feasible: • Development cost: low • Operating cost: moderate • Commercially viable Commercial risk: low	See EIS	Yes Preferred
	Other sites in Nova Scotia and Atlantic Provinces	• Alternative sites have been identified as technically feasible or not feasible depending on the individual site; most frequent limitations relate to • suitable rock type • land and marine access; • land availability; • size of land base;	Economically NOT feasible: • Development cost: low to high (e.g., land access; wharf development, environmental constraints) • Operating cost: moderate to high (e.g., transport distance unfavourable) • Commercially viability uncertain • Commercial risk: low to high	Not assessed	No
2	**Extraction Methods**				
	Surface quarry operation	Technically feasible: • Suitable technology • Reliable (good track record; limited equipment/ infrastructure requirements) • No safety concerns (high safety standards; excellent safety records)	Economically feasible: • Development cost: low • Operating cost: moderate • Commercially viable • Commercial risk: low	See EIS	Yes Preferred
	Underground mining operation	Technically feasible: • Suitable technology available • Bedrock geology may not be favourable • Uncertain track record; • Specialized equipment/ infrastructure	Economically NOT feasible: • No corporate expertise • Development cost: high (large up front development costs) • Operating cost: moderate • Commercial viability uncertain	Not assessed	No

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#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
		requirements • Underground mine safety concerns	(reduction of recoverable basalt due to ground support considerations) • Commercial risk: high (safety concerns, technical and economic uncertainty)		
3	**Rock Fragmentation**				
	Use of explosives (see Project description)	Technically feasible: • Suitable technology • Reliable (good track record); limited equipment/ infrastructure requirements • Well known safety concerns (high safety standards; excellent safety records	Economically feasible: • Development cost: low • Operating cost: moderate • Commercially viable • Commercial risk: low	See EIS	Feasible Preferred
	Ripping	Technically NOT feasible: • Not suitable for basalt rock (suitable for softer rock types such as sediments shale and limestone)	Not assessed	Not assessed	No
	Plasma torch / water cutting	Technically NOT feasible: • Not suitable for basalt rock and aggregate generation (requires highly fractured rock; otherwise, generates too large rock fragments/blocks) • Additional water supply and clarification concerns • No operating experience in the area	Not assessed	Not assessed	No
4	**Rock Processing (Beneficiation)**				
	No on-site beneficiation (export of large blocks of basalt rock, crushing operation at receiving end)	Technically feasible: • Suitable technology • Requires different loading infrastructure (truck accessible pier as opposed to conveyor belt loading equipment)	Economically feasible: • Development cost: low • Operating cost: low • Commercially viable; • Commercial risk: low	• Increased adverse impact to marine environment as a result of the infill work for the required loading pier	Feasible No

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#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
		• No safety concerns	• Other: Reduced contribution to economic sustainability of area		
	On-site beneficiation (rock crushing operation; see Project description)	Technically feasible: • Suitable technology • Reliable (good track record) • Requires proposed loading infrastructure • No safety concerns	Economically feasible: • Development cost: moderate • Operating cost: moderate • Commercially viable; • Commercial risk: low • Other: Value added contribution to economic sustainability of area	• Minimal adverse impact to marine environment as loading can employ conveyor belt, no infill work required • For further assessment – see EIS	Feasible Preferred
5	**Waste Materials Management and Utilization**				
	Recycling (removal and storage of sediments, topsoil, woodchips; reuse in site reclamation; see Project description)	Technically feasible: • Suitable technology • Reliable technology • No safety concern	Economically feasible: • Development cost: moderate • Operating cost: moderate • Commercially viable • Commercial risk: low • Other: application of sustainability development	See EIS	Yes Preferred
	Transport to off-site markets	Technically feasible • Suitable technology • Reliable technology • No safety concern	Economically NOT feasible: • Development cost: low • Operating cost: high (assumes low market value) • Commercially NOT viable • Commercial risk: low • Other: Not supportive of sustainable development objective	Not assessed	No
6	**Waste Water Treatment (Sanitary)**				
	Use of municipal system	Technically feasible; • Suitable technology requires installation of link to municipal system • Reliable technology	Economically NOT feasible: • Development cost: high (requires pipeline ROWs ; tie-in point too far) • Operating cost: low	Not assessed	No

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#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
		• No safety concern	• Commercially NOT viable • Commercial risk: low		
	On-site treatment (septic system)	Technically feasible: • Suitable technology • Reliable technology • Well understood safety concern	Economically feasible: • Development cost: low • Operating cost: low • Commercially viable • Commercial risk: low	See EIS	Yes Preferred
7	**Waste Water Treatment / Process Water Management**				
	Water supply by wells, on-site treatment and discharge to surface water (sediment treatment same as below)	Technically feasible: • Suitable technology; requires installation and operation of on-site groundwater wells • Reliable technology • No safety concerns	Economically feasible: • Development cost: moderate • Operating cost: moderate • Commercially viable; • Commercial risk: moderate (potential for compensation if neighbouring wells are impacted)	• Not supportive of Bilcon's policy on sustainable development • Potential for adverse effects on groundwater regime at and adjacent to site • Potential for adverse effects on well yields of near-by residential properties	Feasible No
	Recycling of waste water (removal of sediments with high rate thickener; storage of sediments and reuse in site reclamation; reuse of wash water; see Project description)	Technically feasible: • Suitable technology; requires installation and operation of on-site groundwater wells • Reliable technology • No safety concerns	Economically feasible: • Development cost: moderate • Operating cost: moderate • Commercially viable • Commercial risk: low (low potential for compensation requirements)	• Supportive of Bilcon's policy on sustainability • No concerns for groundwater regime and /or groundwater wells at and adjacent to site • For further assessment- see EIS	Yes Preferred
8	**Transportation Modes**				
	Land-based transportation (truck)	Technically feasible: • Suitable technology • Reliable technology • No safety concerns	Economically NOT feasible: • Development cost: low • Operating cost: high (distance to markets, maintenance of large number of trucks)	Not assessed	No

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#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
			• Commercially NOT viable • Commercial risk: low		
	Land-based transportation (pipeline)	Technically feasible: • Suitable technology but requires transport medium (e.g., water) • Reliable technology • No safety concerns	Economically NOT feasible: • Development cost: high (requires ROW for pipeline; no suitable harbour/market near-by) • Operating cost: high (transport distance) • Commercially NOT viable • Commercial risk: moderate (maintenance and repair requirements for long pipeline & pumping stations)	Not assessed	No
	Marine-based transportation (see Project description)	Technically feasible • Suitable technology • Reliable technology • Limited equipment/ site infrastructure requirements • No safety concerns	Economically feasible: • Development cost: high • Operating cost: moderate • Commercially viable • Commercial risk: low	See EIS	Yes Preferred
9	**Transportation Routes (Marine)**				
	Shipping channel & shortest connecting route (see Project description)	Technically feasible • No safety concern; • No navigational obstacles or other navigational challenges along proposed connector route; • Main channel well marked and designated for international shipping	Economically feasible: • Development cost: NA • Operating cost: moderate • Commercially viable • Commercial risk: low	See EIS	Feasible Preferred
	Other routes (e.g., shortest route to destination in the US; this would entail navigating along the Digby Neck coast)	Technically feasible: • Some safety concerns (potential for grounding and conflicts with small vessels traffic) • Commercial traffic must transit through established shipping lanes	Economically NOT feasible: • Development cost: NA • Operating cost: moderate • Commercially viable • Commercial risk: high (potential for compensation payments in case of	Not assessed	No

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#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
			conflicts with fishing gear; risk for delays (e.g., collisions, grounding)		
10	**Ship Loading Methods**				
	Conveyor based	Technically feasible: • Suitable technology • Reliable technology • Limited wharf requirements • No safety concerns	Economically feasible: • Development cost: moderate • Operating cost: moderate • Commercially viable • Commercial risk: low	• Minimal impact on marine environment (use of steel pipe piling as opposed to infill work)	Feasible Preferred
	Crane & clam shell	Technically feasible: • Suitable technology • Reliable technology • Requires different loading infrastructure than proposed (pier as opposed to conveyor belt loading equipment) • No safety concern	Economically feasible: • Development cost: high • Operating cost: moderate • Commercially viable • Commercial risk: low	• Potential for increased adverse effects on marine environment as a result of the infill work for the required loading pier; • In comparison with conveyor belt system: Higher noise and higher dust impacts	Feasible No
	Trucking to other terminals	Technically feasible: • Suitable technology • Reliable technology • No safety concern	Economically NOT feasible: • Development cost: low (assumes no capital investment in development of other wharf location) • Operating cost: high (assumes long haul distance to loading dock) • Commercially NOT viable; • Commercial risk: low	Not assessed	No
11	**Terminal Construction Methods**				
	Pipe piling	Technically feasible: • Suitable technology • Reliable technology • No safety concern	Economically feasible: • Development cost: moderate • Operating cost: low • Commercially viable • Commercial risk: low	• Minimal footprint; minimal adverse impact to marine environment; minimal loss/alteration of marine habitat • For further assessment – see EIS	Feasible Preferred

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#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
	Construction methods using caisson, crib, fill and other techniques	Technically feasible: • Suitable technology • Reliable technology • No safety concern	Economically feasible: • Development cost: high • Operating cost: low • Commercially viable • Commercial risk: low	• Increased footprint with increased adverse impact to marine environment (infill work for the required loading pier	Feasible No
12	**Timing, Scheduling (Quarry Operation)**				
	All year: 10 months operation; 2 months maintenance (winter); 2 shifts over 16 hours /day (6:00 to 22:00 hours)	Technically feasible: • Manageable operation scheme • No safety concern	Economically feasible: • Development cost: not affected • Operating cost: low • Commercially viable • Commercial risk: low	See EIS	Feasible Preferred
	Seasonal operation (longer winter break): overall shorter operational time	Technically feasible: • Manageable operation scheme • No safety concern • Requires higher production rates to meet annual targets	Economically NOT feasible: • Development cost: not affected • Operating cost: high (seasonal shut down and start up procedures; idle equipment) • Commercially NOT viable; • Commercial risk: low	Not assessed; however will impose increased vessel transits during season when marine mammals are most common	No
13	**Reclamation Timing**				
	Incremental (progressive) reclamation	Technically feasible: • Manageable reclamation scheme • No safety concern	Economically feasible: • Development cost: Low (storage areas for reclamation materials) • Operating cost: moderate • Commercially viable; • Commercial risk: low	• Supportive of Bilcon's policy on sustainable development • Effects on habitat, wildlife, and visual landscape qualities minimized	Feasible Preferred
	Reclamation at end of quarry operation	Technically feasible: • Manageable operation scheme • No safety concern	Economically feasible: • Development cost: Low to moderate (higher cost due to larger on-site storage requirements for reclamation materials) • Operating cost: low	• Not supportive of Bilcon's policy on sustainable development • Increased / prolonged adverse effects on terrestrial habitat, and visual landscape qualities	Feasible No

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#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
			• Commercially viable • Commercial risk: low	• Not favored by regulators	
14	**Reclamation Objectives**				
	Natural succession based; minimal interference (minimal interference)	Technically feasible: • Manageable operation scheme • No safety concern	Economically feasible: • Development cost: low • Operating cost: low • Commercially viable • Commercial risk: low	• Reduced capacity for CO_2 sequestration • Approach would benefit other habitat types and associated birds, wildlife and plant life • Potential for increased / prolonged adverse effects on visual landscape qualities	Feasible No
	Managed reclamation; establishment of forest habitat; active habitat management	Technically feasible: • Manageable operation scheme • No safety concern	Economically feasible: • Development cost: moderate • Operating cost: moderate • Commercially viable • Commercial risk: low	• For further assessment and discussion of approach – see EIS; approach is to be detailed and finalized with input from regulators, community, and stakeholders	Feasible Preferred (preliminary decision)
15	**Decommissioning**				
	Removal of all site infrastructure and developments	Technically feasible: • Manageable operation scheme • No safety concern	Economically feasible: • Development (decommissioning) cost: moderate to high • Operating cost: not applicable • Commercially viable • Commercial risk: low	• Infrastructure may be of interest in context of certain after use scenarios (e.g., access road and mooring dolphins for residential development and marina development respectively) • Extent of infrastructure removal will be an outcome of the EA arising from the approval of the proponent's reclamation plan.	Feasible No
	Partial removal of site infrastructure and	Technically feasible: • Manageable operation scheme	Economically feasible: • Development (decommissioning) cost:	• Minimal adverse impact to environment as a result of	Feasible Preferred

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#	Alternative	Technical Feasibility (Suitability, Reliability, Safety)	Economic Feasibility (Cost; Commercially Viable; Commercial Risk)	Environmental Effects	Feasible? Preferred?
	developments (in full compliance with regulatory requirements)	• No safety concern (assumes restricted public access)	low to moderate • Operating cost: not applicable • Commercially viable • Commercial risk: low • Other: potential for cost savings in implementation of after use scenarios	decommissioning activities • For further assessment and discussion of approach – see EIS; final decommissioning approach is dependent on such factors as the after use concept and public preferences; to be detailed and finalized with input from regulators, community, and stakeholders • Extent of infrastructure removal will be an outcome of the EA arising from the approval of the proponent's reclamation plan.	(preliminary decision)

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Information Requests on the Revised Project Description

IR-1

The Sediment Disposal Area for years 1-20 (OP1 to OP4) is shown enclosed by berms but shows no provisions for drainage. The relocated sediment disposal area, after year 20, appears to be connected to the drainage system. Explain how precipitation accumulated in the sediment disposal area will be drained and demonstrate how the system would withstand the 100 year maximum 24 hr storm event.

RESPONSE

The sediment disposal area will be bermed on all four sides and hence the only catchment area will be that contained within the disposal area itself. The drainage from undisturbed areas upslope from the sediment disposal area will be routed around the exterior of the disposal area by means of drainage channels.

The sediment disposal area will be designed to maintain a one metre freeboard from the top of the sediment to the top of the berm. It should be recognized that the sediment will be used mixed with the stored topsoil to reclaim areas throughout the life of the quarry.

The 100 year maximum 24 hour rainfall is 191mm and this can be contained within the sediment disposal area. As a precautionary measure an overflow structure will be constructed in the surrounding berm, which will permit overflow to be channeled and to link up with the drainage channel to the east of the processing area.

IR-2

In plan OP-1-R1 the Watershed Drainage is shown to discharge into the coastal bog (environmental preservation zone) via underground drainage (pipe). As shown in Fig. IR8-1 this underground drainage appears to occur across the active quarry face for years 6-10. After quarrying terminates in this area, a +/- 27 metre cliff will separate the drainage channel from the pipe. Explain how adequate drainage is to be maintained during and after quarrying of this area.

RESPONSE

Plan OP1 – R1 and Figure IR8 – 1 represent concept quarry plans for Years 1 – 5 of the quarry construction and operation. Construction, including site preparation, is scheduled for Year 1. During Year 1 construction, a temporary rock storage area on approximately 8.0 hectares will be the first order of construction in Quarry Area 1. As site preparation proceeds for the temporary rock storage area, excavation for sediment pond 5 and excavation and installation of the underground drainage pipe to the bog are planned. The Revised Project Description proposes that the excavation of sediment pond 5 and excavation and installation of the underground drainage pipe be during the transition phase from construction to operation in Years 2 – 5. After reviewing the construction scheduling, from an economic,

engineering and environmental standpoint, the installation of the underground drainage pipe would best be completed during the site preparation of the temporary rock storage area in Year 1.

The overall intent of the proposed drainage is to maintain an adequate flow of water to the coastal bog until this area of the quarry is reclaimed (please refer to response to Panel Comment on Section 9.2.2.1 Aquatic Ecology – On-site Freshwater and response to Nova Scotia Department of Environment and Labour comments from their Environment and Natural Areas Management Division included in the Comment and Response Submittal for the EIS for further details).

Since a "water course diversion" permit may be required from the NSDEL three options are presented for consideration.

Option 1 – open channel drainage west and around sediment pond 5

Option 2 – underground drainage pipe through sediment pond 5

Option 3 – underground drainage pipe southeast/southwest of sediment pond 5

The three options are shown on **Plan IR – 2 RPD**. After further consideration and more detailed engineering and environmental analysis, Option 3 is preferred. A section of Option 3 is shown on **Figure IR – 2 RPD**. Option 1 (open channel) was rejected since the gradients were not adequate for surface flow. Option 2 (underground drainage through sediment pond 5) was also rejected because gradients and outfall inverts at the bog were not adequate. Option 3 (underground drainage pipe southwest of sediment pond 5) appears preferable as gradients and location of the outfall into the bog are most appropriate. It should be noted that all options would require the excavation shown on **Figure IR – 2 RPD** during site preparation in Year 1. This excavation will create a water fall down the rock face into a pool at the bottom of the water fall. Water will then be piped from the pool underground to a location near the head of the bog. On-site investigations indicate this may be a more appropriate location for the outfall than proposed on Plan OP1 – R1. Active quarrying in Years 6 – 10 can take place on either side of the waterfall and pool and the underground drainage pipe will be below the working ground elevation of land surrounding sediment pond 5.

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IR-3
The drainage from the Organic Disposal Area (Plan OP2-R1) is shown to discharge into Sediment Pond 5. During years 6-10 this drainage occurs across an active quarry area. Explain how the drainage can be maintained during the active quarrying in this area.

RESPONSE
Drainage from the Organic Disposal Area (Years 1 – 30) will discharge into sediment pond 5. Minimal runoff is expected from the organic disposal area since temporary erosion control measures are proposed for the stockpile. However, any runoff will be through an open channel adjacent to the west side of the quarry road to sediment pond 5. This channel will be located adjacent to the quarry road and thus not be in the active quarry area during Years 6 – 10. Water discharge from this channel will be over the rock face to the same entry point into sediment pond 5 as the lower drainage channel. **Plan IR – 2 RPD and Figure IR – 2 RPD** included with responses to the Revised Project Description should provide further clarification.

IR-4
Throughout the life of the quarry the main drainage is shown to be via a channel, immediately east of the sediment ponds, that initially discharges into Sediment Pond 4 and then into Sediment Pond 5. Elevation of Sediment Pond 5 is shown to be +/- 10 metres. In Plan IR-7 this channel is shown to have a 10 metre elevation as it crosses under the ship loader and it is shown to drain the live storage area which has a 10 metre base elevation. The flow in the sediments ponds adjacent to this channel is shown to be in the opposite direction. Using profiles and gradients (or other means) demonstrate the viability of the proposed drainage pattern under normal and extreme conditions.

RESPONSE
Normal operating level of Pond 5 would be plus or minus 9.8 metres. A pump station will be installed adjacent to Pond 1 which will pump water into the open drainage channel at that location to a second channel to the north at a higher elevation. This drainage channel will flow north to the vicinity of Pond 4 where water will be pumped via a pipe system to the head of pond 5.

Beginning in Year 16 under normal operating conditions, the water level in Pond 6 would be plus or minus 14.8 metres. Water would overflow from Pond 6 and flow by gravity (plus or minus 1% gradient) in an open, rock lined channel to the pump station at Pond 1. Water from Pond 6 and plant runoff would then be pumped to a higher elevation channel which will carry water to the pump station at Pond 4 where it will be pumped to Pond 5. If water is required from Pond 6 when the level is below the normal operating level (14.8m), a temporary pump will be used to pump from Pond 6 into the open channel and then by gravity to the pump station at sediment Pond 1.

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IR-5
In the sections (e.g. Fig. IR8-1 & IR8-4) the sediment ponds are shown to intersect the water table. Explain how groundwater infiltration will affect the storage capacity of the sediment ponds during storm events, such as the 100 year maximum 24hr storm event. Provide information on the effect of groundwater withdrawal by the sediment ponds on the local water table.

RESPONSE
Reference to Figures IR8-1 and IR8 – 4 shows that the ponds may intersect the water table if constructed to a depth of 4 metres. This could result in infiltration of groundwater into the ponds, depending on pond construction and native soils in the vicinity of each pond. This could act to reduce the storage capacity of the ponds, depending on the fluctuating groundwater level in the constructed ponds, as storage volume would be lost below this level.

As outlined previously, a complete geotechnical investigation will be carried out to assess the pond design requirements, which would include a seepage analysis to determine infiltration potential and rates. Based on this, a suitable liner system (i.e. clay material or synthetic) could be designed for the ponds to reduce groundwater infiltration if required. Alternatively, the ponds could be constructed above the groundwater table using berms. The liner system and/or construction above the water table would effectively eliminate any significant groundwater-surface water hydraulic interaction, minimizing effects of storage capacity of the ponds or on the local water table.

Please refer to Surface Water Information Summary – Conestoga Rovers, February 2007 in Section 12 of this document.

IR-6
The sediment ponds are stated to serve three purposes: sediment retention, process water storage, and surface water (including storm water) management. On p.78 it is stated that 1 metre is needed for sediment storage, 2.5 metres for permanent water storage for processing etc., and 1.9 metres to accommodate the 100 year maximum 24hr storm event. Explain how this can be achieved with sediment ponds having a 4 metre depth.

The consultant report by Conestoga-Rovers notes that "Given proposed pond design, sufficient capacity would exist to contain the 100-yr flood volume, assuming the ponds were or could be drawn down to sufficient levels to accommodate the flood flows." Is it the intention to 'flush' the system prior to each major storm? Will the ponds be equipped with pumps to achieve this?

RESPONSE
In order to achieve the multi-purpose use of the sediment ponds, proper management and monitoring of the ponds will be required. The ponds will be required to store sediment accumulated over time (prior to cleanout) and provide for storage of up to 2.5m of water

(over a combined pond area of 9.6 ha) to satisfy project demand during drought conditions. However, part of the storage volume may also be required for use as emergency flood storage during a major event. Depending on pond water levels at the time, emergency drawdown may be required to ensure sufficient volume is available to handle the flood input. As a result, pumping will likely be required during these times, or additional emergency flood storage capacity will need to be incorporated into the pond design for example, by increasing the perimeter berm height.

Please refer to Surface Water Information Summary – Conestoga Rovers, February 2007 in Section 12 of this document.

IR-7

The maximum water volume which the system may have to handle has been determined using the 100 year maximum 24hr storm event (Conestoga-Rovers report). In view of the time lag between the precipitation event and final discharge into the ocean, a more appropriate prediction of the maximum volume the system may have to handle would be obtained from the 100 year maximum 5 day total precipitation event. Provide calculations of water volumes generate by such an event and the free depth in the sediment ponds needed to accommodate such a volume.

RESPONSE

Storm data for extended duration events was obtained from the Meteorological Service of Canada (MSC), based on a combined analysis for the two MSC stations at Yarmouth, NS (MSC ID# 8206500 and 8206490). The analysis indicated that the 100 year maximum 5-day total rainfall would be 191 mm. Assuming no abstraction losses (conservative estimate), the total runoff volume for the 143 ha north catchment area would be approximately 273,000 m^3. This would require a depth of approximately 2.8 m for each of the 5 operating ponds for flood storage.

Given the proposed maximum sediment storage depth of 1 m, a total pond depth of 3.8 m would be required, leaving only 0.2 m of freeboard. Increased sediment cleanout may be warranted, say a 6 year frequency or 0.7 m sediment storage capacity. This would provide for a 0.5 m freeboard allowance. Again, this assumes that pond level would be drawn down to provide for the full flood volume capacity, as required. Additional emergency storage may be warranted to increase operational flexibility for example by increasing the height of the perimeter berm.

Please refer to Surface Water Information Summary – Conestoga Rovers, February 2007 in Section 12 of this document.

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IR-8

The debris cycle schematics for years 1-20 (OP1-9-R1 etc.) show a slurry line from the High Rate Thickener to the Sediment Disposal Area. Provide information on the specific gravity of the slurry to be pumped, the gradient and distance of the line, and the equipment to be used. In years 11-15 the slurry line is shown to cross the active quarry area. Explain how the line can operate in an active quarry area.

RESPONSE

Bilcon anticipates a 60% solids slurry. The material will weigh approximately 60 lbs per cubic foot in slurry form and will dry to approximately 83 lbs per cubic foot.

The slurry will be transported approximately 800 metres by means of a 150mm diameter polymer pipe. The approximate head is 55 metres.

Bilcon anticipates that two horizontal shaft, rubber lined slurry pumps will be installed.

The slurry transport pipes will be laid on the surface or trenched and covered where crossing roads or active quarry areas. The pipe will be moved as necessary during mining progression.

IR-9

Prior to the first shipment of aggregate from the site, rock debris from site preparation is to be accumulated at the Temporary Rock Storage site. Rock debris will be generated from excavation of Sediment Ponds 2, 3 & 4 and the loading tunnel, leveling of the Plant Processing Area, the Live Storage Area, the Quarry Compound Area, the Organic Disposal Area, and the Sediment Disposal Area. Provide a breakdown of the volume of material generated from each of these sites, and a total volume of material designated for the Temporary Rock Storage site. Provide the footprint of the Temporary Rock Storage Site, the estimated height of the storage pile and its slopes. Provide details on the berms around the site and its drainage.

RESPONSE

As noted elsewhere in this document, sediment ponds 2, 3 and 4 will be constructed before work is carried out on the preparation of the rock processing area. The excavated material from the ponds will be used to construct the berm surrounding the ponds and to commence construction of the berm around the temporary rock storage area.

The rock initially removed from the construction of the plant processing area will be used to complete the berm surrounding the temporary rock storage area as shown on Plan **OP1-R1** in the Revised Project Description. This berm will be designed using the parameters set out elsewhere in this document and defined in the Surface Water Summary Information –

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Conestoga Rovers, 2007 in Section 12 – Reference Documents in this document. The berm will be constructed with an overflow structure to a drainage channel which will conduct water to pond 4.

The subsequent significant sections of rock removed from the plant processing area will be placed in the temporary rock storage area. This stage of rock removal will create an area of sufficient size in the rock processing area to allow the installation of a chassis mounted portable crusher. This portable crusher will produce varying sizes of materials crushed from the further opening up of the plant processing area for leveling, roadwork, drainage channel construction including check dams etc. It is estimated that 800,000 tonnes of crushed material will be required for this work.

The temporary storage area (~ 8 ha) is estimated to have a capacity of 400,000 cubic metres at an average pile height of 40 metres with a 1 to 1 slope. The balance of rock from the plant processing area which will not be used in site construction or cannot be stored in the temporary storage area or the organic disposal area not immediately required for organic materials will be crushed and shipped as rip rap.

Breakdown of Volume

Component	Material Generated
Sediment Ponds 2, 3 and 4	~70,000 cubic metres (~45,000 cubic metres used for berms around the ponds – balance to berm around rock storage area)
Organic Disposal Area	~37,500 cubic metres (total used in perimeter berm)
Sediment Disposal Area	~ 252,000 cubic metres (~48,000 cubic metres for berms and safety berm–balance stored temporarily in the same area – cell 2)
Quarry Compound Area	0 (Building – slab on grade, crushed rock fill to yard area)
Processing Area	~1,140,000 cubic metres (~400,000 cubic metres temporary storage area and completion of berm ~365,000 cubic metres crushed for site construction ~375,000 cubic metres stored on-site or shipped as rip rap)

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IR-10

On p.78 the sediment ponds are stated to require clean-out approximately every nine years. This assumption neglects the fact that the accumulation rate in the upper two ponds will far exceed that of the lower two. Provide detailed information on the clean-out procedure. How will the upper sediments ponds be bypassed during clean-out?

RESPONSE

The sediment ponds, based on a total storage capacity basis (for sediment and water storage), would require clean out every nine years. For ease of calculation and explanation it was assumed that each pond would contain the same depth of sediment. In reality the upper ponds will have a much higher accumulation rate and in fact baffles will be designed for pond #5 to create a forebay for enhanced deposition. The forebay will require cleanout on a much more frequent basis than the downstream ponds.

The cleanout procedure for the forebay will be carried out during a scheduled plant shutdown in dry weather as will the much less frequent cleanout of the downstream ponds. Since the plant will be shut down no plant water will enter pond #5 and since cleanout will only be carried out in dry weather, there will be no runoff into pond #5. No bypass of pond #5 will be required.

The cleanout procedure for each pond will involve lowering the water level in the pond to ensure that no turbid water flows to the next pond in the series during the cleanout. This will be achieved by lifting the planks in the overflow structures and replacing them before the cleanout commences. Cleanout will be by dragline and the material deposited in trucks which will discharge to the sediment disposal area.

Joint Review Panel letter dated Jan 9, 2007 Re: Information Requests IR-11 to IR-23

Further to my letter of December 19, 2006, the Whites Point Quarry and Marine Terminal Joint Review Panel submits the attached 13 additional information requests on the Revised Project description for your response.

IR-11

Although the revised project description discusses alternative regions where the Proponent might have identified appropriate alternative sites, it does not consider extensive areas of New England (such as the Maine coast) which have considerable potential as sources of aggregate. The Proponent is requested to discuss the potential of alternative sites (as requested in the guidelines) for the Maritimes and New England, north of New York and New Jersey.

RESPONSE

Bilcon considers that details of its investigations into specific alternate sites are proprietary information and confidential. The identification of specific sites involves not only general

characteristics such as the availability of good quality rock and deep water for shipping, but also the availability of significant parcels of land with access from service roads. Quarries can not be staked as are mining claims and hence land options must be negotiated ahead of detailed investigations. Such negotiations are clearly confidential.

IR-12

Revised drawings of the project do not show connections from the access roads on the site to Highway 217 if the Whites Point Road does not become available to the Proponent. Nor does the report identify road access to the sediment disposal areas for most of the project life. The access road to the area south of the Whites Point Road cuts directly through the environmental preservation zone. The Proponent is requested to clarify proposed routing and issues related to these access roads within the site.

RESPONSE

In the event Bilcon is unable to acquire the Whites Cove Road right-of-way for access to the quarry property from Highway 217, an alternate access road location is shown on **Map 43.** This access road would connect Highway 217 with the Quarry Compound area and the main quarry road.

Road access within the quarry property to the sediment disposal area location for Years 1 – 20 and Years 21 – 49 is also shown on **Map 43.**

Road access within the quarry property to the organic disposal area location for Years 1 – 30 and Years 31 – 49 is also shown on **Map 43.**

Quarry roads crossing the Whites Cove Road will be at grade intersections and require approval from the Nova Scotia Department of Transportation and Public Works, if Bilcon is unable to acquire the Whites Cove Road right-of-way. Two at grade crossings within the quarry property would be necessary. Both of these roads would pass through the proposed environmental preservation zone if Bilcon is unable to acquire the Whites Cove Road right-of-way.

IR-13

An intervener submission, presented by C. Taggart, indicated that Map 4 (page 32) was neither complete nor up to date. The Panel notes that it is unchanged in the Revised Project Description. The Proponent is requested to ensure that the map of shipping routes and designated whale watching areas is accurate.

RESPONSE

An updated **Map 41** is included with this Comment and Response Submittal showing the present inbound/outbound shipping lanes and the traffic separation scheme in the area of the

proposed Whites Point quarry. Reference to the source of mapping (Nautical Chart 4011 – Approaches to the Bay of Fundy) from which this information was derived, is indicated on **Map 41.** Longitude and latitude points for the shipping lanes are provided in "International Maritime Organization, Sub-Committee on Safety of Navigation. Routing of Ships, Ship Reporting and related Matters, Amendment to the Traffic Separation Scheme in the Bay of Fundy and Approaches". NAV 48/3/5. 5 April 2002.

The whale watching areas shown on Map 4 of the EIS are not "designated whale watching areas" as inferred by C. Taggart. As indicated in the Legend of Map 4, these areas are referred to as "popular whale watching areas". These areas were located based on traditional knowledge of whale watching activities in this area of the Bay of Fundy. The source of this traditional knowledge is Bay to Bay Adventures Ltd.

IR-14

The Proponent is requested to explain how erosion and run-off will be controlled on the basalt pedestal that will be created to carry the old Whites Point Road.

RESPONSE

If Bilcon is unable to acquire the Whites Cove Road right-of-way, existing drainage patterns parallel to the Whites Cove Road will remain the responsibility of Nova Scotia Department of Transportation and Public Works. On-site review of existing drainage indicates the majority of surface runoff is down or parallel to the Whites Cove Road. Road ditches should handle this runoff. Occasional runoff may flow perpendicular to the Whites Cove Road through drainage ways in the environmental preservation zone. Some erosion at the top of the cut face of the quarry may result. However, since the soil is thin over bedrock, this surface will stabilize to bedrock quickly. Any sediment laden runoff flowing over the cut face of the quarry would be collected in the sediment control structures i.e. channels, sediment ponds etc. and be cleansed before discharge from sediment pond 1, into the constructed wetland and then into the Bay.

IR-15

The Proponent is requested to clarify the comment presented near the bottom of page 52 regarding drainage: "An underground drainage pipe will be installed at this time for conveying any necessary surface water runoff to the coastal bog ***or*** *to sediment pond 5." How does a single pipe fulfill both purposes?*

RESPONSE

Prior to construction, water flow at the outfall of the coastal bog into the Bay of Fundy will be measured on a seasonal frequency. This will determine the flow to be maintained through the bog during construction and quarrying activities scheduled to take place in a portion of the bog watershed. It is planned to supply surface runoff from the off-site, undisturbed area

of the bog watershed, if required, to meet the pre-construction flow. This would be done via an underground drainage pipe as shown on **Plan IR – 2 RPD and Figure IR – 2 RPD.** Incremental reclamation of the disturbed portion of the bog watershed is planned. Upon complete reclamation of the disturbed portion of the watershed, the supplemental flow to the bog may be discontinued. At this time, surface water runoff from the off-site watershed via the underground drainage pipe would be stopped from flowing into the bog, i.e. cap the pipe, and watershed runoff allowed to flow into sediment pond 5 for use in the wash water process.

IR-16

On page 72 quarry operations are stated to involve 37 full-time job equivalents, while on page 96 the workforce is given as 34. Resolve the difference. Eight weeks during each winter will be reserved for quarry maintenance. How many full-time positions will continue during this period?

RESPONSE

The reference to 37 full-time job equivalents on page 72 of the Revised Project Description reflects the impact of employment as discussed in Section 9.3.9.2 of the EIS, whereas the figure on page 96 refers to the actual number of persons employed based from the proposed operating requirements.

The figure of thirty-seven full-time equivalents was derived using the standard definition of total hours worked divided by the average annual hours worked in full-time jobs. A conservative figure of 2,100 hours worked on average per full-time job annually (this exceeds both the Provincial and National averages for 2005 of 2,045 and 2,058 hours worked respectively) was used and this figure was divided into the total number of hours worked (77,952 hours) based on the proposed operations schedule for the quarry.

The number of persons employed full-time at the quarry during the 8-week maintenance period is 16. Please refer to the response to the Panel's comment on Section 9.3.9.2 contained in the Comment and Response Submittal for a more complete response to this question.

IR-17

Constructed wetlands can play an important role in treating effluent before it is discharged into the natural environment. They are typically constructed to achieve particular objectives; to do that they require a design that manages the flow of water effectively. The Proponent is requested to clarify the objectives and functioning of its "500 metres of lineal aquatic habitat" to explain how it differs from a conventional ditch. Describe the nature and functioning of the "discharge structure" at its terminus.

RESPONSE

The objective of the proposed constructed wetland is for the creation of wildlife habitat/biodiversity. A further objective is to create additional coastal bog ecosystem, an ecosystem which is unusual along the Bay of Fundy coast. Incidental benefits of the wetland

would result from further sediment retention and minimal nutrient absorption. As described in the response to the Panel's comment on section 9.2.2.1 and illustrated on **Plan IR - 7** and **Figure CB - 1**, the constructed wetland is intended to be a naturalistic wetland with native bog plants. Further, a bog wetland is not conducive to nutrient absorption or use in "polishing effluent".

As a side note, for many years Ducks Unlimited (D.U.) has been involved in creating wildlife habitat/biodiversity through their constructed wetlands development program. D.U. has constructed wetlands throughout the Maritimes with documented results of increased biodiversity. Approximately 90% of D.U.'s constructed wetlands function as wildlife habitat enhancement while approximately 10% function for effluent treatment (*pers com.* Rob Fraser, Ducks Unlimited Canada).

The proposed "discharge structure" referred to would be a concrete culvert placed near the terminus of the constructed wetland before water outfall into the Bay of Fundy. Monitoring equipment including turbidity and pH sensors and a flow meter would be installed in the culvert. Although seasonal flow is expected to be intermittent, these instruments coupled with data loggers would provide continuous monitoring of the above variables in relation to flow entering the Bay from the sediment pond discharge. Monitoring of Total Suspended Solids and pH will probably be required as part of the industrial permit by the Nova Scotia Department of Environment and Labour.

IR-18

On page 78 the risk of a 100 year storm is projected as "approximately 40%". On page 154, under a scenario of increasing climate change, "the 100 year return period event (115mm) in the base climate period 1961-90 is projected to recur once every 10 years by the 2050's, a reduction in the return period by a factor of about 10. " The Proponent is requested to provide an estimate of risk for a 100 year storm event over the life of the project that accommodates the scenario of increasing climate change.

RESPONSE

The 40% risk calculated on pg. 78 reflects the risk of a 100-yr storm (as currently defined) occurring at least once during the project life of 50 years. Based on the climate change guidance documents, the current 100-yr storm is projected to become the equivalent of a 10-yr storm by the 2050's (i.e. 2040 - 2069). The guidance document does not provide information on projected change in recurrence interval during the 2020's (i.e. 2010 - 2039), but does indicate that the maximum 5-day precipitation increases by 15% by the 2020's and remains steady in subsequent time periods.

Assuming the project life will be from 2010 - 2060, and assuming no change in the recurrence interval for the current 100-yr storm in the first 25 years (i.e. 2010 - 2035), the

risk of occurrence of the 100-yr storm during this period would be approximately 22%. For the latter 25 years of the project life (i.e. 2036 - 2060), the risk of occurrence of the current 100-yr storm (i.e. a 10-yr storm during that period) would rise to approximately 93%. If we assume the current 100-yr storm will have a recurrence interval of 10 years over the full project life (i.e. 2010 - 2060), the risk of occurrence would be approximately 99%.

IR-19

Map SR-1 (page 104) presents an ideal turning radius for the ship. Given wind patterns and strong tidal currents that are known to exist in the area, the Panel expects that in some sea states the ship will require additional room to maneuver. The Proponent is requested to clarify the zone of interference the ship will need to occupy during heightened conditions when it is still possible for it to moor at the terminal. Under extreme conditions when the ship will be forced to stand off, where will it go? (What wind and tidal levels will be considered sufficiently hazardous to prevent docking?)

RESPONSE

It must be emphasized that the decision as to whether the ship can safely approach the terminal, load and return to the shipping lanes is strictly one for the master of the ship. Bilcon will have no part in this decision. If the ship must stand off, the master will make the decision as to whether to anchor, proceed to Saint John or indeed to proceed to another port to pick up an alternate cargo. The issue of wind and tidal conditions would be a matter for the ship's master only.

Bilcon has been advised that under safe conditions when a ship will proceed to the Whites Point terminal it will be able to adhere closely to the designated route to and from the shipping lanes and also closely to the turning circle set out on Map SR-1. It should be noted that modern bulk carriers are equipped with bow thrusters enabling much greater maneuverability.

IR-20

Figure 5-R1 (page 112) shows elevations for part of the quarry at reclamation. The Proponent is requested to provide a plan view showing the projected contours of the site after reclamation is complete.

RESPONSE

A contour plan of the quarry area after reclamation is shown on **Plan CP – 1 RPD** contained in this Comment and Response Submittal. It is envisioned that head walls, side walls, and the quarry floor steps will be vertical cuts in the basalt bedrock as shown in the series of sections (Figures IR8 – 1 through IR8 – 7) provided with the Revised Project Description. Display of individual contour lines at 1 metre interval is practically impossible due to the vertical aspect of the cut faces. This would result in many contour lines coinciding one on top of the other. Thus, the groups of contour lines on the plan indicate the bottom and top contour elevation of the quarry floor steps.

7.0 Revised Project Description
Panel Information Requests

IR-21

On page 145 the following information request is addressed: "The proponent should identify whether these areas [sediment stockpiles] are expected to contain water. If so, mitigative measures should be identified to ensure they do not fail or overflow during periods of unusually heavy precipitation." The Proponent is requested to clarify the issue of drainage from sediment disposal areas and to explain all of the planned measures that have been developed to ensure the integrity of the dykes and berms.

RESPONSE

Please refer to the response to IR1 and the details of the design procedures to be undertaken in Section 7.0 Revised Project Description and in Section 12 – Reference Document - Conestoga Rovers & Associates – Surface Water Information Summary, February 2007

IR-22

While the Panel accepts the Proponent's suggestion that the engineering design of the marine terminal will come later, it does require additional clarification on the specifications that will be set for the structure. Identify the extremes of wind, waves, tides, and storm surges that the terminal will be required to accommodate.

RESPONSE

While as noted in earlier submissions detailed engineering design of the marine terminal has not been carried out, the Panel is correct in assuming that Bilcon has reviewed data identifying various extremes in the Bay of Fundy that the terminal will be required to accommodate. It should be noted, however, that extremes identified are for locations at some distance from Whites Cove. Further studies will be required to extrapolate this data to set the parameters for extremes at the Whites Point location. Examples of wind, waves, tides, and storm surges identified as set out below.

Wind and Waves

Data regarding wind and wave frequency in the Bay of Fundy was abstracted from the AES40 database from Environment Canada/Atlantic Region (*pers. comm.* Rick Fleetwood, Regional Climatologist). The data is from AE Gpt 5314, Lat. 44.375n, Long. 66.6667w, Depth 1000m. The period of coverage is 1954 to 2003. The wind speed (m/s) and significant wave height (m) is presented in Table WWO – 1 and WWF – 1.

7.0 Revised Project Description
Panel Information Requests

Table WWO – 1, Wind Speed (m/s) & Significant Wave Height (m) - Observations 1954-2003

	Wind (m/s)	*0.000*	*5.000*	*10.000*	*15.000*	*20.000*	*25.000*	*30.000*	
Sig. Wave Ht. (m)									**Total**
0.000 – 0.9999		6157	24946	269	2	0	0	0	31374
1.000 – 1.9999		919	16274	10494	134	0	0	0	27821
2.000 – 2.9999		35	1220	5747	1610	15	0	0	8627
3.000 – 3.9999		0	121	1033	1508	103	0	0	2765
4.000 – 4.9999		0	11	158	456	159	3	0	787
5.000 – 5.9999		0	0	19	67	71	3	1	161
6.000 – 6.9999		0	0	5	12	12	4	0	33
7.000 – 7.9999		0	0	0	3	9	1	0	13
8.000 – 8.9999		0	0	0	1	4	1	0	6
9.000 – 9.9999		0	0	0	0	1	0	0	1
Total		7111	42572	17725	3793	374	12	1	71588

Source: Environment Canada/Atlantic Region

Table WWF – 1, Wind Speed (m/s) & Significant Wave Height (m) - Frequency 1954-2003

	Wind m/s	***0.000***	***5.000***	***10.000***	***15.000***	***20.000***	***25.000***	***30.000***	***Total***
Sig. Wave Ht. (m)									
0.000 – 0.9999		.0860	.3485	.0038	.0000	.0000	.0000	.0000	.4383
1.000 – 1.9999		.0128	.2273	.1466	.0019	.0000	.0000	.0000	.3886
2.000 – 2.9999		.0005	.0170	.0803	.0225	.0002	.0000	.0000	.1205
3.000 – 3.9999		.0000	.0017	.0144	.0211	.0014	.0000	.0000	.0386
4.000 – 4.9999		.0000	.0002	.0022	.0064	.0022	.0000	.0000	.0110
5.000 – 5.9999		.0000	.0000	.0003	.0009	.0010	.0000	.0000	.0022
6.000 – 6.9999		.0000	.0000	.0001	.0002	.0002	.0001	.0000	.0005
7.000 – 7.9999		.0000	.0000	.0000	.0000	.0001	.0000	.0000	.0002
8.000 – 8.9999		.0000	.0000	.0000	.0000	.0001	.0000	.0000	.0001
9.000 – 9.9999		.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Total		.0993	.5947	.2476	.0530	.0052	.0002	.0000	1.000

Source: Environment Canada/Atlantic Region

Tides
Tides at Saint John are typically in the range of 6.7 metres to 8.5 metres above chart datum. However, the mathematical upper bound is 10.04 metres above chart datum.

Storm Surges
The average storm surge measured from all recording stations in the Bay of Fundy is 0.6 metres for a 1 in 20 year event and 1.2 metres for a 1 in 100 year event. A storm surge of over 2 metres was recorded in the 1869 Saxby Gale at the extreme head of the Bay of Fundy.

Clearly Bilcon will be engaging the necessary experts at the detailed design stage to refine the available data with respect to historic extremes and with respect to anticipated changes in these extremes due to predicted climate change.

7.0 Revised Project Description
Panel Information Requests

IR-23

The Panel requires additional specific information on the nature and number of pieces of stationary and mobile equipment to be used during the operational phase. For example, what type of crushers will be used (impact or percussion), identify their size (capacity), how many will be needed, will they be enclosed, etc? For each type of equipment provide noise levels when operating at maximum capacity.

RESPONSE

Stationary Equipment

The stationary equipment is designed to produce approximately 500 stph net finished product of <3/4 inch. The plant will include the following equipment:

1	jaw crusher primary approximately 48 X 60 inch opening powered by 350 horsepower electric motor
3	60 inch cone and bowl type crushers powered by 500 horsepower electric motors
1	8 X 24 foot primary double deck incline screen
2	8 X 24 foot close circuit incline screens
3	8 X 24 foot incline wash screens
2	6 X 16 foot reverse slope dewatering screens
1	50 foot high rate thicker
~ 35	conveyor belts of 3, 4, and 5 foot width.

Noise Levels

All conveyor belts will be covered where possible to eliminate dust and noise. All screens will use rubber and urethane screen media to reduce noise. Currently most aggregate producers in Nova Scotia meet the noise regulations and guidelines without enclosing their crushers and screens. Bilcon has elected to enclose all the crushers and screens in the operational phase to limit noise and dust. Reference to EIS Volume VI, 9.1.10.2, shows that noise generated by the equipment at the processing plant site inside the enclosures is expected to be a maximum of 85 dB. Enclosure will significantly reduce this level at the plant site outside the enclosures.

Mobile Equipment

Bilcon will use the newest type of mobile equipment available for their primary production pieces. These will be the same type and manufacture as most other aggregate producers use in Nova Scotia and meet the current regulations and guidelines. These units are:

1	Caterpillar 990 front end loader,
3	Caterpillar 775 haul trucks
1	Caterpillar D-9T bulldozer with ripper
1	Caterpillar 385C excavator,
1	Caterpillar 988 front end loader
1	Caterpillar IT 38 tool carrier

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1 5000 gal water truck

Noise Levels
Spectator (exterior) Sound Level

Machine	Test Standard	Test Mode	dB(A)
990H	SAE J88	mid-gear moving	82 average sound pressure
988H	ISO 6395	dynamic	112 sound power
980H	ISO 6395	dynamic	112 sound power
D9T	SAE J88	mid-gear moving	87 average sound pressure
775E	SAE J88	mid gear moving	84 avg. sound pressure
IT38G Series II	ISO 6393	static	110 sound power
385C	No test data available		

Note 1
The SAE J88 test procedure listed is a machine empty forward travel drive-by test with the transmission in mid range gear. Two microphones are placed at a distance of 50 ft from the sides of the machine. The reported value is the average of the two microphone readings.

The ISO 6393 test results in a "sound power" level. This is not the sound level at a set distance from the machine, but a total sound energy being radiated from the machine. This test has one part, the machine is stationary with the engine at rated speed.

The ISO 6395 test results in a "sound power" level. This is not the sound level at a set distance from the machine, but a total sound energy being radiated from the machine. Backup and travel alarms are disabled during this test. This test has different parts depending on machine type:

- for loaders: the machine moving in 1st gear under no load and a cycle of raising/lowering an empty bucket
- for dozers: the machine moving in 1st gear under no load
- excavators: machine stationary and bucket position varied under no load

Note 2
This data is not a guaranteed machine sound level, but data that was measured on a single sample new machine in a typical North America machine configuration. Experience has indicated there is some variability in sound levels from machine to machine of the same model and exact same configuration. This data is only applicable for machine operations as specified in the actual test method (standard and test mode) listed above.

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EIS Reference: EIS Volume V, Chapter 8, Section 8.1

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8.0 Impact Assessment Methodology

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WP 1452 – Joint Review Panel

The Panel will determine the likelihood of the Project causing significant adverse environmental effects. The Panel will use the systematic framework from the Canadian Environmental Assessment Agency Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects (November 1994).

The Panel will assess predicted residual effects (the effects that remain after mitigation) through the application of a combination of criteria that are appropriate to each potential effect. The criteria will normally include the magnitude, geographical extent and duration of the effect and may also include the frequency, reversibility and ecological context. Each effect will therefore be described in terms of a combination of factors.

The Panel will determine what would constitute a significant effect on an environmental component using these same parameters. This judgment will draw from environmental standards, guidelines and objectives, advice from experts, risk assessments, results of past environmental assessments, and other relevant sources. The Panel will then be able to compare the predicted effects to effects that, should they occur, would be considered as "significant".

If the Panel determines that a component of the Project could cause a significant adverse environmental effect on an environmental component, it will then decide whether this effect is likely by determining t probability of the occurrence and the scientific certainty associated with the prediction.

The approach that the Proponent has used in the EIS to form the Impact Statements is not entirely compatible with the methods above (which were recommended in the EIS Guidelines). The Panel expects the Proponent to provide data and information in a form that is compatible with and uses the methodological terminology described in the Guidelines and summarized above.

RESPONSE

In response to the Panel's request Bilcon has summarized the results of the environmental effects assessment for each of the VECs and is submitting the following additional material:

1. Summary of approach to effects assessment
2. Effect Assessment Summary Tables including potential
    a. Project – environment interactions
    b. Potential effects
    c. Proposed mitigation measures

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d. Effects evaluation based on magnitude, geographic extent, duration/frequency, reversibility, ecological /socio-economic context
e. Significance rating

3. Effect Assessment – Decommissioning Phase

The approach followed is compatible with the CEAA guidelines (CEAA 1994) and the requirements of the EIS Guidelines (Fournier, R. 2005). It builds on the information contained in the EIS and provides a transparent and traceable evaluation of the significance of residual effects.

The tables document that, following the consideration of mitigation; none of the potential adverse effects of any of the Project activities is expected to be significant. In compliance with CEAA guidelines the likelihood of the effects was not assessed. This assessment needs to be conducted only for effects that are considered significant.

1. Summary of the Approach to Affects Assessment

In accordance with the provisions of the EIS Guidelines (Fournier, R. 2005) the environmental effects assessment was conducted in a step-wise fashion involving:

- Identification of potential Project-environment interactions;
- Identification of Valued Environmental Components (VECs);
- Prediction and evaluation of Project-related environmental effects;
- Identification of necessary avoidance, mitigation, remediation, and/or compensation; and
- Determination of residual effects and their significance.

Identification of Potential Project-environment Interactions

As part of the initial scoping exercise, potential Project-environment interactions were identified. This involved an understanding of the project works and activities as well as a general understanding of the bio-physical and socio-cultural environments associated with the Project site. The identified issues and interactions of concern are discussed in the EIS. They have been clarified and highlighted in table format presented in the response to IR-2 *EIS Format* (IR-2, page 3).

Identification of Valued Environmental Components (VECs)

The identification of Valued Ecosystem Components resulted from the scoping exercise mentioned above. Where a potential for an interaction between Project works and activities and an environmental component was identified, the component was determined a VEC provided the VEC it also deemed to be of public concern, protected by a statutes or guidelines, or otherwise considered valuable.

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Environmental Effects Assessment
In this step, the potential effects resulting from interactions with the Project, either directly or indirectly via pathways, were investigated in detail for each VEC. This effects assessment involved qualitative and, where possible, quantitative analyses using existing knowledge, professional judgment, and computer modeling where appropriate and feasible. The results of this effects assessment are presented in Chapter 9 of the EIS. For clarity purposes and improved transparency of the effects assessment, key findings have been documented in the attached tables.

Mitigation
Where an adverse environmental effect was identified, mitigation was proposed. Where possible, mitigation measures were incorporated into the Project design and implementation in order to eliminate or reduce potential adverse effects. Mitigation at the receptor end was considered if avoidance and mitigation at the source of the effect was deemed not feasible or not sufficiently effective.

In those instances where an adverse effect is unavoidable and cannot be mitigated to insignificant levels, options for remediation and/or compensation were investigated.

For interactions where positive effects are anticipated, opportunities were determined for maximizing the positive effects.

Residual Effects and Their Significance
Residual effects refer to those environmental effects predicted to remain after the application of all proposed mitigation measures. The predicted residual effects are considered for each Project phase (construction, operation, decommissioning) and for potential accidental events.

In accordance with the Provincial EA regulations and Canadian Environmental Assessment Agency guidelines (1994, 1997), the significance of the residual effects is evaluated for each VEC. For adverse impacts, significance is determined based on the following criteria:

- magnitude;
- geographic extent;
- timing, duration and frequency;
- reversibility; and
- ecological and socio/cultural context.

For magnitude a relative rating was established as defined in Table 1. Where possible, the evaluation applied absolute values for the geographic extent, frequency, and duration. Reversibility was considered as the ability of a VEC to return to an equal or improved condition once the interaction with the Project has ended. The judgment about the reversibility was based on previous experience and research and stated as "reversible" or "irreversible." Interactions with the potential for beneficial effects were not evaluated with

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respect to reversibility as this was considered meaningless in the context of the EA. Subsequently, those effects considered significant would undergo an additional consideration of the likelihood of their occurrence and the level of confidence underlying the effects prediction. However, following the consideration of mitigation measures, none of the residual effects was considered significant.

TABLE 1 Definitions for Levels of Magnitude

Rating	Magnitude*
High	Bio-physical VECs: An environmental effect affecting a whole stock, population, or definable group of people, or where a specific parameter is outside the range of natural variability; Socio-Economic VECs: Has a measurable and sustained adverse effect on socio-economic components; has the potential to affect the entire community.
Medium	Bio-physical VECs: An environmental effect affecting a portion of a population, or one or two generations, or where there are rapid and unpredictable changes in a specific parameter so that it is temporarily outside the range of natural variability. Socio-Economic VECs: Has a measurable effect on socio-economic components, but is temporary and/or is highly localized; has the potential to affect portions of the community
Low	Bio-physical VECs: An environmental effect affecting a specific group of individuals in a population in a localized area, one generation or less, or where there are distinguishable changes in a specific parameter; however, the parameter is within the range of natural variability. Socio-Economic VECs: No measurable environmental effect; has the potential to affect some individuals, households, or institutions within the community.
Nil	No environmental effect.
Unknown	An environmental effect affecting an unknown portion of a population or group or where the changes in a specific parameter are unknown.

*Note: For some VECs these definitions for magnitude (e.g., air and water quality) do not apply. For these VECs, absolute values where stated where available or expert judgment applied to provide a qualitative rating.

For adverse residual effects, the evaluation for the individual criteria was combined into an overall rating of significance:

- **Major**: Potential impact could jeopardize the long term sustainability of the resource, such that the impact is considered sufficient in magnitude, geographic extent, duration/frequency, as well as being considered irreversible. Additional research, monitoring, and/or recovery initiatives should be considered.
- **Medium**: Potential impact could result in a decline of a resource in terms of quality/quantity, such that the impact is considered moderate in its combination of magnitude, aerial extent, duration, and frequency, but does not affect the long term sustainability (that is, it is considered reversible). Additional research, monitoring, and/or recovery initiatives may be considered.
- **Minimal**: Potential impact may result in a small scale, localized or short-term decline in a resource during the construction and/or operation phase of the Project. The effect

is negligible to the overall baseline status of the resource. Typically, no additional research, monitoring, and/or recovery initiatives are considered.

An adverse impact was considered "significant" where its residual effects were classified as major; while they were considered "not significant" where residual effects were classified as medium, or minimal.

In accordance with the EIS Guidelines (Fournier, R. 2005, p.69, item p), only adverse residual effects were evaluated in terms of their significance.

2. Effects Assessment Summary Tables

The effects assessment addresses the construction and operation phases of the Project for all VECs (Table 2). The results of the effects assessment and determination of the significance of any residual effects has been summarized in the attached tables (Table 2.1 to 2.18). The potential effects associated with the decommissioning phase are discussed in text format following the tables.

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Table 2 Valued Environmental Components Assessed

Table #	VEC	Table #	VEC
3.1	**Climate**	3.13	**Aboriginal Land and Resource Use**
3.2	**Geology & Hydrogeology**	3.14	**Aesthetics**
	Basalt Rock		On-shore (HWY 217)
	Residential Well Water Yields		Bay of Fundy
	Residential Well Water Quality	3.15	**Transportation**
3.3	**Surficial Geology and Soils**		Land
3.4	**Surface Water**		Marine
	Little River Watershed	3.16	**Economy**
	On-site Surface Water Drainage/Wetlands		Employment
	On-site Surface Water Quality		GDP
3.5	**Physical Oceanography**		Municipal Taxes
	Turbidity		Economy – Fishery (/Aquaculture)
	Tides and currents		Economy – Fishery/Intertidal
3.6	**Air Quality**		Economy – Fishery/Nearshore
3.7	**Noise and Vibration**		Economy – Tourism
3.8	**Light**		Economy – Land Value
3.9	**Terrestrial Ecology**		Recreation
	Habitat (incl. plants, wildlife)	3.17	**Human Health, Wellness and Socio-Cultural Environment**
	Wetlands		Drinking Water Quality
	Migratory Birds		Marine Contaminants
	Species at Risk		Land Contaminants
3.10	**Aquatic Ecology – Freshwater**		Country Foods
	Fish habitat		Quality of Life
	Fish Species		Social Capital
3.11	**Aquatic Ecology - Marine**		Commercial Patterns
	Marine Fish Habitat incl. Species (Intertidal, Nearshore)		Community Infrastructure; Institutional Capacity
	Marine Mammals (incl. NARWCA)		Education, Training, Skills
	American Lobster		
	Marine Waterbirds		
	Marine Species at Risk (fish, mammals, reptiles, waterfowl)		
3.12	**Heritage Resources**		
	Marine Archaeology		
	Land Archaeology		
	Heritage Properties and Site History		

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3. ***Effects Assessment – Decommissioning Phase***

The Decommissioning Phase of the Project is described in Chapter 7.10 of the EIS. The Phase will commence in year 50 of the Project life and will entail the removal of all processing equipment, conveyors and ship loaders. Some of the site infrastructure will remain in place (e.g., access road, electrical services) for future use. Portions of the marine infrastructure will also remain in place (conveyor support system, gallery trusses, mooring dolphins, buoys, navigational lighting).

The work will be conducted in full compliance with all the federal, provincial and municipal regulations and guidelines that apply at the time of the decommissioning.

Details of the site decommissioning and the associated site reclamation will depend on the applicable legislation as well as potential subsequent land uses at the site. Community and stakeholder input will also be considered in the development of a detailed plan.

In principle, no additional new adverse effects other than those identified for the construction and operation phases are expected. With the completion of the decommissioning of the site, the overall effects are considered to be beneficial for the bio-physical environment.

In particular, the proposed development of new habitat will benefit terrestrial and freshwater environments. No underwater demolition will be conducted and on-shore operational activities will terminate. If any, the consequences for the inter-tidal and near-shore marine environments would be positive.

Effects on socio-economic environment cannot be predicted as this will depend on the future local economic conditions. It is foreseeable that the termination of the quarry may have adverse effects on local job opportunities. In contrast, the termination of the operation and the site reclamation may also have beneficial effects it that it can offer new opportunities for economic activities at and or near the site as in context of subsequent development (e.g., recreational uses, residential development).

TABLE 3.1: Environmental Effects Summary for Climate

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction								
• Quarry and terminal site clearing	• Loss of carbon storage with removal of trees for development • CO_2 , methane and NO emissions from burning brush during clearing (A)	• Chip and compost wood fibre resulting from land clearing (rather than burning); • Develop quarry in increments to conserve forest resources (maintain carbon sink function); • Conduct reclamation incrementally so land is reforested soon after rock is extracted (re-establish carbon sink function); • Approximately 20% of quarry site conserved in a preservation zone (maintain carbon sink function); • Manage over 120 hectares (300 acres) of buffer land adjacent to the quarry property as a forest resource (maintain carbon sink function); • Ongoing examination of evolving technologies for reducing or offsetting emissions (e.g., opportunities for energy conservation, use of biodiesel, contribution to carbon capture initiatives)	Low	Local to global	Short to long term	NR	Proposal supported by provincial policies on economic development	**Minimal** **Not Significant**
• Development of infrastructure • Construction of buildings and plant facilities • Construction of marine shipping terminal	• Exhaust emissions from operation of heavy equipment; • Exhaust emissions from employee and truck traffic. (A)	• Heavy operational equipment diesel engines meeting EPA Tier 3 emission specifications • Maintain vehicles and equipment in good working condition; • Maintain speed restrictions on roads.	Low	Local to global	Short term to long term	NR	See above	**Minimal** **Not Significant**
Operation								
• Clearing and quarry face development;	• Exhaust emissions from heavy equipment during quarry	• Heavy operational equipment diesel engines meeting EPA Tier 3 emission specifications	Annually 0.03-0.05% of	Local to global	Short to	NR	See above	**Minimal**

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Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
• Drilling and blasting (aggregate production); • Crushing, screening, and wash plant operation; • Aggregate stockpiling;	operation • Exhaust emissions from employee and truck traffic. (A)	• Stationary equipment using electrical energy • Transport of quarry products directly by ship once per week rather than by ground transportation to port • Develop quarry in increments to conserve forest resources (maintain carbon sink function); • Conduct reclamation incrementally so land is reforested soon after rock is extracted (re-establish carbon sink function); • Maintain speed restrictions on roads; • Maintain vehicles and equipment in good working condition; • Ongoing examination of evolving technologies for reducing or offsetting emissions (e.g., opportunities for energy conservation, use of biodiesel, contribution to carbon capture initiatives).	regional emissions		long term			**Not Significant**
• Quarry reclamation	• Re-vegetation of quarry site – increase of vegetation functioning as carbon sink (P)	• Follow up and monitoring to ensure success of reclamation work; • No other measures required; activity in itself is a mitigation measure	NA	Quarry site; local to global	Long term	NA	See above	NA

* For definition of levels of magnitude (high, medium, low, nil, unknown) refer to text
** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

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TABLE 3.2: Environmental Effects Summary for Geology and Hydrogeology

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects**					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Geological and hydrogeological effects as a result of: • All construction activities	• No effects identified	• NA	Nil	NA	NA	NA	NA	**Minimal** **Not Significant**
Operation Phase								
Geological and hydro-geological effects as a result of: • Clearing and quarry face development	• Irretrievable loss of basalt rock (A)	• Production of high grade aggregate for value added construction industry products	100 million tons of basalt rock	Quarry site	Long term	NR	Large quantities of basalt rock available in region	**Minimal** **Not Significant**
Geological and hydrogeological effects as a result of: • Clearing and quarry face development • Drilling and blasting • Quarry reclamation	• Loss of residential well water yields • Deterioration of well water quality (A)	• Pre-quarrying survey of water quality and quantity of neighbouring • Bilcon of Nova Scotia Corporation will replace any existing water supply lost or damaged within 800m of active quarry • Quarrying will take place above the groundwater table with no groundwater withdrawal or drawdown • Rock extraction will not be carried out below the contact of the middle and upper flow units • Quarrying will maintain a 1 to 2 m cap of the UFU above the MFU; • Groundwater monitoring (monitoring wells, on-site supply wells, residential wells)	Low	Site vicinity (max19 residential wells)	Long term	NR (yield) R (quality)	No residents adjacent to site; site vicinity sparsely populated	**Minimal** **Not Significant**

* For definition of levels of magnitude (high, medium, low, nil, unknown) refer to text

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** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

TABLE 3.3: Environmental Effects Summary for Surficial Geology and Soils

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction								
• Quarry and terminal site clearing • Development of Infrastructure • Construction of buildings and plant facilities	• Soil erosion caused by lack of vegetation during quarry preparation. (A)	• Implementation of erosion and sediment control plan • Incremental reclamation procedures will reduce area susceptible to erosion • Recycling of soils for use in incremental reclamation will use existing resources	Low	<150 ha (380 acres)	Short-term	R	**Quarry site**	**Minimal** **Not Significant**
Operation								
• Clearing and quarry face development	• Soil erosion caused by exposed land during quarry operation (A)	• Implementation of erosion and sediment control plan • Incremental reclamation procedures will reduce area susceptible to erosion	Low	<150 ha (380 acres)	Long term	R	Quarry site	**Minimal** **Not Significant**
• Quarry reclamation • Slope stabilization, revegetation	• Recycling of soils uses existing resources for incremental reclamation • The addition of organic compost and other amendments will produce a healthier soil regime than previously existed • (P)	• Follow up and monitoring to ensure success of reclamation work; • No other mitigation required as activity in itself is a mitigation measure; • Sediment and organic disposal areas will be dyked to control soil erosion and dykes will receive erosion control measures during construction	NA	<150 ha (380 acres)	Short to long term	NA	Quarry site	NA

* For definition of levels of magnitude (high, medium, low, nil, unknown) refer to text

8.1 Methods

** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

TABLE 3.4: Environmental Effects Summary for Surface Water

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction								
• Quarry and terminal site clearing • Development of infrastructure • Construction of buildings and plant facilities • Construction of marine shipping terminal	• Contamination of Little River Watershed through surface water runoff during site preparation (A)	• Implementation of erosion and sediment control plan • The minimum 30m preservation zone around the quarry perimeter has been expanded to include all quarry lands that contribute surface water to the Little River Watershed;	Nil	NA	NA	NA	Watershed mostly residential; Designated "important freshwater wetlands" in south portion	NA
Operation								
Effects on the Little River watershed through: • Clearing and quarry face development • Storm and waste water management	• Contamination of the watershed through surface water runoff • Loss of water from the watershed through groundwater loss during quarry operation (A)	• The minimum 30m preservation zone around the quarry perimeter has been expanded to include all quarry lands that contribute surface water to the Little River Watershed; • Design and implementation of stormwater management plan in accordance with regulatory requirements; • Surface water drainage from the compound area will be directed toward the active quarry and away from Little River Watershed; • The minimum 30m preservation zone around the quarry perimeter has been expanded to include all quarry lands that contribute surface water to the Little River Watershed;	Low	Local/ Regional	Long term	R	Watershed mostly residential; Designated "important freshwater wetlands" in south portion	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
		• No water loss is expected due to groundwater loss. • Follow up monitoring of water level and flow in Little River Watershed.						
Effects on on-site surface water drainage /wetlands through: • Clearing and quarry face development • Drilling and blasting (aggregate production) • Storm and waste water management	• Alteration of existing site topography and drainage patterns due to quarry operation (A)	• The quarry floor will be back sloped to direct runoff waters away from the Bay of Fundy; • Natural surface runoff from the mountainside will be diverted into controlled drainage ways and sedimentation ponds and constructed wetlands before entering the Bay of Fundy; • The bog area is in the identified preservation zone and existing natural habitat requirements, such as intermittent surface water flow, will be maintained; • Monitoring of water quality and flow at stormwater inflow and outflow points	Low to mediu m	<150 ha (380 acres)	Long term	R	**Quarry site**	**Minimal** **Not Significant**
Effects on on-site surface water quality through: • Clearing and quarry face development • Drilling and blasting (aggregate production) • Storm and waste water management	• Surface water contamination from quarry operation (A)	• Design and implementation of stormwater management plan in accordance with regulatory requirements; • All water from the working area of the quarry will enter sedimentation ponds before entering the constructed wetlands; • Monitoring of effluent quality at all outflows from sediment retention ponds.	Low	Local	Long term	R	Quarry site	**Minimal** **Not Significant**
Quarry reclamation affecting surface water run off and erosion potential	• Re-establishment of vegetation (P)	• Follow up and monitoring to ensure success of reclamation work; • No other measures required; activity in itself is a mitigation measure	NA	<150 ha (380 acres)	Long term	NA	Quarry site	NA

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NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.5: Environmental Effects Summary for Physical Oceanography

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction								
Effects on turbidity caused by: • Construction of marine shipping terminal • On-site development	• Increased turbidity with construction of the marine terminal caused by the placement of piles. (A)	• Selection of site for terminal on exposed bedrock; • The marine terminal extends into deep enough water to eliminate the need for blasting or dredging to achieve adequate water depth; • Use of pipe pile construction method; causes less turbidity than placing rock infill in intertidal and sublittoral zones • Silt curtains will be installed if turbidity exceeds thresholds during pipe pile installation.	Low	Local	Short term	R	Stable and hard bedrock seabed; no anomalies	**Minimal** **Not Significant**
Effects on tides and currents caused by: • Construction of marine shipping terminal	• Obstruction of tides and currents from the placement of the pipe pile of the marine terminal (A)	• Selection of deep water site; • Use of pipe pile construction method; • Spanning of majority of sublittoral, intertidal and shoreline	Low	Local	Long term	R	Stable and hard bedrock seabed; no anomalies	**Minimal** **Not Significant**
Operation								
Effects on turbidity caused by: • Quarry site development • Vessel transport	• Increased turbidity caused by discharge of surface water run off to marine environment and additional ship traffic in the area; (A)	• Selection of site for terminal on exposed bedrock; • Recycling of washwater; on-site sediment retention ponds; controlled water discharge and effluent monitoring; all discharges to meet applicable regulatory standards • Selection of deep water site;	Low	Local	Long term	R	Stable and hard bedrock seabed; no anomalies	**Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Effects on tides and currents caused by: • Existence of marine shipping terminal	• Obstruction of tides and currents from the placement of the pipe pile of the marine terminal (A)	• Selection of deep water site; • Spanning of majority of sublittoral, intertidal and shoreline	Low	Local	Long term	R	Stable and hard bedrock seabed; no anomalies	**Minimal** **Not Significant**

* For definition of levels of magnitude (high, medium, low, nil, unknown) refer to text
** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.6: Environmental Effects Summary for Air Quality

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Air Quality Effects as a result of : • Quarry and terminal site clearing • Development of infrastructure • Construction of buildings and plant facilities • Construction of marine shipping terminal	• Dust generated by on-site haul and access roads; • Emission of gases from burning brush during land clearing; • Diesel emissions from heavy equipment; • Exhaust emissions from vehicles during construction; (A)	• Dust control via water spray or other approved methods; • Brush will be chipped, composted and used during land reclamation to eliminate gas emissions caused by burning brush; • All heavy mobile equipment to have approved emission controls and be well maintained; • Paved access road from HWY 217 to the quarry property; • Monitoring of particulate emissions (dust)	Dust levels at property line within NSDEL requirements	Local	Short term	R	Rural, sparsely populated location; nearest residence approximately 150m off-site	**Minimal** **Not Significant**
Operation Phase								
Air Quality Effects as a result of : • Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening and wash plant operation • Aggregate stockpiling, reclaim and loading	• Dust generated by on-site haul roads and rock processing; • Diesel emissions from heavy equipment; • Emissions from vehicles during operation; • Dust generated on the access road to the quarry; • Particulate emissions from crushing and screening; (A)	• Dust generated on-site will be controlled with water spray or other approved methods; • All heavy mobile equipment will have approved emission controls and be well maintained; • There will be a paved access road from HWY 217 to the quarry property; • Use of electric power for stationary land operations; • Crushing and screening will take place approximately 1000m from the nearest residence; • Crusher and screens to be enclosed, conveyor systems hooded.	Dust levels at property line within NSDEL requirements	Local	Long term	R	Rural, sparsely populated location; nearest residence approximately 150m off-site	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
		• Dust emissions within regulatory standards; • Monitoring of particulate emissions (dust)						
• Aggregate/ Vessel transport	• Diesel exhaust emissions from vessels used to haul basalt rock from site. (A)	• Employment of large marine bulk carriers as energy efficient mode of transportation; • No land transport;	Low	Local	1 vessel/ wk; long term	R	See above	**Minimal** **Not Significant**
• Quarry reclamation, re-vegetation	• Erosion and dust control, and, carbon sinks caused by revegetation of the quarry (P)	• Follow up and monitoring to ensure success of reclamation work; • No other measures required; activity in itself is a mitigation measure.	NA	Quarry site	Long term	NA	See above	NA

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** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.7: Environmental Effects Summary for Noise and Vibration

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction								
• Development of infrastructure; • Quarry and terminal site clearing; • Construction of buildings and plant facilities; • Construction of marine shipping terminal.	• Noise from heavy equipment and construction of buildings and marine terminal. (A)	• A 30 m environmental preservation zone is proposed around the quarry perimeter and White's Cove Road; • The 30m preservation zone will remain forested to help absorb and deflect sound waves; • Sockets will be drilled into the bedrock for seating the piles of the marine terminal rather than continuous pile driving.	Low Noise levels at property line within NSDEL requirements	Local	Short term	R	Rural, sparsely populated location; nearest residence at approximately 150m	**Minimal** **Not Significant**
Operation								
• Clearing and quarry face development; • Drilling and blasting; • Crushing, screening, and plant operation; • Vessel transport.	• Concussion and ground vibration from blasting • Noise from loading rock into trucks and from the aggregate screening process. • Noise from loading vessels for transport. • Increased sound levels in marine environment (blasting; ship traffic) (A)	• A 30 m environmental preservation zone is proposed around the quarry perimeter and White's Cove Road; • The 30m preservation zone will remain forested to help absorb and deflect sound waves; • Incremental reclamation of quarry site to re-establish/increase noise attenuating vegetation buffers; • No blasting is proposed within 800 m of residential structures not located on the quarry property without written permission; • Crusher and screens to be completely enclosed in a building and conveyors to be covered to minimize noise emissions; • Blasting will not be conducted during times of thermal inversion, on foggy, cloudy or overcast days to minimize sound propagation • Each blast will be monitored for concussion and ground	Low Noise levels at property line within NSDEL requirements; blasting in marine environment within DFO Guidelines	Local	Long term start up; once / week operation; once every 2 weeks	R	Rural, sparsely populated location; nearest residence at approximately 150m	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
		vibration. • Rubber lined truck beds will be used to reduce noise of truck loading and rubberized screens will be used in the aggregate screening process; • Environmental preservation zones along the coast line and property lines of the quarry to attenuate noise from ship loading activities. • Horizontal separation distance of about 1.5km between ship loading activity and the nearest residence • Noise and vibration from the quarry to meet the requirements set forth in the NSDEL "Pit and Quarry Guidelines" at the quarry property line • Blasting in compliance with Department of Fisheries and Oceans "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters" • Monitoring of noise level at property line and receptor locations; reporting to NSDEL • (see Aquatic Ecology -Marine Mammals and Species at Risk for additional noise related mitigation measures))						
• Quarry reclamation, revegetation	• Revegetation to provide for noise abatement (P)	• Follow up and monitoring to ensure success of reclamation work; • No other measures required; activity in itself is a mitigation measure.	NA	Quarry Site	Long term	NA	NA	NA

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** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.8: Environmental Effects Summary for Light

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
• Development of infrastructure; • Quarry and terminal site clearing; • Construction of buildings and plant facilities; • Construction of marine shipping terminal.	• Security lighting and lights required for the construction of the quarry and marine terminal will change light environment at and adjacent to the site • Pole mounted security lighting may cause night sky "glow" (A)	• Limit construction activities (e.g., 7:00 am to 7:00 pm) • Preservation of a 30 m environmental preservation zone to screen site;	Low to medium	Local	Short term	R	Rural, sparsely populated location; nearest residence at approximately 150m	**Minimal** **Not Significant**
Operation Phase								
Light effects as a result of: • Clearing and quarry face development; • Crushing, screening, and wash plant operation; • Vessel transport;	• Security lighting and lights required for the operation of the quarry and marine terminal will change light environment at and adjacent to the site • Pole mounted security lighting may cause night sky "glow" • Lighting of the shiploader and conveyor systems will be required for night time shiploading and the elevated shiploader will be equipped with lighting directed downward to the holds of the ship	• Conveyor system lighting will be shielded and directed onto the conveyor belts; • Minimal light spill from the elevated shiploader lighting is expected into the marine waters and into the night sky; • Whenever feasible, ship loading would be conducted in daylight hours to avoid night light that could attract fish or birds; • Preservation of a 30 m environmental preservation zone to screen site; • Incremental reclamation of quarry site to re-establish/increase screening effect of vegetation buffers; • On-land lighting plans will be developed considering the criteria proposed by the International Dark-Sky Association (IDA). Design criteria would include: o keeping artificial lighting to a minimum	Low to medium	Local	Long term	R	Rural, sparsely populated location; nearest residence at approximately 150m	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
	• Possible collision with quarry buildings by night migrating birds (A)	o security lighting to be motion activated o reduction of "light trespass" on to neighbouring properties o selection of luminaries (lighting fixtures) that reduce glare o selection of luminaries that are designed to not pollute the night sky • Each fixture will be provided with shields to prevent light spill beyond the area of illumination and to contain all lighting effects within the property line of the quarry						

8.1 Methods

TABLE 3.9: Environmental Effects Summary for Terrestrial Ecology

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Effects on terrestrial habitat (incl. plant and wildlife species) as a result of : • Quarry and terminal site clearing • Development of infrastructure	• Removal of habitat from active areas of the quarry and the lands immediately adjacent to the active areas; (A)	• The scheduling of any habitat alteration will be done to minimize direct impacts on all bird species. • A minimum 30m environmental preservation zone is proposed, extending from the mean high water mark, inland along the 3 km (1.9 mi.) coastline of the property, to protect the coastal rare plants identified; • The constructed wetlands will create aquatic habitat and add to the natural habitats already existing	Low to medium	<150 ha (380 acres)	Long term	R	Quarry site; no particular protective status	**Minimal** **Not Significant**
Effects to wetlands as a result of : • Quarry and terminal site clearing • Development of infrastructure	• Existing wetlands are in protected areas, and a constructed wetland will be put in place; (A)	• Storm water management plan to ensure water supply for wetlands is maintained;	Low	Small portion of 150 ha site	Long term	R	Quarry site; no particular protective status	**Minimal** **Not Significant**
Effects on migratory birds as a result of : • Quarry and terminal site clearing • Development of infrastructure	• Loss/alteration of migratory bird habitat; (A)	• The scheduling of any habitat alteration will be done to minimize direct impacts on all bird species. Clearing activities for quarry expansion will generally take place during late fall through winter to avoid spring and fall migrations and to avoid the most sensitive spring and summer nesting period; • The constructed wetlands will be designed to attract avian wildlife, especially resident waterfowl and migratory species that may use them for both nesting and staging sites.	Low	Local/ Regional	Long term	R	Quarry site; no particular protective status	**Minimal** **Not Significant**
Effects on species at risk as a result of :	• Loss of habitat for and removal of existing species at risk;	• The preservation zone will include all habitats where the three plant species at risk identified on this property	Medium	Local/ Regional	Long term	R	Plant species	**Medium**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
• Quarry and terminal site clearing • Development of infrastructure	(A)	occur;					with provincial status of "blue" and "yellow"	**Not Significant**
Operation Phase								
Effects on terrestrial habitat (incl. plant and wildlife species) as a result of : • Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening and wash plant operation	• Removal habitat from active areas of the quarry and the lands immediately adjacent to the active areas; (A)	• The scheduling of any habitat alteration will be done to minimize direct impacts on all bird species. • A minimum 30m (100 ft.) environmental preservation zone is proposed, extending from the mean high water mark, inland along the 3 km (1.9 mi.) coastline of the property, to protect the coastal rare plants identified; • The constructed wetlands will create aquatic habitat and add to the natural habitats already existing	Low	<150 ha (380 acres)	Long term	R	Quarry site; no particular protective status	**Minimal** **Not Significant**
Effects to wetlands as a result of : • Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening and wash plant operation •	• Wetlands are in protected areas, and a constructed wetland will be put in place; (A)	• Storm water management plan to ensure water supply for wetlands is maintained;	Low	Small portion of 150 ha site	Long term	R	Quarry site; no particular protective status	**Minimal** **Not Significant**
Effects on migratory birds as a result of : • Clearing and quarry face development • Drilling and blasting	• Loss/alteration of migratory bird habitat; • Possible collision with quarry buildings by night migrating birds.	• The scheduling of any habitat alteration will be done to minimize direct impacts on all bird species; • Minimal night lighting is proposed to reduce the possible collision hazard for night migrating birds;	Low	Local/ Regional	Long term	NR	**Quarry site; no particular protective status**	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
(aggregate production) • Crushing, screening and wash plant operation	• Blasting may startle birds in area • Noise from the extraction, transportation, and crushing activities could exclude some of the more sensitive species from adjacent, undisturbed habitats and possibly reduce the reproductive success of those that do remain (A)	• Security lighting will be motioned activated; • The constructed wetlands will be designed to attract avian wildlife, especially resident waterfowl and migratory species that may use them for both nesting and staging sites; • The infrequent occurrence of blasting should not be a significant stressor for wildlife using these areas.						
Effects on species at risk as a result of : • Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening and wash plant operation	• Loss of habitat for and removal of existing species at risk; • Potential for spread of invasive plant species (A)	• The coastal preservation zone will include all habitats where the three plant species at risk identified on this property occur; • Monitoring of plant populations that are considered at risk would be conducted for as long as the quarry is operated along with monitoring of invasive plant species. • The coastal preservation zone will include all habitats where the three plant species at risk identified on this property occur. • Consideration of new information on the protection of Species at Risk (e.g., recovery strategies or action plans) throughout the life of the Project; and implementation of the new information into Project management if feasible; • Regular consultation with regulatory agencies to ensure Project remains in compliance with SARA. • Monitoring and control of invasive species. • Yearly review (and implementation if warranted) of new guidelines and action plans with respect to invasive alien species and approaches to control/management of these species.	Low to Medium	Local/ Regional	Long term	R	**Plant species with provincial status of "blue" and "yellow"**	**Medium** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Quarry reclamation affecting habitat and species as a result of re-vegetation, habitat creation and management and	• Re-establishment of habitat (P)	• Follow up and monitoring to ensure success of reclamation work; • No other measures required; activity in itself is a mitigation measure	NA	<150 ha (380 acres)	NA	NA	Quarry site	NA

* For definition of levels of magnitude (high, medium, low, nil, unknown) refer to text
** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.10: Environmental Effects Summary for the Fresh Water Aquatic Environment

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Effects on the freshwater aquatic environment as a result of : • Quarry and terminal site clearing • Development of infrastructure • Construction of marine shipping terminal	• Impairment/loss of fish habitat and communities through site clearing and siltation caused by erosion. (A)	• The water courses near the north and south property lines will be included in the minimum 30 m buffer zone proposed around the perimeter of the property; • All surface runoff from disturbed land, before restoration is complete, will flow through a series of sediment retention ponds and then into a constructed wetland; • Department of Fisheries and Oceans, Habitat Management Division, have concluded that the only watercourse within the active quarry area is not suitable as fish habitat.	Low	Quarry site	Short term	R	On-site no watercourses suitable for freshwater fish habitat	**Minimal** **Not Significant**
Operation Phase								
Effects on the freshwater aquatic environment as a result of : • Clearing and quarry face development	• Impairment / loss of fish habitat and communities through site clearing and siltation caused by erosion; • Impairment/ loss of fish habitat and communities due to water loss as a result of quarrying. (A)	• The water courses near the north and south property lines will be included in the minimum 30 m buffer zone proposed around the perimeter of the property; • All surface runoff from disturbed land will flow through a series of sediment retention ponds and a constructed wetland; • Department of Fisheries and Oceans have concluded that the only watercourse within the active quarry area is not suitable as fish habitat; • Quarrying will be in the upper flow unit, quarrying below the upper flow unit will not be carried out, and no loss of groundwater through this fractured zone to the south water course is expected; • Monitoring of all outflows from sediment retention ponds for Total Suspended Solids (TSS), pH, and total water flow will take place weekly.	Low	Quarry site	Long term	R	On-site no watercourse suitable for freshwater fish habitat	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Quarry Reclamation	• Site re-vegetation, slope reduction, slope stabilization (P)	• Follow up and monitoring to ensure success of reclamation work; • No other mitigation required as activity in itself is a mitigation measure	NA	Quarry site	Long term	NA	See above	NA

8.1 Methods

TABLE 3.11: Environmental Effects Summary for the Marine Aquatic Environment

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Effects on marine fish and fish habitat and lobster as a result of : • Construction of marine shipping terminal	• Loss of bottom fish and lobster habitat and alteration of water column habitat due to placement of pipe piles in nearshore waters • Introduction of disease organisms from ballast water (A)	• No filling such as a rock causeway or infilled crib work or sheet piling within the intertidal zone is proposed; • Lost habitat will be replaced with an area of bottom habitat three times the size of the area lost and with features attached to selected pipe piles in various depths in the water column to enhance food sources for pelagic fish. • Monitoring of alien disease organisms at/near marine terminal	Low (habitat compensation at 3x the loss of bottom habitat)	Local	Short term	R	Commercial fishing area	**Minimal** **Not Significant**
Effects on marine waterbirds as a result of : • Construction of marine shipping terminal	• Loss of wintering habitat for Harlequin Duck, Barrow's Goldeneye; (A)	• No Harlequin Ducks have been observed in the waters near the site and Barrow's Goldeneye have not been observed either to winter at site, so no mitigation is proposed.	Low	Local	Short term	R	Commercial fishing area Area without protective status	**Minimal** **Not Significant**
Operation Phase								
Effects on marine fish and / or habitat as a result of : • Drilling and blasting • Vessel transport	• Pressure from blasting can cause lethal damage to fish and incubating eggs, and noise can cause behavioural changes. (A)	• Timing of blasting activities is proposed within 3 hours of low tide, and at low tide whenever possible; • The explosive ANFO will be used instead of TNT whenever possible. • Blasting will be guided by "Bilcon of Nova Scotia Corporation's 'Blasting Protocol'" and adhere to the Department of Fisheries and Oceans "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters"	Low Blasting in compliance with DFO Guideline	Local	1 vessel/wk; Blasting: approx. once/ week Later: once/ 2 weeks	R	Commercial fishing area	**Minimal** **Not Significant**
Effects on marine mammals as a result of :	• Subtle changes in marine mammal activity;	• Blasting will be guided by "Bilcon of Nova Scotia Corporation's 'Blasting Protocol'" and adhere to the	Medium	Bay of Fundy;	1 vessel/wk;	NR	Proj. Site approximately 12	**Medium**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
• Drilling and blasting • Vessel transport	• Contact with vessels and marine mammals. (A)	Department of Fisheries and Oceans "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters" • Blasting will not be conducted if pinnipeds are within 170m of the detonation point or if cetaceans are within 500m; • Blasting will not be conducted if marine mammal species at risk (fin, blue or North Atlantic right whales) are observed within 2500m of the detonation site • Observation of shipping channel and safety zone for presence of marine mammals • Vessel speed reductions and/or course alteration in case of whale sightings within designated approach/departure route • Marine mammal interactions within the vessel turning radius are unlikely due to the slow movement of the vessel while maneuvering into and out of the berth.	Should be Low as per DFO	national/ internati onal	Blasting: approx. once/ week Later: once/ 2 weeks		km away from Right Whale Conservation Area	**Not Significant**
Effects on American lobster as a result of : • Drilling and blasting	• Harm to lobster from pressure and sound is possible; (A)	• Timing of blasting activities is proposed within 3 hours of low tide, and at low tide whenever possible; • The explosive ANFO will be used instead of TNT whenever possible; • Blasting activity to adhere to "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters"	Low	Local	Blasting: approx. once/ week Later: once/ 2 weeks	R	Commercial lobster fishing area	**Medium** **Not Significant**
Effects on marine waterbirds as a result of : • Drilling and blasting • Vessel transport	• Harm to marine water birds caused by noise/vibration; • Contact with waterbirds and vessels (A)	• Timing of blasting activities is proposed within 3 hours of low tide, and at low tide whenever possible; • Blasting will not be conducted if waterbirds are within 170m of the detonation point • Waterbird interactions within the turning radius are unlikely due to the slow movement of the vessel while	Low	Local	1 vessel/wk; Blasting: approx. once/ week Later: once/2	R	Area without protective status Commercial fishing area	**Medium** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
		maneuvering into and out of the berth			weeks			
Effects on marine species at risk as a result of : • Drilling and blasting • Vessel transport	• Harm to Inner Bay of Fundy Atlantic Salmon and/or Leatherback Turtle • Behavioural changes in marine mammals; • North Atlantic Right Whale strikes by marine vessels (A)	• Blasting activity to adhere to "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters" • Application of three times the designated setback indicated in the Guidelines for Use of Explosives in or near Canadian Fisheries Waters to be applied from May to October (i.e., during iBoF Atlantic salmon migration) • Blasting will not be conducted if endangered marine mammals are within 2500m blast; • Employment of trained observer for sighting mammals and waterfowl within defined safety zones and vessel approach/departure route (observations from elevated on-shore location and work boat) • Reduced vessel speed (10 knots or less) and/or alteration of course in case of sighting of marine mammals within designated shipping route • Consideration of new information on the protection of Species at Risk (e.g., results of Allowable Harm Assessment for right whale; recovery strategy for iBoF salmon; other restrictions of critical habitat; recovery strategies or action plans) throughout the life of the Project; and implementation of the new information into Project management if feasible; • Regular consultation with regulatory agencies to ensure Project remains in compliance with SARA • Coordination during initial and subsequent one year monitoring phase with DFO on details of monitoring program for CONWEP model verification and finalization of safety zone distances • Implementation of Canadian Ballast Water Control and	Medium	Bay of Fundy	1 vessel/wk; Blasting: approx. once/ week Later: once/2 weeks	NR	Proj. Site approximately 12 km away from Right Whale Conservation Area Commercial fishing area	**Medium** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 - Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
		Management Regulations under the Canada Shipping Act. • Monitoring of alien disease organisms at/near marine terminal • Vessels will use designated inbound/outbound shipping lanes shown on the Canadian Hydrographic Chart.						

* For definition of levels of magnitude (high, medium, low, nil, unknown) refer to text
** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.12: Environmental Effects Summary for Heritage Resources

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Effects on marine archaeology as a result of: • Construction of marine shipping terminal	• Damage, loss of marine artifacts (A)	• The location of the marine terminal and of the shipping route will avoid the possible archaeological sensitive underwater ridge extending from Sandy Cove west during either construction or subsequent shipping activities • Prior to marine construction, Bilcon of Nova Scotia Corporation will have the appropriate archaeological investigations conducted under permit with the Nova Scotia Museum: if archaeological resources are discovered as a result of this investigation, appropriate mitigation actions will be taken in consultation with the Nova Scotia Museum	Low	Marine terminal	Long term	NR	Coast line with long history of shipping and fishing activities	**Minimal** **Not Significant**
Effects on land archaeology as a result of: • Quarry and terminal site clearing • Development of infrastructure • Construction of buildings and plant facilities	• Damage/loss of archaeological resources (land-based) (A)	• On-site archaeological survey • Archaeological recording and limited testing of the Hersey House foundation plus an area within a 250m radius around the house will be conducted under permit with the Nova Scotia Museum if the foundation cannot be avoided during quarry construction or operations • Before construction, an educational briefing concerning archaeological/historical resources will be conducted for quarry employees; training program to be established in consultation with regulatory agency. • Further investigate location of the historic Indian Hill Camp prior to construction/ site development • If any evidence of archaeological materials or human remains is discovered during construction, activities will not recommence until the artifacts are evaluated and permission is granted by the Museum to resume work. Additionally, a local site archaeologist will be on call if immediate situations arise.	Low	Quarry site	Long term	NR	No archaeological /cultural resources identified on-site;	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Effects on heritage properties as a result of: • Quarry and terminal site clearing • Development of infrastructure • Construction of buildings and plant facilities	• Negative visual influences on heritage properties (A)	• Since the quarry operation is not visible from Highway #217, no negative visual influences on heritage/cultural tourism travelers would result. • View planes from existing heritage properties would not be affected since the quarry is not visible from any of the registered or designated heritage properties.	Nil	NA	NA	NA	Site and abutting properties not identified as heritage property	**Minimal** **Not Significant**
Effects on historical resources/site history as a result of: • Quarry and terminal site clearing • Development of infrastructure • Construction of buildings and plant facilities	• Damage/loss of historical resources (A)	• Before construction, an educational briefing concerning archaeological/historical resources will be conducted for quarry employees. • If any resources are uncovered such as potential human remains, procedures outlined in the Cemeteries Protection Act will be followed; • A local archaeologist will be on call if immediate situations arise.	Low	Quarry site	Long term	NR	No historical resources identified on-site;	**Minimal** **Not Significant**
Operation Phase								
Effects on land archaeology as a result of: • Clearing and quarry face development	• Damage/loss of land archaeological resources (land-based); (A)	• On-site archaeological survey • Before construction of the quarry infrastructure and operation, an educational briefing concerning archaeological/historical resources will be conducted for quarry employees. If any evidence of archaeological materials or human remains is discovered during; • Construction will not recommence until the artifacts are evaluated by the Museum and permission is granted by the Museum to resume work. Additionally, a local site archaeologist is on call if immediate situations arise	Low	Quarry site	Long term	NR	No archaeological /cultural resources identified on-site	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Effects on heritage properties as a result of: • Clearing and quarry face development	• No interaction identified - quarry operation is not visible from Highway #217	• Since the quarry operation is not visible from Highway #217, no negative visual influences on heritage/cultural tourism travelers would result. • View planes from existing heritage properties would not be affected since the quarry is not visible from any of the registered or designated heritage properties.	Nil	NA	NA	NA	Site and abutting properties not identified as heritage property	**Minimal** **Not Significant**
Effects on historical resources/site history as a result of: • Clearing and quarry face development	• Damage/loss of historical resources (A)	• Before construction, an educational briefing concerning archaeological/historical resources will be conducted for quarry employees. • If any resources are uncovered such as potential human remains, procedures outlined in the Cemeteries Protection Act will be followed; • A local archaeologist will be on call if immediate situations arise. • Also, a local archaeologist is on call if immediate situations arise.	Low	Quarry site	Long term	NR	No historical resources identified on-site;	**Not Significant**

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NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.13: Environmental Effects Summary for Aboriginal Land and Resources

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Effects on aboriginal land and resources as a result of : • Quarry and terminal site clearing • Development of infrastructure	• Loss or damage of aboriginal artifacts; • Loss of fishing grounds, lobster traps. (A)	• Archaeological survey of quarry site; • Should any artifact be discovered during the clearing and grubbing operation, all work will be stopped in the area until an investigation is carried out by a qualified archaeologist under the direction of Nova Scotia Museum; • The only impact expected on the fishery is possible trap loss near the marine terminal, this loss will be compensated.	Low	Quarry site	Short term	NR & R	No archaeological /cultural resources identified on-site; General area used by First Nations (fishing, hunting)	**Minimal** **Not Significant**
Operation Phase								
Effects on aboriginal land and resources as a result of : • Clearing and quarry face development • Vessel transport	• Loss or damage of aboriginal artifacts; • Disruption/ loss of fishing grounds,; loss of lobster traps; • Effects on terrestrial and aquatic environment; • Contaminants in marine and terrestrial environment and country foods. (A)	• Archaeological survey of quarry site • Should any artifact be discovered during the clearing and grubbing operation, all work will be stopped in the area until an investigation is carried out by a qualified archaeologist under the direction of Nova Scotia Museum; • The only impact expected on the fishery is possible trap loss near the marine terminal, this loss will be compensated; • For mitigation related to the terrestrial and aquatic environment, contaminants in these environments and in country foods refer to the relevant VECs.	Low	Local	Long term	NR & R	See above	**Minimal** **Not Significant**
Quarry Reclamation	• Re-establishment of habitat (P)	• No mitigation required as activity in itself is a mitigation measure	NA	Quarry site	Long term	NA	See above	NA

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** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.14: Environmental Effects Summary for Aesthetics

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 (Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Aesthetic Effects as a result of : • Quarry and terminal site clearing • Development of infrastructure • Construction of buildings and plant facilities	• No interaction identified - quarry operation is not visible from Highway #217 (A)	• Maintenance of a 30m environmental preservation zone will be maintained along the perimeter of the property; • No further mitigation measures required since the quarry will not be visible from the road;	Nil	NA	NA	NA	Rural, sparsely populated location; nearest residence at approximately 150m	**Minimal** **Not Significant**
Aesthetic Effects as a result of : • As above plus: • Construction of marine shipping terminal	• Quarry activity/infrastructure seen from the Bay of Fundy; (A)	• The operational schedule proposes to limit site disturbance to 2.5 hectares a year; • The 30m environmental preservation zone will include a preservation zone along the Bay of Fundy.	Low	Local	Short term	R	Remote coastline; outside of area frequented by (whale watching) tour boats	**Minimal** **Not Significant**
Operation Phase								
Aesthetic Effects as a result of : • Clearing and quarry face development • Rock processing • Vessel transport (ship loading)	• Effects (night glow) seen from on-shore (HWY 217); (A)	• Site not directly visible from Hwy; effects limited to night glow – see mitigation measures listed under Light;	Low	Local	Long term	R	Rural, sparsely populated location; nearest residence at approximately 150m	**Minimal** **Not Significant**
Aesthetic Effects as a	• Quarry activity/infrastructure seen	• The operational schedule proposes to limit site	Low	Local	Long	R	Remote	**Minimal**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 (Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
result of : • Clearing and quarry face development	from the Bay of Fundy. (A)	disturbance to 2.5 hectares a year; • Reclamation of previously disturbed land will be implemented on a five-year schedule, this would give priority to enhancing the aesthetics between the shoreline and land based infrastructure. • The 30m environmental preservation zone will include a preservation zone along the Bay of Fundy. • The buildings at the processing plant be gray or dark green in colour and made of non-reflective materials to blend with the surrounding forest and rock outcrops. • The ship loader components are to be a "battle ship" gray colour to blend with the marine environment.			term		**coastline; outside of area frequented by (whale watching) tour boats**	**Not Significant**
Quarry reclamation	• Re-establishment of vegetation; slope reduction and stabilization (P)	• Reclamation on the basis of detailed landscape plan including tree and shrub plantings and seeding of herbaceous communities with the purpose of habitat creation, visual site integration, and provision of recreational opportunities • Follow up and monitoring to ensure success of reclamation work; • No other mitigation required as activity in itself is a mitigation measure	NA	Quarry site	Long term	NA	See above	NA

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NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.15: Environmental Effects Summary for Transportation

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Land Transportation Effects as a result of : • Quarry and terminal site clearing • Development of infrastructure • Construction of buildings and plant facilities • Construction of marine shipping terminal	• Inconvenience of heavy truck traffic on HWY 217; • An increase in truck and private automobile traffic for the year long construction phase. • Alterations/ upgrades to Whites Cove Road (A)	• Whites Cove Road will be upgraded to ensure safe access to the quarry property from Highway 217; • Whenever possible deliveries of machinery, equipment, and construction materials will be made by water; • Consultation with TPW prior to any upgrades to Whites Cove Road	Low	Local	Short term	R	Rural 2-lane Hwy with heavy commercial traffic	**Minimal** **Not Significant**
Sea Transportation Effects as a result of : • Construction of marine shipping terminal	• Inconvenience to the fishery of marine vessel traffic in the Bay of Fundy. (A)	• Advanced notice of shipment schedules will be provided to local fishermen as well as the designated shipping route and docking radius. • Losses of fishing gear will be compensated for.	Low	Local	Short term	R	Commercial fishing area	**Minimal** **Not Significant**
Operation Phase								
Land Transportation Effects as a result of : • Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening and wash plant operation • Aggregate stockpiling, reclaim and loading	• Truck traffic from delivery of fuel and explosives once every two weeks; (A)	• Whites Cove Road will be upgraded to ensure safe access to the quarry property from Highway 217; • Quarry products will be shipped directly from the site by water, eliminating heavy truck traffic, noise, vibration, and inconvenience to residents; • There will be fuel storage on-site to minimize the frequency of tanker truck deliveries.	Low	Local	Long term	R	**Rural 2-lane Hwy with heavy commercial traffic**	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Sea Transportation Effects as a result of : • Vessel transport	• Inconvenience to the fishery of marine vessel traffic in the Bay of Fundy. (A)	• The location of the marine terminal will provide a short distance and direct route to and from the designated in bound/outbound shipping lanes • The location of the marine terminal will be along a homogenous section of the coastline without islands or other physical navigational hazards • Definition of vessel approach / departure course in consultation with local fishermen • Completion of Port Procedures Manual at least six months before arrival of first vessel in conjunction with Transport Canada Marine Safety Group; • Advanced notice of shipment schedules will be provided to local fishermen as well as the designated shipping route and docking radius. • Losses of fishing gear will be compensated for.	Low	Local	1 vessel/wk	R	Commercial fishing area; navigation mostly within designated shipping lanes	**Not Significant**

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8.1 Methods

TABLE 3.16: Environmental Effects Summary for Economy

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Economic Effects as a result of : • All quarry activities	• Increase in employment (P)	• Local labour markets will be utilized to the extent possible • Implementation of employment policy that ensures gender equality • No others proposed; effect is beneficial	45 person-years	County	Short term	NA	Area with high dependency on employment insurance benefits	**NA**
Economic Effects as a result of : • All quarry activities	• Increase in GDP and Municipal Taxes (P)	• None required	NA	County	Short term	NA	See above	**NA**
Economic Effects on the nearshore fishery as a result of: • Marine terminal construction	• Disruption of lobster and herring fishery (A)	• Compensation will be provided for lost traps and gear related to shipping activities.	Low	Regional	Short term	R	Important commercial fishery	**Minimal** **Not Significant**
Operation Phase								
Economic Effects as a result of : • All quarry activities	• Increase in employment • Increase in municipal tax revenue (P)	• Local labour markets will be utilized to the extent possible; • No others proposed; effect is beneficial.	51.8 person-years	County	Long term	NA	Area with high dependency on employment insurance benefits	**NA**
Economic Effects as a result of : • All quarry activities	• Increase in GDP (P)	• None required	NA	County	Long term	NA	See above	**NA**
Economic Effects on aquaculture as a result of: • Drilling and blasting (aggregate production)	• Adverse effects on pelagic fish including eggs and larvae (A)	• Weights of explosive charge will be kept to a minimum; • Time-delay detonators will be used to create a series of	Low	Regional	Long term	R	Nearest licensed land-based aquaculture; 2.5 km off-site;	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
		single explosions, larger charges will be subdivided into a series of smaller charges; • Blast holes will be backfilled with gravel or sand; • All blasts will be monitored for noise and ground vibration at the east and west property lines.					nearest water-based aquaculture 8 km off-site	
Economic Effects on the intertidal fishery as a result of: • All quarry activities	• Loss of access to intertidal zone where local harvesting of periwinkles and dulse takes place (A)	• Access to the coast through quarry property is proposed upon appropriate arrangements; • A check in procedure will be put in place to protect harvesters during periods of blasting.	Low	Local	Long term	R	Intertidal zone used for harvesting of periwinkle and dulse	**Minimal** **Not Significant**
Economic Effects on the nearshore fishery as a result of: • Vessel transport	• Disruption of lobster and herring fishery (A)	• Definition of vessel approach / departure course in consultation with local fishermen; • Establishment of toll-free phone number for fishers and tour boat operators to obtain up-to-date information on vessel arrivals and departures; • Advance notice will be given of shipment schedules; • Compensation will be provided for lost traps and gear related to shipping activities. • Re-establishment of the Community Liaison Committee with a local fisherman representative is proposed to maintain lines of communication between the quarry and fishing industries.	Low	Regional	Long term	R	Nearshore fishery is important component of local economy	**Minimal** **Not Significant**
Economic Effects on tourism as a result of: • All quarry activities • Vessel transport	• Visibility of the quarry from tourist attractions/ accommodations (A)	• The quarry will not be visible from surrounding land tourist attractions; • Adventure tour boats are not as frequent as offshore Long Island and Brier Island; views of site and terminal mostly from distances beyond 3 km where facility begins to blend in with background.	Low	Regional	Long term	R	Tourism is important component of local economy; little tour boat activity near site	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
		• Establishment of toll-free phone number for fishers and tour boat operators to obtain up-to-date information on vessel arrivals and departures; • See also mitigation for Transportation – Marine and Aesthetics • Bilcon to explore, together with representative of local tourism industry, options for contributing to enhancement of the area's tourism and recreation opportunities						
Economic Effects on property value as a result of: • All quarry activities	• Changes in property values in areas immediately adjacent to the operation (A)	• Evaluation of the residential properties within 800m of the active quarry by a qualified real estate appraiser prior to construction and a re-evaluation carried out five years later to determine if value has been lost. Loss will be compensated by Bilcon.	Low	Local	Long term	NR	Considerable interest in properties in Digby and Annapolis County; particularly properties with waterfront or water view	**Minimal** **Not Significant**
Economic Effects on recreation as a result of: • All quarry activities	• Loss of access to Bay of Fundy coastline by Whites Cove Road for recreational purposes (A)	• Unrestricted access along the shoreline on Crown lands below the ordinary high water line would be maintained. A check in procedure would be initiated for the safety of the recreational users. • A minimum 30m wide environmental preservation zone will be maintained along the coastline of the quarry as a buffer to enhance visual qualities • A security fence will be installed along public property lines for public safety	Low	Local	Long term	R	Site not a designated recreation area	**Minimal** **Not Significant**
Quarry reclamation	• Re-establishment of vegetation and access	• Follow up and monitoring to ensure success of reclamation measures	NA	Quarry site	Long term	NA	Rural, sparsely populated area	**NA**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
	(P)	• Consultation with local community with respect to details of site reclamation and after use						

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** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.17: Environmental Effects Summary for Human Health and Wellness and Socio-cultural Environment

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
Effects on social capital as a result of : • Pre-project planning	• Differences in opinion about the project among residents of the community create a disruption of social cohesion (A)	• Re-establishment of the community liaison committee that was established when a 4 hectare quarry was permitted in 2002.	Medium	Community	Short term	R	Area with high dependency on employment insurance benefits	**Medium** **Not Significant**
Operation Phase								
Effects on quality of life as a result of : • All operational quarry activities	• Perceived impairment of environmental health and quality (A)	• On-going community consultation • Environmental monitoring and disclosure of monitoring results	Low	Residents in Site vicinity	Long term	R	Nearest residence approximately 1km off site	**Minimal** **Not Significant**
	• Increased health programs; • Increased income and financial security, and increased presence of family opportunities for employees. (P)	• None required	NA	Community	Long term	NA	Area with high dependency on employment insurance benefits	NA
Commercial pattern effects as a result of : • Quarry operation	• Inconvenience to nearshore fishermen as a result of marine terminal activities; • Visual degradation if tourism cruises venture along this section of coastline. (A)	• Specific shipping lanes will be designated; • Advance notice will be given of shipment schedules; • Compensation will be provided for lost traps and gear related to shipping activities. • Views from the water from adventure tour boats are anticipated to be infrequent and mostly at considerable distance from site.	Low	Community	Long term	NR	See above; Nearshore fishing and boat tours component of local economy	**Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
	• Opportunity for diversification/broadening of local economy (P)	• Implementation of a local hiring policy with training of all employees at Bilcon's expense.	NA	Community	Long term	NA	Area with high dependency on employment insurance benefits	**NA**
Effects on education, training, and skills as a result of: • Quarry operation	• Improved opportunities for education and training (P)	• Implementation of a local hiring policy with training of all employees at Bilcon's expense.	NA	Regional	Long term	NA	Area with level of education lower than in urban areas	**NA**
Effects on infrastructure and institutional capacity as a result of: • Quarry operation	• Additional burden on local services (A)	• burden is expected to be compensated by beneficial effects (see below)	Low	Regional	Long term	NR	Area with declining population base	**Minimal** **Not Significant**
	• Opportunity for improvement of local services based on increased tax base, income, and employment (P)	• None required	NA	Regional	Long term	NA	Area with declining population base	**NA**
Effects on quality of life as a result of : • Quarry operation - reclamation	• Improved perception of site based on site re-vegetation, habitat creation, visual integration, provision of recreation opportunities (P)	• None required; activity is mitigation measure sin itself	NA	Local	Long term	NA	Area with declining population base	**NA**

* For definition of levels of magnitude (high, medium, low, nil, unknown) refer to text
** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Methods

TABLE 3.17: Environmental Effects Summary for Human Health and Wellness and Socio-cultural Environment

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
Construction Phase								
No interaction with construction activities identified	• No effects identified	• No mitigation required	NA	NA	NA	NA	NA	NA
Operation Phase								
Effects on,on and off-site drinking water quality as a result of: • Clearing and quarry face development • Drilling and blasting (aggregate production)	• Damage to off-site water supply quality; (A)	• See mitigation for Geology and Hydrogeology • The quarry activity will take place in the upper basalt flow unit, while the off-site wells are in the middle flow unit or deeper and will not be affected by the quarry. • Water wells on-site and in the adjacent area will be monitored.	Low	Local	Long term	NR	**Rural, sparsely populated area; nearest residence approximately 1000m off-site**	**Minimal** **Not Significant**
Effects on marine contamination as a result of: • Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening, and wash plant operation • Operation of marine terminal and marine – based aggregate transport	• Marine contamination from surface water and sediment runoff (A)	• A system of drainage channels and sediment retention ponds is proposed to control on-site contaminants from entering marine waters; • A closed circuit recycling of aggregate wash water is proposed; • Sediments from the ponds will be kept on-site and used in reclamation; • Controlled discharge with effluent quality monitoring; • Electrical motors for the conveyor systems over the intertidal and near shore (requires minimal lubricants), equipped with drip pans; • Incremental reclamation will stabilize areas disturbed by quarrying and reduce erosion;	Low	Local	Long term	R	**Active fishing and harvesting of marine resources at and near the Project site**	**Minimal** **Not Significant**

8.1 Methods

Project-Environment Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation (for comprehensive listing see Table 2 Section 11.0 Env. Management)	Significance Criteria for Environmental Effects					Residual Effects and Significance**
			Magnitude*	Geographic Extent	Duration/Frequency	Reversibility (R= reversible NR = Not reversible)	Ecological/ Social-cultural and Economic Context	
		• Monitoring of periwinkles for contaminants.						
Effects on land contamination as a result of: • Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening, and wash plant operation	• Land contamination from herbicides/pesticides, hazardous materials, diesel fuels, oils, greases, coolants, sewage, or solid waste. (A)	• Implementation of Environmental Protection Plan including spill prevention and clean up procedures, provision of clean up equipment and training; • Qualified persons will handle hazardous materials such as explosives, and no explosives will be stored on site; • Diesel fuels, oils, greases, and coolants will be stored on site in spill containment areas; • Vehicle fuellings, oil and coolant changing will be done using closed systems with dry break disconnect couplings; • Automatic greasing systems will be used on off-road mobile equipment, and grease used will not contain heavy metals; • Sewage disposal will be by an on site sewage disposal system; • A local hauler will dispose of solid waste in an approved landfill site; • Monitoring of raspberries for contaminants.	Low	Local	Long term	R	**Rural, sparsely populated area; nearest residence approximately 1000m off-site; Berry picking at and near the Project site**	**Minimal** **Not Significant**
Effects on country food as a result of: • Clearing and quarry face development • Drilling and blasting (aggregate production) • Crushing, screening, and wash plant operation	• Impacts on country foods through air, water, and soil pathways. (A)	• Measures will be taken to reduce the contamination of air, water, and soil through quarry activities • Air, water, and soil pathways will be monitored for contamination over the life of the quarry; • Every five years laboratory analysis of the metal content in raspberries and periwinkles will be conducted.	Low	Local	Long term	R	**Berry picking at and near the Project site**	**Minimal** **Not Significant**

* For definition of levels of magnitude (high, medium, low, nil, unknown) refer to text
** For definition of levels of significance (major, medium, minimal) refer to text
NA = not applicable; magnitude, reversibility, and significance have not been assessed for positive effects

8.1 Impact Assessment Methodology

WP 1625 – Partnership for Sustainable Development
Deficiency Statement 17
EIS Guidelines
4.3 – Expectations - 'The Panel expects the Proponent to make use of environmental assessment guidance materials published by federal and provincial departments..." 'The EIS must support any analyses, interpretation of results and conclusions by providing all relevant references."
12.7 - Residual Impacts - 'To assist in the characterization of each residual effect, describe direction (i.e., adverse, beneficial, neutral); magnitude; geographic extent; timing and duration; frequency; reversibility; and other social and economic features or implications."
The EIS Guidelines provide a clear description of the logical sequence and elements required in the examination of significance. The Guidelines draw specifically on both federal and provincial guidance. In particular, the CEAA Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects (Nov. 1994) identifies the following factors in the assessment of significance:

- *magnitude*
- *geographic extent*
- *duration and frequency*
- *reversibility*
- *ecological context*
- *probability of occurrence*
- *scientific uncertainty*

The Nova Scotia Environmental Assessment Regulations, Section 2, similarly defines significance, with respect to an environmental effect, in terms of 'its magnitude, geographic extent, duration, frequency, degree of reversibility, possibility of occurrence or any combination of the foregoing'
EIS
While the EIS makes passing reference to these criteria, it fails to make use of them in the assessment of significance. Specifically, 'The determination of whether an effect is considered insignificant or significant is based primarily on the level of spatial scale (local, regional, provincial, national/international) and after mitigation measures are considered."[47] *The EIS bases its determination of significance on only one (geographic extent) of the possible seven criteria included in the CEAA guidance. No justification or reference is provided for this method. The significance methodology employed in the EIS represents a clear deficiency with respect to the EIS Guidelines. This deficiency has the effect of dramatically altering the conclusions of the EIS. The Proponent should revise the significance methodology used to correspond with the Guidelines and CEAA guidance.*

RESPONSE
Please refer to Bilcon's response to Panel in this Section..

8.1 Impact Assessment Methodology

EIS Guidelines – Section 8.0 – Impact Assessment Methodology
Deficiency Statement 37
EIS Guidelines
8.1 - Methods - 'Indicate the degree of certainty in the impact predications and determination of significance (identify measures used)."
EIS
The EIS provides impact predictions on 76 Valued Environmental Components.[83] *As noted above, the EIS Guidelines require an indication of the level of certainty with impact predictions and significance determination. The EIS addresses this requirement with the single statement 'Considering the amount and quality of on-site investigations, baseline data collected, modeling and trend analysis within the region, the reliability of effect prediction is high."*[84] *A mere reference to studies and analysis undertaken does not satisfy the EIS Guidelines requirement to identify the measures used to indicate the degree of certainty of impact predictions. A clear and detailed rationale is required to support the statement "reliability of effect prediction is high." The individual sections of the EIS which deal with specific VECs (Chapter 9) appear to provide no further information on the level of certainty with impact predictions and significance determination. The Proponent should revise impact predictions for the 76 VECs to include an estimate of certainty.*

RESPONSE
Please refer to Bilcon's response to Panel in this Section.

Deficiency Statement 41
EIS Guidelines
8.1 – Methods – "Explain and justify the methods used to predict potential impacts of the Project on the VECs..."
EIS
8.0 – Impact Assessment Methodology – The EIS defines the term "local" to "...include Project effects on valued environmental components on the quarry and marine terminal site and adjacent surrounding land and water area." To meet the requirements of the section 8.1 of the EIS Guidelines the spatial boundary "adjacent surrounding land and water area" must be defined.

RESPONSE
Please refer to Bilcon's response to Panel in this Section.

Deficiency Statement 42
EIS Guidelines
8.1 – Methods – "Identify and justify any assumptions made"

8.1 Impact Assessment Methodology

EIS

8.1 – Methods – The EIS refers to three environmental evaluation criteria used to determine the type of effect - positive, negative or neutral. The criteria used to determine a neutral or negative effect are based solely on a regulatory framework. The criteria used to determine a positive effect is not based on a regulatory framework. Section 8.1 of the EIS Guidelines is not met because there is no justification provided for the assumption that any effect that meets a regulatory requirement is neutral. Many of the VEC's identified in the EIS are not regulated. The fact that a regulation or guideline exists does not preclude an adverse environmental effect even where the regulation or guideline is not exceeded. Furthermore, if the EIS uses regulations and guidelines as the criteria to determine neutral and negative effects, why is the same criteria not applied to positive effects. For example, positive effects occur only where Project development or activities improve upon regulatory requirements.

RESPONSE

Please refer to Bilcon's response to Panel in this Section.

Deficiency Statement 43

EIS Guidelines

8.1 – Methods – "Explain and justify the methods used to predict potential impacts of the Project on the VECs..."

EIS

8.1 – Methods – Significance - The EIS states, "The determination of whether an effect is considered insignificant or significant is based primarily on the level of spatial scale (local, regional, provincial, and national/international)..." Arguably this is an explanation, however, there is no justification provided for this method. The EIS goes on to state, "Generally, to be considered significant the influence of effect would have to be greater than a regional scale ..." The statement fails to explain what is meant by 'generally'. Under what circumstances would an effect that is local or regional be considered significant? Furthermore, there is no justification or rationale for the assumption that any effect that is local or regional is not significant.

RESPONSE

Please refer to Bilcon's response to Panel in this Section.

Deficiency Statement 44

EIS Guidelines

8.1 – Methods – "Explain and justify the methods used to predict potential impacts of the Project on the VECs..."

EIS

8.1 – Methods – Probability - The EIS identifies 76 VECs. Of those 76 only 9 fall into the categories identified as provincial or national/international. Presumably, this means that

only 9 of the 76 VECs have the potential to be significant. The Proponent has indicated that 1 of the 9 VECs (terrestrial floral species at risk) is effected in a 'significant positive' way. The Proponent identified 3 other VECs as being effected in a 'significant positive' way. All 3 of these VECs fall into the scale category 'regional." According to the EIS methodology set out in the subsection of section 8.1 entitled Significance this determination is not possible. However, the Proponent appears to change the methodology in the subsection of section 8.1 entitled Probability. The EIS states, "In the case of human components, a significant positive or significant negative effect must be judged to have a regional, provincial or national/international scale of effect..." Not only is this change in methodology out of context (it should appear in the subsection on Significance) there is no explanation or justification provided.

RESPONSE

Please refer to Bilcon's response to Panel in this Section.

Deficiency Statement 91

EIS Guidelines

Section 12.7 - Residual Impacts - 'Describe and document: how significance was determined (i.e. the process carried out or the methods used); the basis for determining significance, along with documentation for existing thresholds (e.g. stakeholder input, traditional knowledge, standards, guidelines or quantitative risk assessment)."

EIS

For the assessment of significance, the EIS Guidelines require the Proponent to document the basis for the assessment, including existing thresholds (e.g. stakeholder input, traditional knowledge, standards, guidelines or quantitative risk assessment). The criteria used within the EIS are more limited than those suggested in the Guidelines, specifically, 'If the project development or activities are within environmental regulatory regulations or guidelines established for a particular environmental component, a neutral effect would result." It is unlikely the regulatory standards or guidelines exist for all possible impacts. This would necessitate the use of stakeholder input, traditional knowledge and quantitative risk assessment is establishing appropriate thresholds. Based on the EIS methodology, this was not done. The EIS methodology also fails to consider how sub-threshold effects may contribute to cumulative effects. The EIS is deficient in following the Guidelines in this respect.

RESPONSE

Please refer to Bilcon's response to Panel in this Section.

8.2 Public Consultation

EIS Reference: EIS Volume V, Chapter 8, Section 8.2

INDEX OF COMMENTS

8.0 Impact Assessment Methodology

8.2 Public Consultation

8.2 Public Consultation

WP 1452 - Joint Review Panel

8.2 Public Consultation
8.2.2 Provide the updated communications plan referred to in the last paragraph of pg. 10 and show how the public consultation initiatives have influenced the plan.

RESPONSE
Communications Plan
The Communications Plan referred to on page 10 of Chapter 8.2 of the EIS refers to "a regularly updated communications plan to address and integrate feedback." The Plan provided in Chapter 8.2 is an iterative process and, as with most projects and activities, will be updated as the project proceeds in order to adjust to changing situations.

Bilcon received a clear message from the community that more information was required to better understand the project and its effect on their wellbeing. Since the EIS has been submitted, Bilcon has made efforts to keep the community informed of the EA process via regular Quarry Update newsletters, distributed to all residences and businesses in Digby, Digby Neck and Islands (Freeport, Little River, Sandy Cove, Westport, Tiverton), Bear River, Clementsport, Clementsvale, Cornwallis, Smith's Cove, Granville Ferry and Annapolis Royal (**see Appendix 1**). These updates have fostered open communication within the community, resulting in telephone calls, emails, regular mail and office visits (**see Appendix 2).**

Bilcon hosted an employment information meeting on October 2, 2006 at its satellite office in Little River at the request of the young people who live on Digby Neck and Islands. Some community members were under the impression that Bilcon would hire quarry workers "from away" and wanted to meet with Bilcon to clear up any misconceptions. Approximately 22 young people signed the attendance sheet, with ages ranging from 17 to 24. On Nov 15, 2006, Bilcon held another employment information meeting. Notices were placed in the communities of Digby Neck and Islands. Bilcon also invited people who had expressed interest in employment opportunities with Bilcon. Approximately 45 people attended. Handouts included job descriptions, rates of pay, benefits, skills and education required. Bilcon also addressed the issue of training for local people. Residents were also interested in discussing the effects of quarry operations on their community, consequently the topics of discussion turned to subjects such as air quality, noise, surface water, groundwater and wells, aesthetics and light. Both meetings were very positive and Bilcon plans more public information meetings at its office in Little River in the New Year.

The approach, methodology and process described on pages 6-10 of Chapter 8.2 of the EIS as well as the communications tools and methods described on pages 15 and 16 of the same chapter are appropriate to and will continue throughout the construction and operations

phases (i.e. Please note the references to the construction and operations phases on pages 11 and 14 of the same section). However, once the project starts the Communications Plan will be updated on an annual basis to reflect all recent public consultation activities, changing issues and how they were addressed.

The Joint Review Panel has asked for further information on other aspects of the PCDP including the Community Liaison Committee and a more effective role for it; the project mitigation and monitoring process as it related to public participation and appropriate conflict resolution measures. These are outlined below.

Community Liaison Committee
Bilcon sees the CLC committee as helping to achieve the following two very important objectives:

- input into the monitoring and evaluation of consultation activities; and
- bringing project related issues to the attention of the proponent and providing input on how to best achieve resolution of these issues.

CLC Membership
Representatives of the community will include but not be limited to the following groups and should consist of no less than ten and no more than 16 members with an equal representation of men and women:

- local government
- education
- business
- environment
- social and community welfare
- safety and protection
- fishing industry
- tourism industry
- immediate neighbourhood, re: noise, air quality, water monitoring and property values (4)
- youth
- senior citizen

Individuals will be appointed for a three year term and will be appointed by an independent body consisting of three representatives: one from Bilcon, one from the Municipality District of Digby and one from the Digby and Area Board of Trade.

8.2 Public Consultation

Frequency of Meetings
Meetings will be held at a minimum of once a month upon project approval and no less than four times a year once operational; one of these meetings must be held with local residents on an annual basis. These meetings will be known as Community Forums. If, upon project start-up, more meetings are necessary, they will be held. However, their purpose will be to mutually resolve ongoing issues.

Outcomes
Monitoring of public consultation activities will focus on consultation events and, in particular, methods and tools used for consultation and disclosure throughout the life cycle of the Project.

Monitoring will be directed at the following consultation aspects:

- Consultation processes;
- Management of expectations, particularly as they relate to access to employment and other potential opportunities;
- Anticipation and management of potential issues before they become conflicts, particularly input into how they might be addressed and communicated back to the community;
- Any comment received on consultation methods, positive and negative.

Disclosures and information dissemination include the following:

- Disclosure methods and materials;
- Types of disclosures and frequency of information disclosures;
- Location of disclosures (poster boards, information centre, website etc)
- Any comments received on disclosure materials, positive or negative.

An annual Communications Plan monitoring report will be developed by Bilcon and posted on the Project's website.

Conflict Resolution
In this case, conflict resolution refers to the implementation of an effective grievance procedure that is necessary when a conflict cannot otherwise be resolved.

Bilcon will work pro-actively towards the prevention of conflicts through the implementation of impact mitigation measures and community liaison activities as described in the EIS and previously in this Information Request that enable it to anticipate and address potential issues before they become conflicts and result in grievances. Nevertheless, should grievances emerge, Bilcon is committed to addressing these in a timely and effective manner in

accordance with good management practices and the Company's internal grievance procedure.

Bilcon has a public grievance procedure that advises those with a grievance on how they can lodge a grievance related to the proposed project. Anyone can raise a grievance with the Company if they believe the Company's business practices or development is improper or illegal. Examples of improper or illegal behaviour may include:

- Provable negative impacts on an individual (e.g. financial loss, physical harm)
- Dangers to Health & Safety
- Failure to comply with standards or legal obligations
- Harassment of any nature
- Criminal activity
- Improper conduct or unethical behaviour
- Financial malpractice or impropriety or fraud
- Attempts to conceal any of the above.

Bilcon will review all grievances. Sometimes a grievance is not connected to a project activity or an activity is within an applicable provincial or federal standard (e.g. noise standard). In these cases, this will be explained to individuals filing the grievance. In all other cases, the Company will investigate whether it has failed to work to its intended standard and if so, measures will be identified to prevent the incident from occurring again.

Reporting a Grievance
Several methods will be available to report a grievance including:

- Send a Grievance form to the Company which will be available from the CLC;
- Contact the Company office; and
- Send an email to a purpose e-mail address that will be available.

Grievance Procedure
If the grievance cannot be immediately resolved, a number of steps will be followed that are outlined below:

- Once the grievance form is received or notification of a problem is received, someone will be assigned to that grievance;
- Acknowledgement of the grievance will occur within 10 working days of having received it;
- The acknowledgement will specify a contact person, their reference indicators and an anticipated target date for resolution;

8.2 Public Consultation

- The Company will work to understand the cause of the grievance which may result in contacting the individual filing the grievance during the time period;
- Once the grievance is investigated, the result of the investigation and the Company's proposed course of action, if required, will be communicated to the person;
- If the individual filing the grievance considers the matter to be satisfactorily resolved, a "Statement of Satisfaction" will be signed by the individual;
- If the grievance remains unresolved, it will be reassessed and the Company will have further discussion as to what future steps can be taken;
- The Company will also contact the individual at a later stage to ensure that Company activities continue to pose no further problems regarding this grievance;
- All grievances will be monitored by the project management team who will be responsible for ensuring that a plan is developed and internally approved as soon as reasonably practicable for any unresolved grievances. The objective will be to bring unresolved grievances to a swift and fair resolution.

Confidentially and Anonymity
An individual may wish to provide a concern in confidence under this procedure. If that is the case, the Company will not disclose the individual's identity without consent. Details of submissions and allegations will remain secure within the team responsible for investigating the concern. However, a situation may arise where it will not be possible to resolve the matter without revealing the identity of the individual (e.g. if it is necessary to give evidence in court). The investigative team will discuss with the individual whether and how best to proceed.

An individual may also choose to raise a concern anonymously. However, this may make it more difficult to look into the matter or provide feedback. Accordingly the Company will consider anonymous reports, but they are not encouraged. If a concern is raised anonymously, sufficient facts and data will need to be supplied to enable the investigative team to look into the matter in detail.

Public Consultation Initiatives that have influenced the Plan
It is unclear whether "the plan" refers to the Communications Plan or the Project Plan. Therefore, examples of both are provided.

Some of the ways in which public consultation has influenced the actual Project Plan are listed below:

- modification of the ship turning circle
- possible modification of the location of the access road
- research into the possibility of a rare plant on the quarry site by a local resident
- incorporation of operational training plan into the construction phase

- enhancement of the training program to recognize the existing skill sets in the local area
- modification of the monitoring program with respect to the possibility of an "Indian Camp" on the site
- modification of compensation plans for residential wells and property values
- development of lobster trap compensation fund

Further monitoring and evaluation of consultation will also occur through the Community Liaison Committee (CLC).

- Despite using many standard public consultation methods to engage the public (e.g. store front office, advisory committees, news letters, public meetings) Bilcon realized that it was not receiving a sufficient range of viewpoints regarding the project and that some individuals felt intimidated if they voiced their opinions publicly regardless if they were for, neutral or against the project. Thus, the Company initiated a confidential Attitude Survey in order to obtain a representative sample of input from individuals living within the employment catchment area.
- Bilcon also realized that it needed a systematic way in which to record all viewpoints and to ensure that all issues were addressed in the EIS. Accordingly, it initiated an issues management system. (**see Appendix 2**)
- Bilcon also realized that while it had held numerous meetings and open houses, it needed a way of recording issues and concerns regarding the project and, as result, initiated the exit survey system.

8.2.3 The stakeholders' consultation list is presented in Appendix 6 (not Appendix 34 as reported).

RESPONSE

Bilcon acknowledges that Appendix 34 is public notification of the open houses and that Appendix 6 is the stakeholders' consultation list.

8.2.4 Describe the Attitude Survey information in a table that identifies and differentiates responses by geographical location (so that the Panel can identify local responses from the larger survey area, for example).

RESPONSE

The table that identifies and differentiates responses by geographical location has been prepared and can be found in 2005 and 2006 Attitude Surveys – AMEC Earth and Environmental Inc. in Section 12.

8.2 Public Consultation

8.2.6 Provide full details (past and future plans) of the issues management system, community forums and the stewardship process for community grants.

RESPONSE

Full details (past and future) of the Issues Management System, Community Forums and Stewardship process for Community Grants:

Issues Management System

The issues management system is described on page 14 of Section 8.2. A company internal system, it will be used in the future, as it was in the past, to log issues.

Community Forums

These are previously described in the section on the CLC.

Stewardship Process for Community Grants

Bilcon has been supporting community programs for the past 4 years and will continue to do so in the future. Community grants have been made primarily in the areas of school programs, heritage conservation and health, but contributions have also been made to promote women in the workplace, alternate transportation, seniors' safety programs and business promotion in the Digby area. Examples of contributions are as follows:

- Digby Alternate Transportation Society (DATS)
- South West Nova Transition House Association
- Digby and Area Board of Trade - Donation for Scottish Trade Mission
- Digby "Business Discovery Expo"
- Digby Water Commission - Summer Concert Series
- Shoppers Drug Mart Tree of Life
- Seniors' Safety Program
- All Saints Church
- Digby and Area Board of Trade - Travel Fund for Atlantic Provinces Chamber of Commerce
- Annual Meeting in Saint John
- RONA MS Bike Tour
- Digby Scallop Days
- Heritage Building - Digby Neck

8.2 Public Consultation

9.3 Human Environment and Impact Analysis
The Panel expected that in assessing the effects on the human environment the Proponent would take full advantage of traditional knowledge and of public involvement as a strategy.

The Panel needs to understand how the community functions to assess fully the effects of the Project.

RESPONSE
Please refer to:
EIS Volume VII
9.3.7 Community Profile, page 28
9.3.10 Economy Fishery, page 85
9.3.11 Economy – Fishery/Aquaculture, page 88
9.3.12 Economy – Fishery/Intertidal, page 90
9.3.13 Economy – Fishery/Nearshore, page91
9.3.14 Economy – Tourism, page 97
9.3.15 Economy – Land Value, page106
9.3.17 Human Health and Community Wellness, page 119
9.3.22 Socio-cultural Patterns, page 136
9.3.23 Education, Training and Skills, page 150

Bilcon's Response to Comments
Section 8.1 – Impact Analysis

WP 1541 – Fisheries and Oceans Canada

Volume V – Chapter 8
Page 12 – According to the "Issues Scoping" section consultants met with Whites Cove lobster fishermen three times: Nov. 2003; Feb 2004; and Mar 2004. Are these the licensed fishers who fish lobster near the proposed marine terminal? Harvester operation will need to adapt to the marine terminal and new vessel traffic patterns – has this been discussed and supported? Was the displaced effort a concern for harvesters?

RESPONSE
Three meetings were held with licensed lobster fishers who traditionally fish in the nearshore Whites Cove area. Agreement was reached on the establishment in consultation with lobster fishers of a designated inbound and outbound route, the increase in turning radius of the ship immediately adjacent to the Whites Point terminal and the establishment of a compensation fund to be administered by a committee of lobster fishers. No specific details of the compensation plan have been established pending a meeting with the Lobster Fishing Area #34 Management Board. Please refer to Bilcon's responses to Fisheries and Oceans Canada in Section 9.2.5 – Economy

8.2 Public Consultation

Page 14 – The website http://www.bilconof.ns.ca/is not working as of July 25th, 2006

RESPONSE
Bilcon's website is www.bilcon.ca

Page 22 – Various "Business Meetings" and "Focus Groups" were held. Meetings included six fishing processing operators but no fishing associations. Focus Groups included the Full bay Scallop Association. Although "Bilcon has made an effort to invite any and all interested parties or individuals to become involved in the project", no specific mention is made of licensed harvesters in this Section. Did the Whites Cove meetings described above adequately engage individuals using areas near the project site and in the proposed shipping Route?

RESPONSE
As noted in other responses, the attendees at the three meetings held with licensed lobster fishers who traditionally fish in the nearshore Whites Cove area were of the view that the inconvenience from shipping activities was not an issue. Since a decision has now been made to construct the terminal from drilling barges which can only operate during the summer months, the lobster fishery will not be inconvenienced since no construction activities at the terminal will take place during the lobster season.

Please refer to Bilcon's responses to Fisheries and Oceans Canada in Section 9.2.5 – Economy

WP 1542 - Health Canada

Public Information and Consultation Process
Health Canada acknowledges the effort invested by the proponent regarding the public information and consultation process as detailed in the EIS Guidelines. Communication activities and information are well presented and easy to retrieve. The newsletters and the creation of a Community Liaison Committee (CLC) are good practices that help the proponent inform the community and at the same time receive feedback from the community on the project.

RESPONSE
Comment noted. Please see Bilcon's response to Panel in this Section.

Health Canada notes that primary public concerns identified were related to the preservation of the environment and indirect effects of the project on income sources (fishing, lobster, tourism, etc.) and quality of life of local residents.

8.2 Public Consultation

RESPONSE
Bilcon will be happy to work with the local tourism association to help objectively assess any changes in tourism visitation to Digby neck that can be directly attributed to the quarry.

Health Canada also identified a gap in the public information and consulting process among First Nations in the regional and local area. As the proponent recognizes, good communication has not been established with First Nations living in the area and despite the numerous documented attempts, Health Canada would support any future attempt to consult with the local First Nations group.

RESPONSE
Please refer to Bilcon's response to the Panel under Section 3.1 Traditional and Community Knowledge.

Bilcon will continue to make efforts to establish contact with the Confederacy of Mainland Mi'kmaq and would welcome an opportunity to discuss the project and any issues the Confederacy has regarding the project.

Traditional Knowledge and Social Impacts on First Nations' Quality of Life and Well-being
Realizing previous consultation difficulties encountered by the proponent, Health Canada would like to see more information about whether the project may limit access to traditional hunting/gathering or fishing grounds used by local First Nations people.

RESPONSE
Bilcon would be pleased to meet with the Confederacy to further discuss questions concerning access to traditional hunting/gathering or fishing grounds by the First Nations people on the proposed White's Point Quarry site.

WP 1630 - Environment Canada

Item #3 Taking a Long Term View
Information Request

Identify the public consultation methods and criteria used for determining decommissioning and reclamation plans.

RESPONSE
Please refer to:
EIS Volume V – Chapter 8.2 Public Consultation
EIS Appendix Volume II – CLC Minutes
Section 3.2 – Public Involvement in this submission
Section 8.2 – Public Consultation in this submission

WP 1625 – Partnership for Sustainable Development

EIS Guidelines -- Section 2.0 -- The Review Process
Deficiency Statement 1
EIS Guidelines
2.1 - Scope of the Project - 'The scope of the Project is described in Part I of the Panel's TOR (Appendix 1)."
2.3 - Environmental Impact Statement - 'The Environmental Impact Statement (EIS) document produced by the Proponent will identify the effects (both beneficial and adverse) of the Project on the environment."
EIS
The EIS Guidelines (Appendix – Part I) provides a description of the Project under consideration. As is widely known, the Proponent is Bilcon of Nova Scotia Corporation, which proposes to construct a 120 ha quarry and marine terminal, with a planned duration of 50 years.
The EIS makes reference to public consultation undertaken through the Community Liaison Committee (CLC) at least nine times, in terms of information provided and comments received. An example is where the EIS states 'Activities initiated by Bilcon include stakeholders' interviews conducted by Elgin Consulting and meeting notes from the CLC meetings (See Appendix 2)." The CLC was established as a result of an application for a 3.9 ha quarry. This approval differed from the Project in terms of scale (3.9 ha versus 120 ha), duration (10 years versus 50 years) and the fact that the original approval did not include a marine terminal. The CLC was also established under Nova Stone Exporters Inc., a company that has no involvement in the Project. As the CLC addressed a project that was not that described in the Appendix to the EIS Guidelines, it should not be cited as such in the EIS. The Proponent should amend the EIS to remove references to the CLC as part of the public consultation process for the White's Point Quarry and Marine Terminal.

RESPONSE
The Community Liaison Committee (CLC) was not established as a result of an application for a 3.9 ha Quarry. The CLC was established under the terms of the Permit for the 3.9 ha Quarry and at the request of NSDEL. Under the Terms and Conditions of the Permit, NSDEL could require Bilcon to establish a Community Liaison Committee, and NSDEL activated this condition and so notified Bilcon on June 17, 2002. The first meeting of the CLC took place at the Sandy Cove Fire Hall July 18, 2002. At that meeting, Bilcon advised committee members that it intended to file a Registration of Undertaking with the intention of extending the quarry beyond the permitted area and that Bilcon would answer questions with respect to this larger quarry.

8.2 Public Consultation

Reference to the minutes of the CLC meetings contained in Volume II of the Appendices establishes that the vast majority of the discussions held by the Committee concerned the larger quarry operation and the joint Environmental Assessment Process. Bilcon contends that the CLC was a significant part of the consultation process with respect to the larger quarry operation.

Deficiency Statement 3
EIS Guidelines
3.2 - Public Involvement - 'Public participation is a central objective of the overall review process and a means by which the concerns and interests of the public are taken into account."
8.2 - Public Participation - 'Identify and report on key issues raised, and describe how those issues have been addressed." 'Explain how the results of that engagement influenced the design of the Project." 'Document, track and describe any issues raised by stakeholders that may remain outstanding."
EIS
One of the key purposes of the Canadian Environment Assessment Act is to 'ensure that there be opportunities for timely and meaningful public participation throughout the environmental assessment process." Meaningful public participation implies a two-way dialogue where a developer provides information on an undertaking, receives feedback on the possible impacts and how the Project can be improved. In this interactive process, the design of the Project is amended, public consultation repeated, and further changes made if necessary.
The EIS documents the public consultation activities of the Proponent. These activities have been largely confined to providing information on the Project and recording comments and concerns. While considerable effort is made to ask for individual's opinions on the Project, there is little information available on how these opinions and concerns were addressed, beyond simply making reference to them in the Concordance Table (Section 5).
The EIS Guidelines explicitly require the Proponent to identify how the comments received through public input have influenced the design of the Project. This has not been done. The Guidelines also require the Proponent to identify those concerns which remain outstanding. This has not been done. The EIS fails to document how meaningful public consultation was undertaken and its results.

RESPONSE
As with Statement 2, reference to the comments requested throughout the Public Consultation Process clearly demonstrate that the design of the project took into account all the concerns raised during the Public Consultation Process.

Please refer to Bilcon's response to Panel in this Section.

8.2 Public Consultation

Deficiency Statement 46
EIS Guidelines
8.2 – Public Participation – "Describe the methods used to identify, inform and solicit input to the assessment process."
EIS
8.2.1 – Requirements, Approach and Methodology – Approach – The EIS describes the public consultation principles used by Bilcon. Included in the list of principles is "A systematic public consultation process is rigorously followed based on a work plan that includes specific milestones, locations, dates, times, responsibilities, audiences, intended outcomes and communication tools."[101] There are several tables provided in the section 8.2 of the EIS but none of them appear to be a work plan with specific milestones. To meet the requirements of section 8.2 of the EIS Guidelines, this work plan should be included in the EIS.

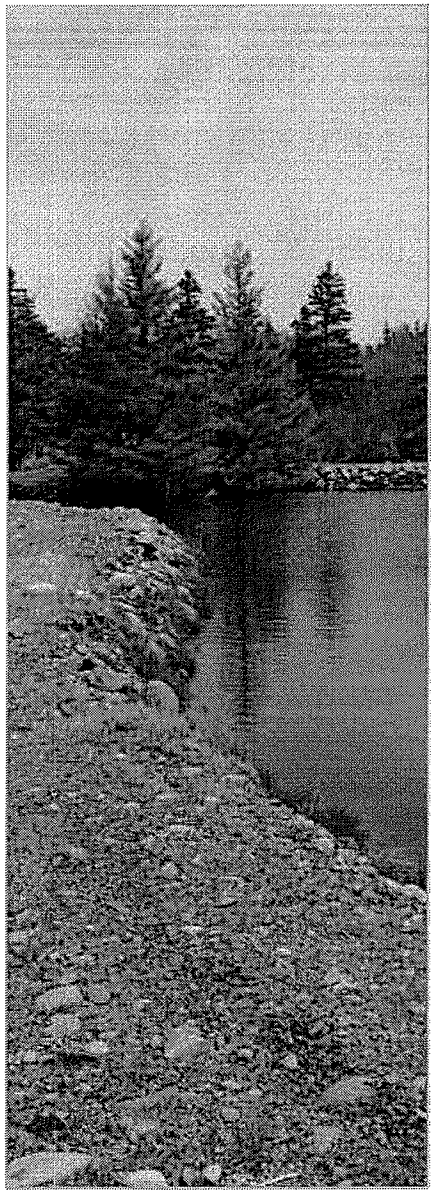
RESPONSE
Please refer to Bilcon's response to Panel in this Section.

Deficiency Statement 47
EIS Guidelines
8.2 – Public Participation - "Public participation plays a vital role in the assessment process." "Document the role of public engagement in identifying VECs, issues, impact prediction and mitigation."
EIS
8.2.1 – Requirements, Approaches and Methodology – Geographical Scope – The EIS states, "As a general principle, the scale and effort of public consultation decreases with increasing distance from the Project."[103] As described above, see Deficiency Statement 17, spatial scale is the primary basis for the determination of significant or insignificant in the EIS. The EIS states, "...to be considered significant the influence of effect would have to be greater than a regional scale."[104] How can public participation play a vital role in the assessment process and particularly in impact prediction, as required by the EIS Guidelines, if the focus of the public consultation is local/regional but significant effects can only occur at the provincial, national or international scale? The public consultation approach taken by the Proponent is not consistent with their approach to impact assessment methodology. How can the public participation program described in the EIS be considered anything other than an exercise in public relations with local community members?

RESPONSE
Please refer to Bilcon's response to Panel in this Section.

8.2 Public Consultation

Appendix 1
Whites Point Quarry Updates



How much rock will be taken out?

About two-million tonnes of basalt would be extracted each year for the 50-year life of the quarry and transported by ship to New Jersey.

How do you plan to turn the quarry location back into a useable area once your quarrying operations are complete?

Reclaiming and restoring the land we intend to quarry at Whites Point on Digby Neck is an integral part of Bilcon of Nova Scotia's commitment to the environment and the local community. We have already developed an extensive, ongoing reclamation plan for the site. We intend to create terraced, green space as each phase of the quarry operation is completed. This means that we will be working to reclaim the quarried lands approximately every five years. In locations around the world, previously quarried lands have been turned into recreational sites such as parks, nine-hole golf courses and amphitheatres.

Would you like to submit a question for our Glad You Asked column? Email: **questions@bilcon.ca**

Want to know more?

If you're looking for additional information on any aspect of our project, please visit our website at www.bilcon.ca, contact us by phone at (902) 245-2567, or by email at newsletter@bilcon.ca. You're also welcome to drop by to see us in person anytime during regular business hours, Monday to Friday. Our offices are located at 305 Hwy 303, Suite 3 in the Town of Digby.

publication printed on recycled paper

BILCON OF NOVA SCOTIA

Whites Point Quarry Update

Environmental impact report due March 31

A report on the environmental impact of the Whites Point Quarry project will be completed and submitted to the Canadian Environmental Assessment Agency (CEAA) by March 31, 2006.

This report includes the findings of a number of independent consultants, specializing in fields ranging from geology to the economy. The document will take an in-depth look at and evaluate how the quarry project could affect:

- Groundwater quantity and quality
- Land and marine water quality
- Earth ecology including endangered species
- Marine ecology including endangered species, with particular emphasis on the North Atlantic right whale and inner Bay of Fundy salmon
- Heritage resources including land and marine archaeology
- Social resources including economics, community well-being and quality of life
- Fishing industry, with particular emphasis on the lobster fishery
- Property values
- Tourism industry including ecotourism
- Human health, including air and water quality, noise and land and marine contaminates.

This study is required for the panel review of the project that is currently underway. This type of review is the most stringent environmental assessment process, and it involves a lot of opportunity for public participation.

Once the report has been submitted, CEAA will review it and post the document on their website, **www.ceaa.gc.ca**. Next, members of the public will be given an opportunity to comment and ask questions. Bilcon must respond within 15 days. After this, public hearings will be held (dates to be determined), and finally a decision about whether or not the project will be allowed to proceed will be made.

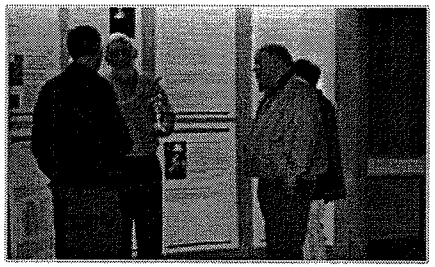
Please see our website at **www.bilcon.ca** for a complete list of environmental items being evaluated as part of the Environmental Impact Statement (EIS) for the project.

Open house welcomes local residents

A recent open house at the Sandy Cove Fire Hall provided an opportunity for local residents to learn more about the Whites Point quarry project.

Forty-six people, including the students of Island Consolidated School on Digby Neck, took part. The event gave those who attended a chance to speak directly with independent consultants about their findings and to view information displays. It was also a great opportunity for our team here at Bilcon of Nova Scotia to meet members of the community and answer questions.

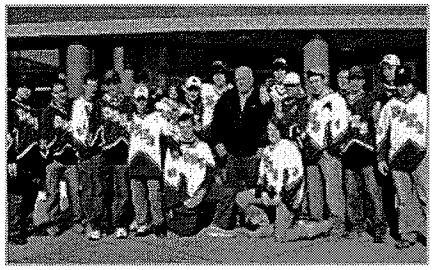
Thanks to everyone who took the time to drop by!



Bilcon supports community causes

Players on the Digby Mariners high school hockey team have brand new uniforms this year, thanks to a $2,500 sponsorship from Bilcon of Nova Scotia.

The team is just one of several community organizations to receive support from Bilcon in recent months. The company also made a donation to Christmas Daddies, sponsored lunch for participants in a health fair on Digby Neck, supported a seniors' safety program and a local hospice society, and assisted a scout member with the cost of his registration and uniform. Bilcon has also sponsored four Digby Neck students over the past two years, making it possible for them to attend the 'Encounters with Canada' program in Ottawa.



Digby Mariners high school hockey team

In supporting community organizations, Bilcon is following in the footsteps of its parent company, New Jersey-based Clayton Concrete, Block and Sand. Clayton's founders are well-known for their volunteerism and support of a wide variety of causes.

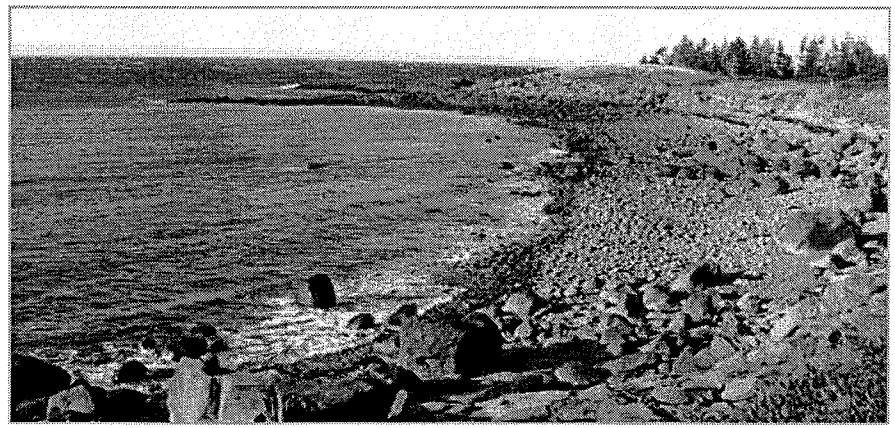
Bilcon is continuing to accept sponsorship requests from residents of Digby Neck and the Digby area. Anyone interested in asking the company to support a particular cause should outline their request in writing, and forward a letter to Paul Buxton of Bilcon. Requests can be mailed to:

Bilcon of Nova Scotia,
PO Box 2113, Digby, NS B0V 1A0;
sent by fax to (902) 245-5614;
or email bilcon.ns@ns.aliantzinc.ca

Facts about Quarries

A quarry is a type of open-pit mine from which rock or minerals are extracted. Quarries are generally used for extracting building materials and are usually shallower than other types of open-pit mines.

You might be surprised to discover just how many quarries are operating in Nova Scotia. According to Nova Scotia's Department of Environment and Labour, there were 1,171 permitted quarries of varying sizes operating in the province in 2003. The former Western Valley Development Authority determined in 1998 that there were 87 identified quarry sites in Digby County, although not all were active at that time. Right here in the Digby area, the provincial Department of Transportation and Public Works says they use 13 privately-owned sites for their sand and gravel needs.



In addition to sand and gravel, the type of rock extracted from Nova Scotia quarries includes: Granite, Limestone, Marble, Sandstone and Slate.

Glad you asked

We've received a number of questions about the Whites Point quarry project. In each issue of this newsletter, we'll feature the answers to several of your most recent questions. You can also find a detailed list of questions and answers on our website at **http://www.bilcon.ca.**

What types of jobs will the quarry create?

The types of positions that will be available at the quarry include: mechanics, office clerk, equipment operators, general labourers, electricians, welders, quality control technicians, rock drillers, water/quarry truck drivers, plant operators and rock drillers.

We are looking forward to working with the pool of skilled and highly motivated people on Digby Neck who will be capable of successfully operating this project. The initial construction of the quarry and terminal will create work in the local area for about one year. Competitive wages (in the range of $12.50 - $20 an hour) will be paid. As well, extensive training for the ongoing operation of the project will be provided for at least 34 full-time people.

How big will the quarry be?

The entire quarry property is approximately 380 acres. This includes a permanent environmental preservation zone of 80 acres that will surround the quarry.

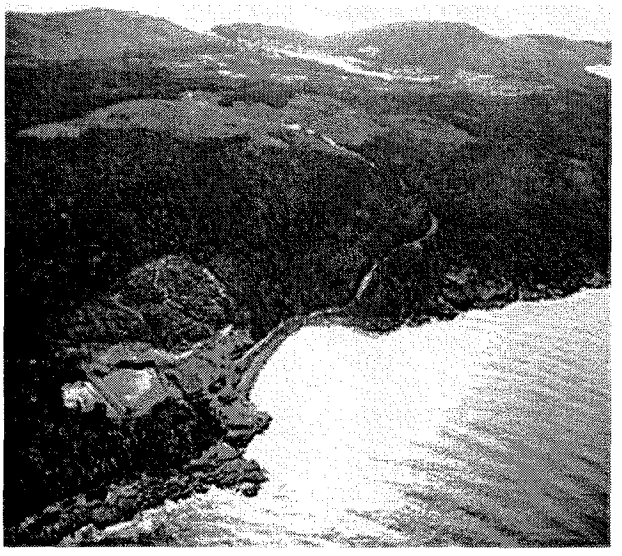
What effect will this quarry have on the lobster fishery?

We believe the month of December will be the most difficult for the lobster fishery because weather conditions may be acceptable for the shipment of quarry product and, at the same time, December is a crucial period for lobster fishing. We will work closely with the lobster fishermen who use Whites Cove to establish an acceptable procedure.

Sediment control structures will be built, including sediment ponds, to prevent any sediment from directly entering the marine environment. Additionally, a sediment monitoring program will be initiated to ensure the standards set by the Nova Scotia Department of Environment and Labour are met.

BILCON
OF NOVA SCOTIA

Whites Point Quarry Update



The Project

Bilcon of Nova Scotia Corporation is proposing to construct, operate and decommission a basalt quarry, ship loading facility, and marine terminal for the production and export of crushed rock at Whites Point on Digby Neck.

The project is subject to a Joint Panel Review under an agreement between the Federal Government and the Province of Nova Scotia and an environmental assessment has been carried out in accordance with the agreement. The entire 17 volume 3035 page Environmental Impact Statement including a Plain Language Summary may be viewed on the Panel website at www.wpq-jointreview.ca.

The components of the project are:

- Rock extraction
- A rock crushing and screening plant
- A loading tunnel
- A ship loading facility
- A marine terminal

Works associated with the construction, operation and decommissioning of the project include: site access road, sediment retention ponds, maintenance area, preservation areas and sediment and topsoil storage areas.

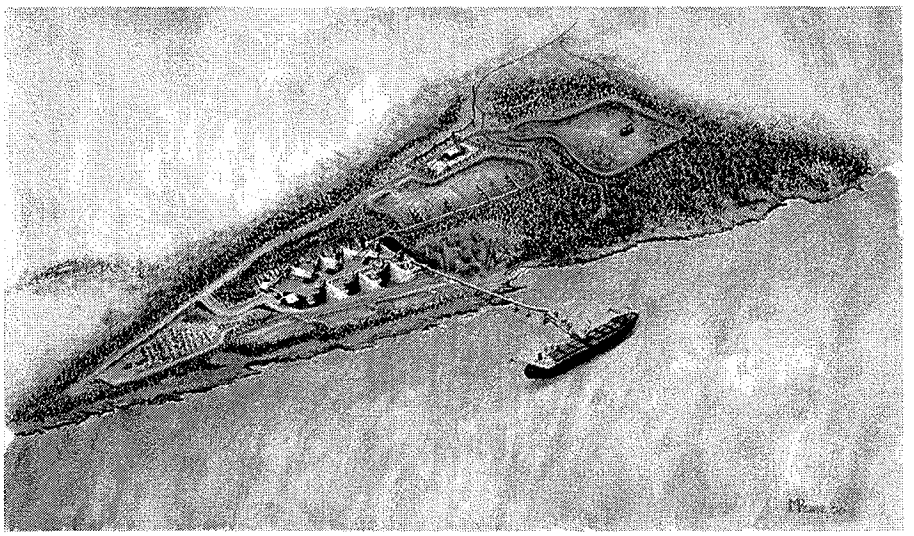
The lifespan of the project is projected to be 50 years, with the annual production of 2 million tons being shipped to the United States for use by Bilcon's parent company Clayton Concrete, Block and Sand. Bilcon expects to employ 34 people full-time and will provide extensive training.

Bilcon Partners with Industry Experts to Conduct Environmental Research

Bilcon engaged expert individuals or companies and institutions to provide the research to carry out the Environmental Impact Statement including:

- Acadia University

  Dr. Michael Brylinsky Ph.D. - Acting Director Acadia Centre for Estuarine Research
  Dr. Michael Dadswell Ph.D. - Professor of Biology
  Dr. Barry Moody Ph.D. - Professor, Department of History and Classics
  Dr. Ken Neil Ph.D. - Research Scientist - Lepidoptera (Butterflies)
- Ruth (Hersey) Newell M.Sc. - Botanist
- Dr. George Alliston Ph.D. in Wildlife Science - Certified Wildlife Biologist
- AMEC Earth and Environmental- Public Consultation, Health and Community Wellness
- John Amirault - M. Eng, P. Eng., Consulting Engineer, Process and Risk Assessment, Environmental Assessment
- Atlantic Marine Geological - Gordon Fader M.Sc. - Marine Geology
- Paul-Michael Brunelle B.Des., FGDC - Atlantic Dragonfly Inventory Program and Entomological Society of Canada
- Canadian Seabed Research - Bathymetry
- Elgin Consulting - Traditional Knowledge Study
- Gardner Pinfold - Economic Analysis
- Jacques Whitford - Hydrogeology
- Jasco Research - Concussion and Ground Vibration
- David Kern B.Sc. - Environmental Consultant, Contributing Writer
- LGL - Impacts on the American Lobster
- John Lizak M.Sc. - Geological Assessment Whites Point
- Mallet Research - Ballast Water Research
- O'Halloran Campbell - Dolphin Design
- James Ross M.Sc - Fish Habitat Management
- XY GeoInformatics - Geospatial Data Comparison and Compilation



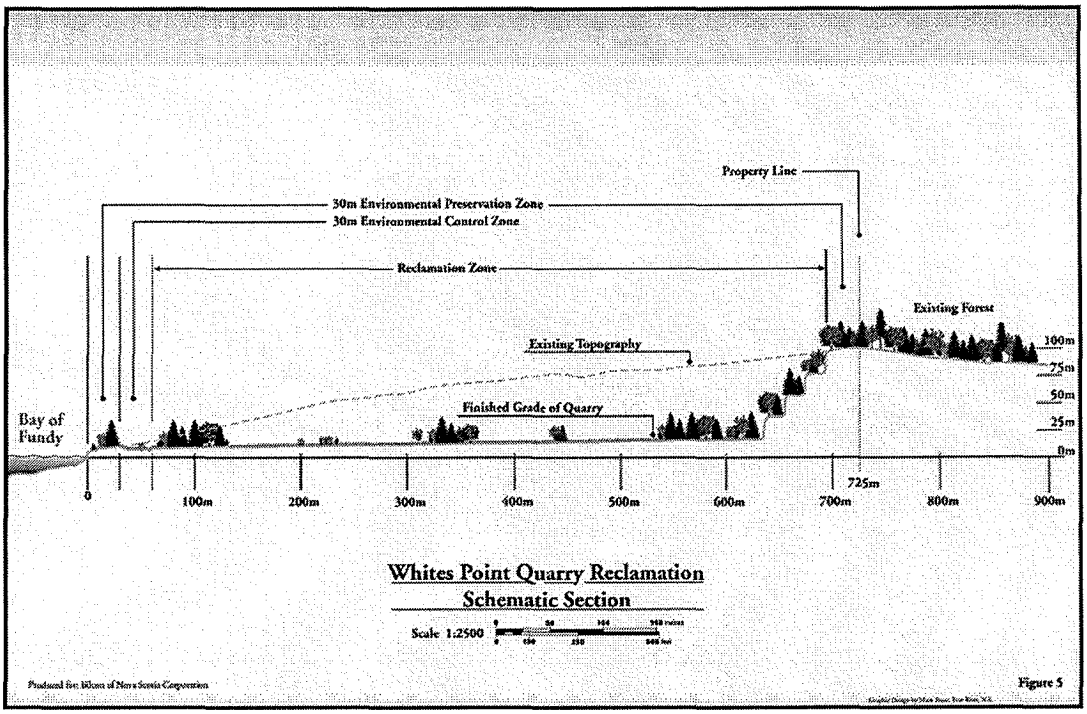
Only Whites Point is Being Considered by Bilcon for Quarrying

While the basalt formation extends 200 kilometres from Brier Island to Cape Blomidan, only Whites Point is being considered by Bilcon.

Whites Point was selected for the following reasons:

- The Quality and Availability of the Basalt: Whites Point is situated on a thick layer of massive basalt which, when crushed, becomes a high-quality aggregate for use in concrete and road-paving.
- Easy Access to the Bay of Fundy: The fact that the rock is located on the coast is a key consideration for transportation.
- Minimum Truck Traffic: Because all rock will be transported by ship, there will be minimum truck traffic from the site on Digby Neck.
- Visual and Noise Protection: The ridge of the North Mountain range provides a visual barrier so that the quarry will not be visible from Highway #217 or from anywhere on the Eastern side of the Neck. The same ridge provides noise protection from sound generated by a typical quarry operation.
- Presence of Skilled Employees: There is a pool of skilled and highly motivated people on Digby Neck capable of operating this project.
- Deep Water: Feasible water depth for the location of a marine terminal to ship aggregates rather than trucking through rural communities.
- Marine Terminal Site Characteristics: Limits the potential for turbidity production during constructions.
- Presence of Bedrock: Construction of the marine berthing facilities will be on bedrock thereby eliminating the necessity for dredging and dredge material disposal during construction and operations.
- Area of Low Seismic Hazard: The quarry site is located in an area of low seismic hazard and no earthquakes have been recorded on Digby Neck.
- Absence of Freshwater Habitat for Salmon at the Quarry Site
- No Significant Wetlands on Quarry Site: The quarry site is not a winter refuge habitat for the Harlequin Duck, a protected species.
- Limited Interactions with Ecotourism Activities: Whale watching tours, recreational boating and adventure boating primarily travel off Long and Brier Island.
- Avoidance of the North Atlantic Right Whale Conservation Area: Location of marine terminal means that Bilcon's ships avoid passing through the designated conservation area of the endangered North Atlantic Right Whale.
- Artifacts or Heritage Values: Studies show that the quarry site is highly unlikely to contain artifacts of archaeological significance.

A recent story in the Halifax Chronicle Herald quoted someone as suggesting that the granting of a permit to Bilcon at Whites Point would lead to a multitude of quarries along this basalt formation. Unless some other location has all the above attributes, it will not be considered by anyone for a quarry and marine terminal. Bilcon does not know of any other location on the North Mountain from Brier Island to Blomidon where a quarry and marine terminal could be constructed to meet all the economic and technical requirements required for feasibility.



Environmental Reclamation Plan

Reclamation of the Whites Point Quarry lands is proposed to proceed incrementally over the 50 year life of the project. Approximately 6 acres of quarry will be opened each year. Reclamation includes: site grading and drainage, soil preparation and planting.

The priority area for reclamation is lands along the coastline north of the Whites Cove Road and landward from the environmental preservation zone and environmental control/ constructed wetland area.

Reclamation of this coastal area first will increase the buffer area between the quarry and the marine environment providing more effective erosion control, noise attenuation, and wildlife habitat. As quarrying is completed inland from the coast, additional lands will be reclaimed on an incremental basis.

The environmental reclamation program for the quarry will maintain and increase a more ecologically diverse and productive site, during and after completion of resource extraction.

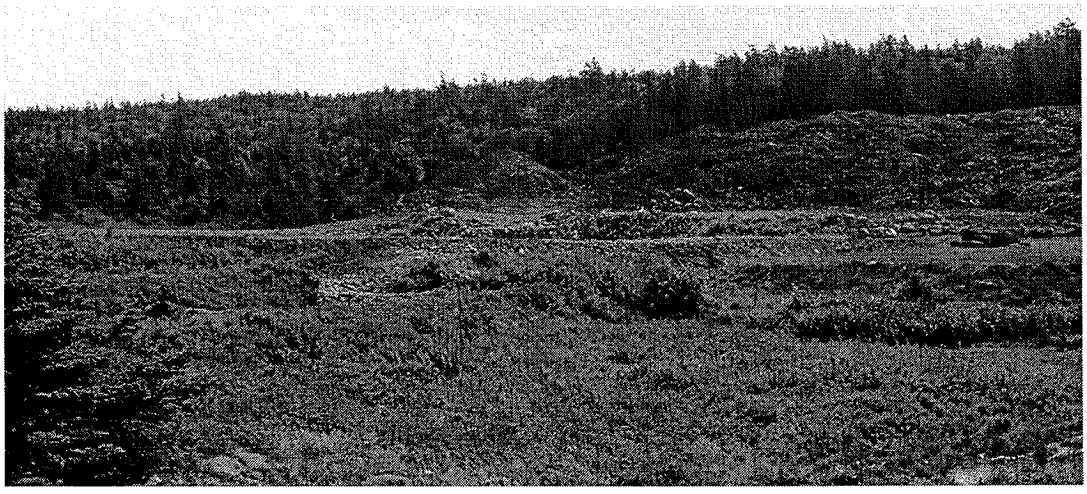
During project operation, maintaining sensitive habitats and creating habitat diversity is a primary objective.

The reclamation process begins after the environmental controls (sediment retention ponds, drainage channels, etc.) are in place.

We Will Accomplish This By:

- Maintaining an environmental preservation zone, especially along the sensitive coastline
- The creation of constructed wetlands and incremental planting to create various successional stages of vegetation
- The establishment of cover for wildlife
- The establishment of a more productive soil regime and forest.

Glaucous Rattlesnake Root - Photo by Ruth Newell



Bilcon Hosts Visitors to the Whites Point Site

On Wednesday, May 17th, 2006 a group of people interested in the Whites Point Project visited the site. The group was led by Lisa Mitchell of LJM Environmental Consulting. Local residents Ashraf Mahtab, Kemp Stanton and Andy Sharp were in attendance as well as former Executive Director of the WVDA, Janet Larkman. Three academics from Dalhousie University, Bill Freedman (Biology), David Hansen and Steve Zou (Civil and Resource Engineering) also attended. Discussions surrounded hydrogeology (groundwater), the crushing and loading operation and incremental reclamation. A future visit to the quarry site is scheduled for June, 2006.

Brier Island Quarry?

Bilcon wishes to assure residents of Digby Neck and Islands that neither Bilcon nor any representative of Bilcon has ever given any consideration to Brier Island as a potential quarry site. The only quarry site in the Province of Nova Scotia being considered by Bilcon is at Whites Point.

Mega Quarry?

The Whites Point Quarry will have a capacity of 2 million tons per year at full capacity. This would be considered a small to medium export quarry and for example, smaller than the Auld's Cove operation in Cape Breton and similar to the Bayside quarry on the other side of the Bay of Fundy in New Brunswick. The newly permitted quarry in Port McNeil on Vancouver Island will export 6 million tons per year and the Vulcan Quarry in Cancun, Mexico exports 10 million tons per year. Several quarries in Halifax and Dartmouth produce between 1 and 2 million tons a year to supply the metro market.

Bilcon Continues to Support Community Wellbeing

Bilcon's parent company, Clayton Concrete, Block and Sand has a 50 year history of community participation and charitable donations.

Bilcon is proud to continue this tradition by sponsoring such events as:

- Digby Regional High School - Hockey Team
- Christmas Daddies
- RCMP Seniors's Safety Program
- The Apple Blossom Festival
- Digby Scallop Days - Wharf Activities
- Digby Summer Concert Series
- Digby and Area Board of Trade's delegate to Chamber of Commerce Annual Meeting - titled "Reaching Atlantica" in Saint John, New Brunswick

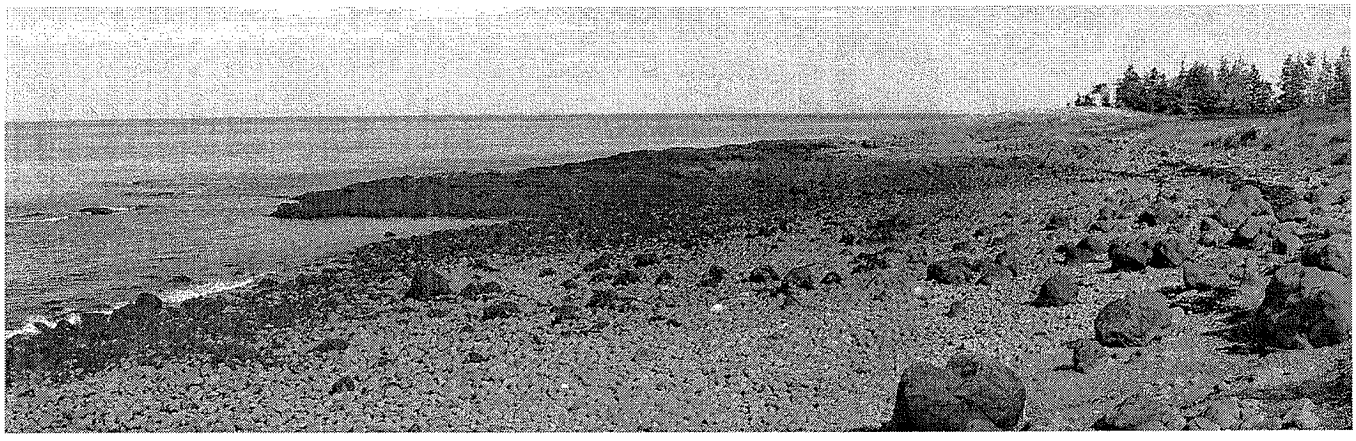
Questions or Concerns About the Quarry?

Bilcon is interested in hearing from you. The Canadian Environmental Assessment Agency has set up a website for you to voice your opinions. The website may be accessed at www.wpq-jointreview.ca.

You may also visit us at 305 Highway #303, Suite 3, P.O. Box 2113, Digby, Nova Scotia, B0V 1A0, telephone: 245-2567 between 10:am and 3pm. Our website is: www.bilcon.ca and email can be sent to Bilcon.NS@NS.aliantzinc.ca

BILCON OF NOVA SCOTIA

Whites Point Quarry Update



The Project

Bilcon of Nova Scotia Corporation proposes to construct and operate a basalt quarry, a crushing operation, and a ship loading terminal at Whites Point on Digby Neck. Bilcon has leased 150 hectares of land and, at a production rate of 2 million tonnes per year, anticipates a quarry life of 50 years. Shipment of crushed product is anticipated to be approximately 40,000 tonnes per week, though this will vary with ship availability and weather conditions.

The quarry will operate at full capacity for 44 weeks of the year with a scheduled shut-down for maintenance and bad weather during the winter months. The quarry will directly employ 34 people working two shifts and Bilcon is committed to hiring and training local people. The quarry is expected to expand its operational footprint by 2.5 hectares during each year of operation and reclamation will be carried out on an incremental basis, rather than at the end of quarrying operations.

Land-based structures include rock crushers, screens, closed circuit wash plant, conveyors, environmental control structures and a load-out tunnel. Marine-based facilities will include berthing dolphins, mooring buoys and a quadrant loader capable of loading 5,000 tonnes per hour. The berthing dolphins and the quadrant loader will be supported on pipe piles anchored to the sea floor.

Bilcon will ship the crushed rock by common carrier to New Jersey for use by its parent company, Clayton Concrete Block and Sand, in the manufacture of concrete and concrete block. Testing of the Whites Cove rock indicates that it will produce a high-quality crushed product meeting the standards required in New Jersey and New York.

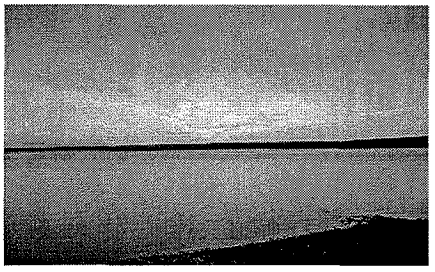
All projects of this magnitude are required to undergo an environmental assessment to determine how the project could affect people, the environment, and the economy. The Environmental Impact Statement (EIS) is in itself a part of the environmental impact assessment which is a planning tool to identify and mitigate any significant environmental effects.

Bilcon's Commitments

All projects of this type are subject to environmental approvals and must comply with all relevant regulations. In addition to compliance with regulations, Bilcon has made additional commitments to the community. On the following pages is a condensed version of the Commitment Table. The complete version can be found in the Whites Point Quarry Environmental Impact Statement (EIS). The EIS may be viewed on the Panel's website at www.wpq-jointreview.ca

In summary, Bilcon commits to:

- Hiring local residents first
- Maintaining a healthy, environmentally safe quarry and marine terminal site - including a 78.9 acre preservation zone
- Providing a safe haven for wetland flora and fauna
- Monitoring noise levels in the marine environment as set out in the EIS and working with the Department of Fisheries and Oceans (DFO) to increase the knowledge base with respect to species at risk
- Monitoring and preserving the water table, ensuring fresh water for future generations
- Procuring supplies in the local area and generally supporting local business both during construction and operation



Whites Point Quarry and Marine Terminal
Commitments Table

Bilcon Commitment	Phase	Responsibility	Approving Agency
Project Design Bilcon of Nova Scotia Corporation will design, construct, operate and decommission the project as set out in the EIS including subsequent specific changes required in future permits or authorizations.	Construction Operation Closure	Bilcon	Environment Canada, Transport Canada, Dept. of Fisheries & Oceans, NS Dept. Environment & Labour,NS Museum, Municipality of Digby
Physical Environment No excavation will be carried out below sea level, nor will excavation be carried out below the upper basalt flow unit.	Operation	Bilcon	
Groundwater Quarrying will not take place below the groundwater table. Groundwater levels will be monitored in the existing wells both on and off site. Water for the wash cycle will be made up from surface water storage. No groundwater will be used for processing.	Operation	Bilcon	Nova Scotia Department of Environment and Labour
Air Quality Bilcon will enclose processing equipment which will be located approximately 1000 m from the nearest residence. All pit roadways will be watered during dry conditions to minimize dust.	Construction Operation	Bilcon	
Marine Water Quality No bilge discharge or fuelling operations will be permitted at the marine terminal.Bilcon will require its shippers to comply with Transport Canada Guidelines for ballast water management.	Operation	Bilcon	Transport Canada
Noise Monitoring – All blasts will be monitored for concussion and ground vibration in consultation with NSDEL. Preservation zones will be kept in a forested condition between the quarry and adjacent residences.	Operation	Bilcon	Nova Scotia Department of Environment and Labour
Employment and Training Bilcon will engage staff whenever possible from the local area and will not recruit from existing businesses. Bilcon will establish a training program for all staff. All training will be funded by Bilcon.	Operation	Bilcon	
Archaeology Monitoring – if significant heritage resources are discovered an appropriate monitoring or recovery program will be developed in consultation with the Nova Scotia Museum.	Operation	Bilcon	Nova Scotia Museum

Whites Point Quarry and Marine Terminal
Commitments Table

Bilcon Commitment	Phase	Responsibility	Approving Agency
Marine Fish Habitat Bilcon has received approval in principle for a Compensation Plan under Section 35(2) Fisheries Act. Bilcon will further develop a monitoring plan in concert with DFO.	Construction	Bilcon	Department of Fisheries and Oceans
Lobster Fishery Bilcon will advise lobster fishers using Whites Cove on the arrival and departure times of all bulk carriers during the lobster season. Bilcon will provide compensation to a Committee of Whites Cove Lobster Fishers who will assess and compensate for loss of lobster gear due to ship movements. Compensation as a fixed sum will be paid on an annual basis.	Operation	Bilcon	
Marine Species Bilcon will not carry out any blasting in marine waters. Bilcon will conduct on land blasting in accordance with the "Guidelines for the Use of Explosives in or near Canadian Fisheries Waters". Bilcon will monitor noise levels in the marine environment as set out in the EIS and will work with DFO to increase the knowledge base with respect to species at risk. Bilcon will maintain communications with local whale watch and seabird curise operators in the Digby Neck Area.	Operation	Bilcon	Department of Fisheries and Oceans
Terrestrial Species Bilcon will establish and maintain 78.9 acres of environmental preservation zone as set out in the EIS. Monitoring-Floral, faunal and invertebrate surveys will be conducted every five years to document any changes in species composition.	Construction Operation	Bilcon	Nova Scotia Department of Environment and Labour
Land Values Bilcon will carry out an appraisal of residential properties within 800 m of the quarry prior to operations and after five years of operation. Compensation will be offered where property values have been diminished.	Construction Operation	Bilcon	
Economy Bilcon will wherever possible, procure supplies in the local area and generally support local business both during construction and operation.	Operation	Bilcon	

Glad You Asked

We've received a number of questions about the Whites Point Quarry Project. In each issue of this newsletter, we'll feature answers to your most recent questions.

Since the whole area is a prime tourism destination has any consideration been given to visual impacts?

Several years ago Highway #217 was designated the "Digby Neck and Islands Scenic Drive" from Digby to Brier Island. The site of the proposed Whites Point Quarry property lies between Highway #217 and the Bay of Fundy.

The working area of the quarry will be located on the western slope of Digby Neck and down slope from the ridge to the Bay of Fundy shore. Whale and seabird cruises have become popular ecotourism attractions on the Bay of Fundy and St. Mary's Bay. Presently, cruises originate from East Ferry, Tiverton, Freeport, and Brier Island during the tourist season. The peak tourist season (June – September) generally coincides with the season when the most whales appear in the Lower Bay of Fundy. Operators offer daily cruises during the summer months. Other than whale and seabird cruises, the Lower Bay of Fundy experiences little recreational boating activities such as sea kayaking, sailing, or pleasure cruising, when compared to the Atlantic coast.

Due to the horizontal set back and vertical change in elevation, the quarry will not be visible from Highway #217 nor from residential dwellings located along the highway.

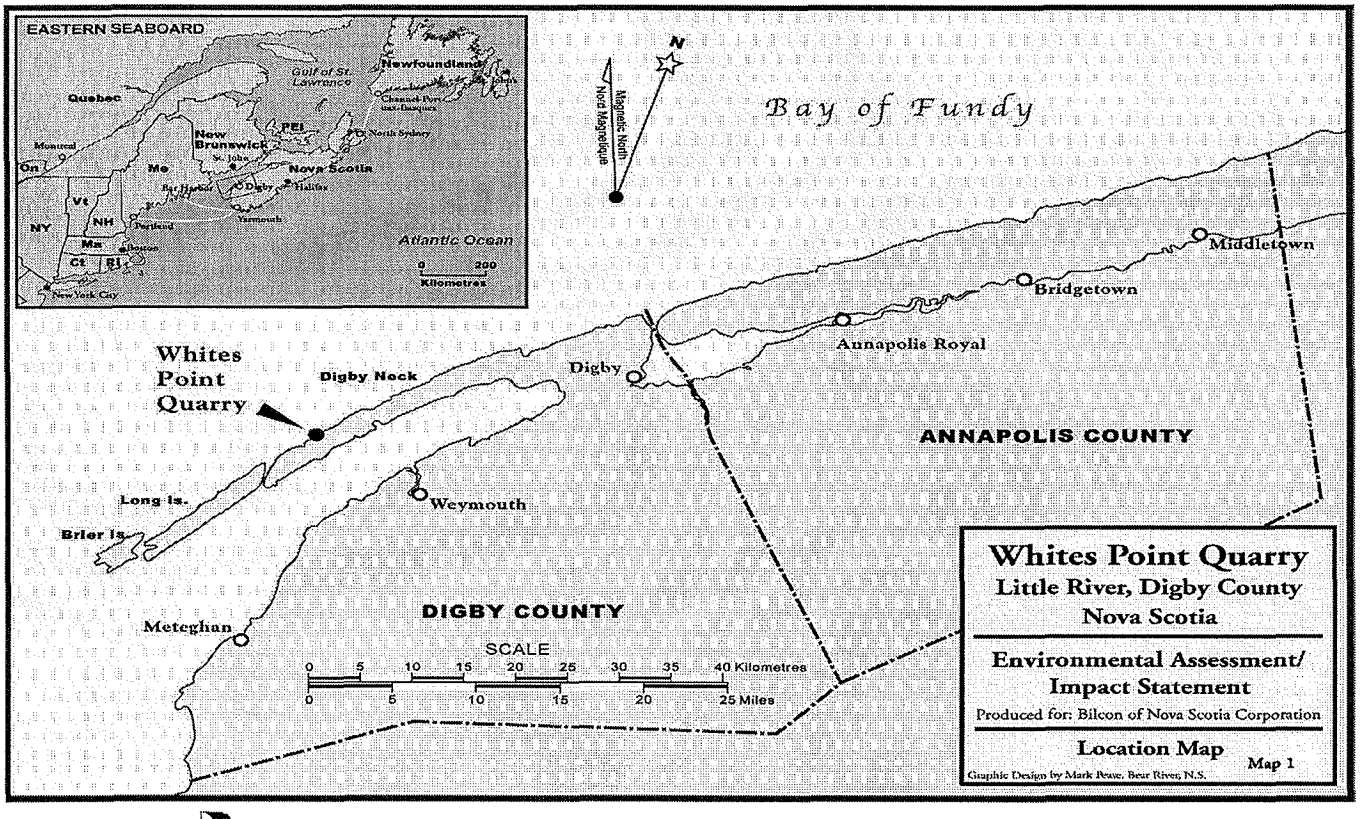
Additionally, a 30 metre wide environmental preservation zone will be located within the quarry property along all property lines adjoining the quarry property. This will act as a further visual buffer zone in relation to existing adjoining properties as well as for environmental purposes.

However, the proposed onshore infrastructure and marine terminal development will be visible from the Bay of Fundy waters. The marine facility will not be the typical massive sheet pile wharf structure common to container terminals but a less intrusive system of three independent mooring dolphins and individual conveyor support systems. Since whale and seabird cruise operators tend to take tourists to where whales are most frequent, views of the quarry from the water by visitors would be infrequent. Also, since this area of the Bay is not a high use recreational boating area, views of the quarry from the water by recreational boaters or pleasure craft would be infrequent.

Questions or Concerns about the Quarry?

If you are looking for additional information on any aspect of our project, please visit our website at www.bilcon.ca, contact us by phone at 902 245-2567, or email us at bilcon.ns@ns.aliantzinc.ca

You are also welcome to visit us in person anytime Monday to Friday 10am to 3pm. Our office is located at 305, Highway #303, Suite 3 in Digby.



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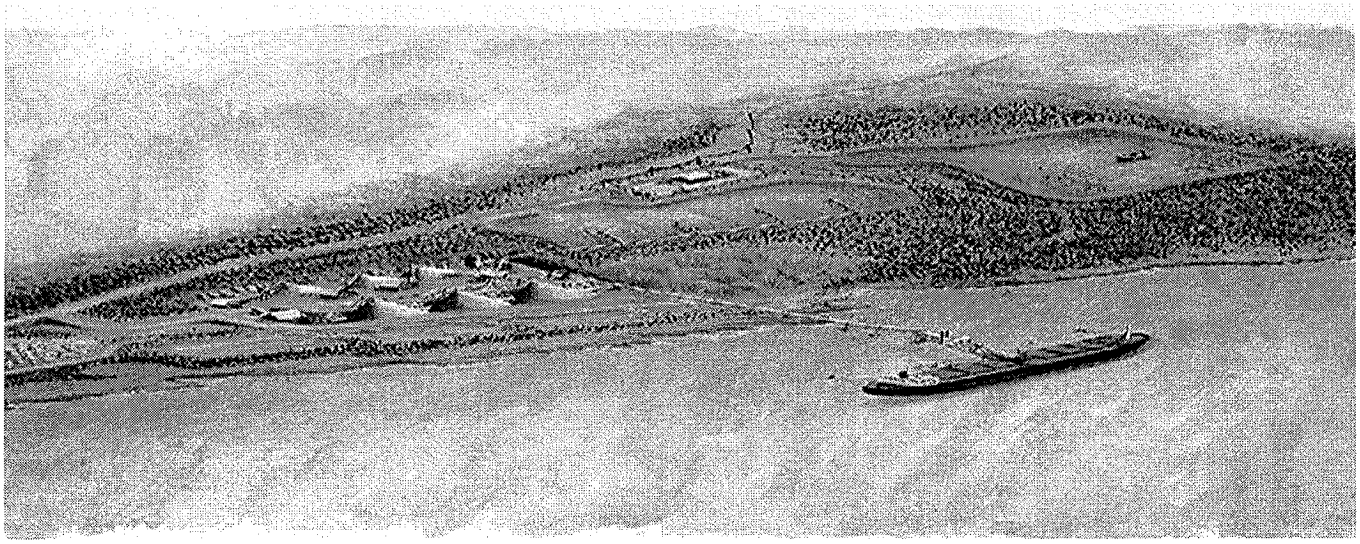
Whites Point Quarry Update



The Panel Review Process

The Environmental Impact Statement (EIS) released this past April, examined 76 subjects under the physical, biological and human environment categories. Nineteen scientific and engineering experts carried out the research, and the EIS is available for public review prior to the public hearing phase of the environmental assessment review process, expected in the fall.

Bilcon is responsible for providing data and analysis on any potential adverse environmental effects to permit proper evaluation by the Joint Review Panel, the public and technical and regulatory agencies. The Panel received written comments during the review period which ended August 11th, 2006. Comments submitted in writing to the Panel were provided to Bilcon and added to the Public Registry. The registry is part of the Joint Panel Review website and can be accessed at: www.wpq-jointreview.ca.

Bilcon will provide a response to written comments from the public, the Panel, interested parties and regulatory agencies. Once the Panel is satisfied that the EIS is complete, it will hold public hearings. Within 90 days of completion of public hearings, the Panel will prepare and submit its report to the federal and provincial Ministers of the Environment. This report will include recommendations on all factors set out in the *Canadian Environmental Assessment Act* and the Nova Scotia *Environment Act.*

The Environmental Impact Statement

The purpose of the EIS is to identify the potential effects of the project on people, the environment and the economy. It further proposes mitigation measures to be taken to diminish or eliminate potential adverse effects and details monitoring procedures to verify the accuracy of the predictions.

The EIS demonstrates to the community that there are no significant harmful environmental effects and the following conclusions can be drawn from the document:

- The assessment is based on science carried out by highly qualified and experienced scientists and engineers rather than conjecture.
- The exaggerated perceptions of the risk of this project are not supported by the science.
- There are no significant negative environmental effects if the mitigation and compensation measures are followed.
- There are several significant positive effects of the project.
- The project will be undertaken by a Proponent who is well financed, experienced, and with an excellent safety, environmental, and community record.
- The project will be reclaimed incrementally, leaving a site landscaped for future development.
- The project will improve the economy and economic diversification in the local area and will contribute to the municipal, provincial and federal tax bases.

The project will create employment beneftits for the community

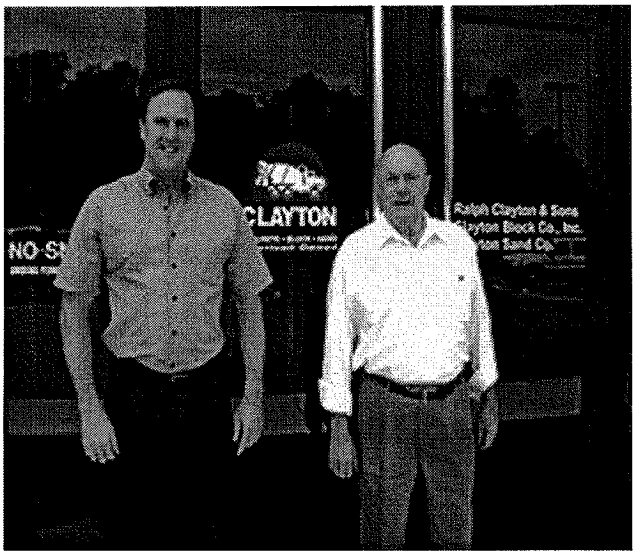
Bilcon will hire local people first for this project. Thirty-four full time positions paying in the range of $13.75 to $20.00 an hour will be created during the normal operation of the quarry.

The types of positions available include mechanics, general labourers, electricians, welders, quality control technicians, equipment operators, office clerks, water/quarry truck drivers, plant operator, rock drillers and environmental technicians

These 34 people will work full time, with some reduction of the work force depending on weather conditions.

Between 60 and 85 construction jobs will be required to build the Whites Point Quarry and Marine Terminal. At an annual salary of $30,000 year, over $1.5 million will be earned by Digby County construction workers alone.

Bilcon will invest $40.6 million in the construction of this project. The funding for this initiative is entirely private - no government investment has been sought.



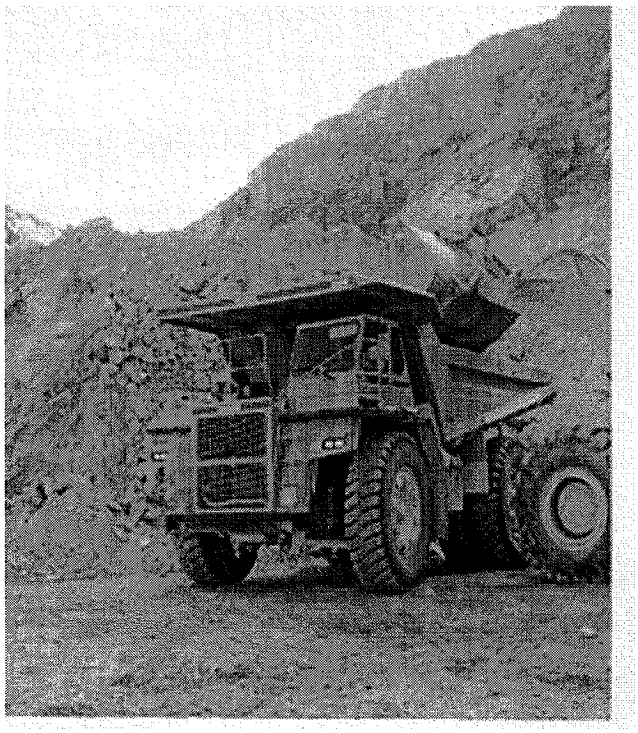
Bill Clayton Jr. and Sr. - Clayton Concrete Block and Sand

Bilcon and its parent company, Clayton Concrete Block and Sand, have a history of doing right by communities.

Bilcon's parent company is widely recognized for its high standards and outstanding corporate citizenship. Bilcon understands the importance of community involvement, having participated as a sponsor of a number of local events and organizations. Bilcon has also provided information and presentations about the project to schools, environmental groups, business groups and the general public.

Bilcon now has an office in Little River.

We will be setting up a series of information meetings at the Towle House in Little River. Watch for advertisements in the Digby Courier and the Clare Shopper for dates and times.



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Proposed Quarry Manpower

First Shift

1	Operations Manager
1	Plant Operator
1	Quarry Operator
2	Quarry Rock Truck Drivers
1	Class A Mobile Equipment Mechanic
2	Ground Labourers
1	Electrician (Back up Plan Operator)
1	Quality Control Technician
1	Fuelman/Greaser
1	Water Truck Driver
2	Misc. Equipment Operators (Bulldozer, Excavator,Cleanup Loader)
1	Office Clerk
2	Welder/repairmen
2	Environmental Positions
1	Occupational Health, Safety, Security and Environment Officer

Second Shift

1	Plant Operator
1	Electrician (Back up Plant Operator)
2	Ground Labourers
2	Welders/repairmen
1	Quality Control Technician
1	Shift Foreman
1	Mechanic/Fuel greaser
1	Face Operator
1	Misc. Operator
2	Quarry Rock Truck Drivers
1	Water Truck Driver

One of the reasons for selecting Whites Cove was the availability of a trained or at least partially trained work force. As of 1998 there were 87 identified quarry sites in Digby county. The general skills for a quarry operation are clearly available in Digby County and Bilcon is committed to hiring locally.

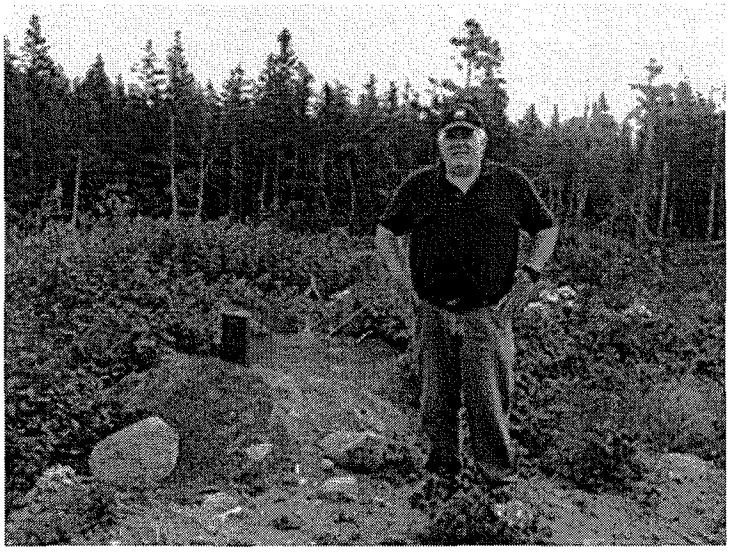
- Bilcon has not received nor will apply for any government funding for the construction and operation of the project.
- Staff will be hired locally on a priority basis and training will be provided by Bilcon at its expense.
- All staff will be paid industry competitive wages.
- Hiring preference will be given to women.
- Great care will be taken to ensure that staffing does not negatively affect local businesses.
- Bilcon will wherever possible purchase supplies in the local area and generally support local business both during construction and operation of the facility.

As Bilcon is still in the environmental assessment process, we are not hiring at this time but welcome inquiries regarding employment and encourage you to submit a resume or application to P.O. Box 2113, Digby, NS B0V 1A0 or visit us at the Bilcon office between 10:00 am and 3:00 pm. Feel free to call us at 245-2567 or email us at bilcon.ns@ns.aliantzinc.ca.

Operations Manager for Whites Point Quarry

John Wall, Operations Manager for Whites Point Quarry and Marine Terminal relocated to the Digby area from New Jersey in August 2006. John is joined by his wife and two daughters. The family looks forward to settling in Digby.

With over 25 years experience in the quarry and mining industry worldwide, John is confident that the project will benefit Digby Neck and area and is looking forward to construction and operation of the Whites Point Quarry and Marine Terminal.



Glad You Asked

We have received a number of questions about the Whites Point Quarry Project. In each newsletter, we'll feature answers to your most recent questions.

I'm concerned about noise

Excessive noise, particularly in rural areas, can have a negative effect on the residents' quality of life.

Concerns have been raised over the level of noise which will generated by the quarry construction and operation, by the blasting which will occur every two weeks during regular operation and by the shiploading operation which will occur once a week.

The Nova Scotia Department of Environment and Labour sets out limits in the Pit and Quarry Guidelines for noise levels at the quarry property line for daytime (65 dBA), evening (60 dBA) and night time (55dBA). Limits are also set out for air concussion at 128 dBA within 7 metres of the nearest structure not located on site. These are the levels which Bilcon must not exceed.

Potential Effects

The noise limits at the quarry property line are set to minimize these effects. For example the maximum noise at the property line of the quarry for evening operation is 60 dBA which is the equivalent of normal conversation at the property line.

Managing Potential Effects

The quarry operation will certainly create some noise during construction, rock processing, blasting and shiploading. To reduce noise levels and to ensure that the standards set by the Department of Environment and Labour are met Bilcon will carry out the following measures:

- The processing plant has been located approximately 1000 metres from the nearest residence and approximately 60 metres below the crest of the North Mountain.
- Rubber lined truck boxes and screens will be used.
- The crushing plant will be enclosed wherever practical.
- Bilcon will employ alternate back up warning devices.
- The preservation zones will remain in a forested condition to provide greater sound absorption.
- Monitoring for operational noise will be conducted at the locations indicated and approved by the Department of Environment and Labour to ensure that the standards are not exceeded.
- Monitoring of all blasts will be conducted at three monitoring stations for concussion and ground vibration to ensure that the standards are not exceeded.

Want to know more?

If you are looking for additional information on any aspect of our project, please visit our website at www.bilcon.ca, contact us by phone at 902 245-2567, or email us at bilcon.ns@ns.aliantzinc.ca

You are also welcome to visit us in person anytime Monday to Friday 10am to 3pm. Our office is located at 305, Highway #303, Suite 3 in the Town of Digby.

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Whites Point Quarry Update

Bilcon's office at theTowle House in Little River

Panel Review Update

The Whites Point Quarry and Marine Terminal Project is presently in an Environmental Review process. Bilcon is now preparing responses to questions raised by the Joint Review Panel, Regulatory Agencies, Responsible Authorities, Interest Groups and the General Public. Bilcon takes seriously all comments and questions brought forward and will be addressing those in the forthcoming detailed response to the Joint Panel. Bilcon expects to submit its responses early in the new year.

Some of the issues that are being addressed in further detail are:

- Ecosystem Approach and Precautionary Principle
- Public Consultation and Community Involvement
- Economy: Employment, Tourism, Fishing, Whale Watching
- Quality of Life, Health and Wellness
- Traditional and Community Knowledge, Heritage Resources, Visual Aesthetics, Property Values
- Construction, Operation and Decommissioning
- Reclamation
- Cumulative Effects

After the responses have been submitted, the Panel, Regulatory Agencies, Responsible Authorities (RAs), Interest Groups and the public will have 15 days to review the comments. Following the review period, the Panel will set a date for public hearings. These hearings are an opportunity for people to ask questions about the project and to receive more information.

While it is difficult to predict timelines, public hearings are anticipated in March, 2007.

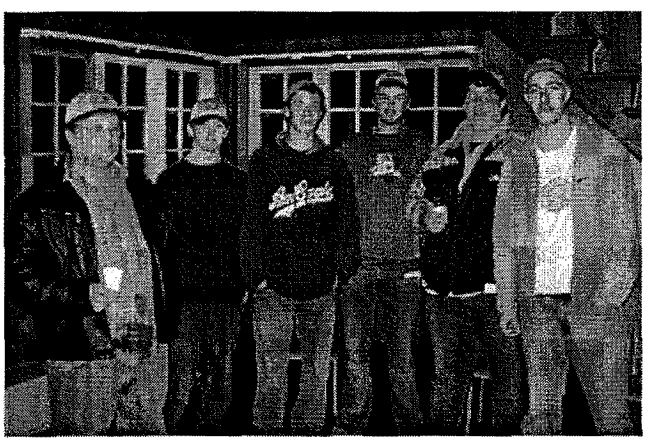
Bilcon will continue to keep the public informed about the Environmental process in the new year.

Bilcon would like to thank all of those who have voiced their support for the Project, and also to those who have shown interest in employment at the quarry.

An update for residents of Digby Neck and surrounding areas
www.bilcon.ca / December 2006

Job Meetings in Little River

Bilcon hosted an employment information meeting on October 2, 2006 at its satellite office in Little River at the request of the young people who live on Digby Neck and Islands. Some community members were under the impression that Bilcon would hire quarry workers "from away" and wanted to meet with Bilcon to clear up any misconceptions. Approximately 22 people attended and discussed job opportunities with John Wall and Paul Buxton. Paul is in charge of the environmental assessment process and obtaining the industrial permit to begin construction, and John is in charge of construction and operations.



Local residents at the job meeting on October 2, 2006

On Nov 15, 2006, Bilcon held another employment information meeting. Notices were placed in the communities of Digby Neck and Islands. Bilcon also invited people who had expressed interest in employment opportunities with Bilcon. Approximately 45 people attended. Discussions surrounded job descriptions, rates of pay, benefits, skills and education required. Residents were also interested in discussing the effects of quarry operations on their community, consequently the topics of discussion turned to subjects such as air quality, noise, surface water, groundwater, wells, aesthetics and light. Both meetings were very positive and Bilcon plans more public information meetings at its office in Little River in the New Year.

Best Wishes for the Holiday Season and a Happy and Prosperous 2007

Want to know more?

If you are looking for additional information on any aspect of our project, please visit our website at www.bilcon.ca, contact us by phone at 245-2567, or email us at bilcon.ns@ns.aliantzinc.ca Our website is in the process of being updated, look for changes in the new year.

You are also welcome to visit us in person anytime Monday to Friday 10am to 3pm. Our office is located at 305, Highway #303, Suite 3 in the Town of Digby.

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Appendix 2
Communications Log

Appendix 2 – Communications Log

April 4th, 2006	Tom Hubley	Walk in	Employment
April 19th, 2006	Claudia Tidd	Email	Informative Website
May 11th, 2006	George Masters	Telephone	Request PLS
May 19th, 2006	Joseph Thibault	Walk in	Employment
May 24th, 2006	Doug Carrigan	Letter – G. Masters	Request PLS
May 26th, 2006	Anonymous	Call	Employment
May 12th, 2006	Lisa Mitchell group	Email	Site Visit
June 8th, 2006	Lisa Mitchell group	Email	Site Visit
June 21st, 2006	Lisa Mitchell Group	Email	Site Visit
June 22nd, 2006	Andy Sharpe	Email	Site Visit
June 23rd, 2006	Mr. Earle	Telephone	Negative feedback
June 27th, 2006	Robert Pettet	Letter/Resume	Employment- Lives in Germany
June 30th, 2006	Barry Conrad	Walk in	Employment
July 3rd, 2006	Mike Arnold	Walk in	Employment
July 3rd, 2006	Anonymous	Telephone	Employment
July 4, 2006	Mike Arnold	Email	employment
July 4th, 2006	Anonymous	Telephone	Employment
July 4th, 2006	Anonymous	Telephone	Employment
July 5th, 2006	Anonymous	Email	Employment
July 5th, 2006	Anonymous	Telephone	Employment
July 7th, 2006	Herbert Deveau	Walk in	Employment
July 10th, 2006	Eldred Guier	Mail	Employment
July 14th, 2006	Mark Barrett	Walk in	Employment
July 14th, 2006	Mr. Farley	Walk in	Employment
July 17th, 2006	Linda Graham	Telephone	Support- is writing letter to panel, will email us first.
July 18th, 2006	Anonymous – Round Hill	Telephone	Employment
July 18th, 2006	Anonymous-woman	Telephone	Employment
July 18th, 2006	Anonymous	Telephone	Employment
July 18th, 2006	Colin Facey	Walk in/resume	Employment
July 18th, 2006	Anonymous-woman (Bill Robichaud on call display	Telephone	Employment
July 18th, 2006	Anonymous- display)	Telephone	Employment
July 18th, 2006	Linda Graham	Email	Letter of support to

Appendix 2 – Communications Log

			the Panel
July 19th, 2006	Matthew Outhouse	Telephone	Employment
July 19 2006	Richard Eldridge	Email	employment
July 19th, 2006	D. Langdale	Email	Support for the Project.
July 20th, 2006	Cory Strong-Bear River	Telephone	Employment
July 20th, 2006	Anonymous	Telephone	Employment
July 20th, 2006	Cory Strong-Bear River	Walk in	Employment
July 21st, 2006	Anonymous	Telephone	Employment
July 21st, 2006	Mark Barrett	Walk in	Returned Employment application – Emailed J. Wall and received a prompt response
July 21st, 2006	Terry Ells	Fax	Resume – Husband
July 21st, 2006	Carolyn Ells	Fax	Resume - Wife
July 21st, 2006	William Robicheau	Walk in	Employment
July 21st, 2006	Ingrid Pruneau	Walk in	Employment
July 27, 2006	Jacqueline Amirault	Email	Ballast water
July 27th, 2006	Donald S. White	Walk in	Employment
July 28th, 2006	Matthew Lent	Walk in	Employment – Lives in Tiverton, doesn't know Don Mullin and wonders why he's speaking for the people of Digby Neck and Islands.
July 30th, 2006	Sue Davis	Email	Wants the newsletter to be printed on recycled paper – email sent telling her it is recycled Domtar Luna Gloss- she also didn't understand the PLS and wanted to know about worst case scenarios
July 31st, 2006	Crystal Haight	Walk in – HRCD	Employment - Shaw

Appendix 2 – Communications Log

		Due Diligence Heavy Operators Course	
July 31st, 2006	Anonymous	Walk in	Employment
July 31st, 2006	Matthew Lent	Walk in	Brought application
July 31st, 2006	Anonymous	Walk in	Quarry Information
Aug 1st, 2006	Charlene Robicheau	Walk in - Wife	Employment - Shaw
Aug 1st, 2006	Jason Gossen	Walk in - Husband	Employment - Irving
Aug 1st, 2006	Mihira Lakshman	Email	PLS Request
Aug 1st, 2006	Anne Smith	Telephone	PLS Request
Aug 2, 2006	Sean Weseloh McKeane	Telephone	PLS Request
Aug 2nd, 2006	Dean and April Gosson	Walk in	Resume- took pl summary, may write to panel
Aug 3, 2006	Corey Strong	Walk in	Resume
Aug 3, 2006	Anonymous	Walk in	Employment
Aug 4, 2006	Faye Andrews	Walk in	Employment
Aug 4, 2006	Heather Cross	Telephone	Request PLSummary
Aug 7, 2006	Donald White	Walk in	Returned application and resume
Aug 10, 2006	Mark Barrett	Walk in	To check on quarry progress
Aug 11, 2006	Anonymous	Telephone	Employment – live in Doucetville
Aug 11, 2006	Greg Dondale	Walk in	Employment
Aug 14, 2006	Rickey Robicheau	Telephone	Employment
Aug 15, 2006	Cory Strong	Email	Employment
Aug 15, 2006	Truman Steele Round Hill	Telephone	Employment
Aug 18, 2006	Lionel Taylor – Little River	Walk in	Employment
Aug 18, 2006	Everett Pyne – Little River	Walk in	Employment
Aug 21, 2006	Kevin O'neil – Rodney's brother	Walk in	Employment- from Digby – Has heavy equip.
Aug 21, 2006	Bryan Simms (Ward Smith)	Walk in – The Forgotten People	Employment – Excavator Ticket, Loader and Truck experience (currently

Appendix 2 – Communications Log

			employed at Elliot in Halifax.
Aug 21, 2006	Matthew Lent	Walk in	Employment – doing his weekly check in
Aug 21, 2006	Lionel Taylor	Walk in	Returned employment application
Aug 23 2006	Cory Strong	Email	Letter in support
Aug 23, 2006	Arnold Doty	Walk in	Employment – update on the quarry – Lee gave PLS and a speech on his responsibility to make his views heard, i.e. Panel, MP, MLA
Aug 29, 2006	Tanya Comeau	Email	Employment consultant in Church Point – asking about employment opportunities
Aug 29,2006	Everett Pyne	Walk in	Employment
Aug 30, 2006	Lois Conner	Email	Doesn't support the project
Aug 30, 2006	Randy Saulnier	Telephone	Employment
Aug 31, 2006	Anonymous	Walk in	support
Aug 31, 2006	Randy Saulnier	Walk in	Employment-brought resume
Sept 1/06	Brad Mansfield	Walk in	Resume
Sept 7, 2006	Mark Barrett	Walk in	Met J. Wall
Sept 11, 2006	Don White	Walk in	Checking on status of Panel Review
Sept 11, 2006	Sandra Freeport Employment Centre	Telephone	Requested faxed copy of Employment Application and discussed ways we accept resumes
Sept 11, 2006	David Hogarth	Walk in	Dropped off employment application and resume

Appendix 2 – Communications Log

Sept 15, 2006	Victoria Outhouse	Telephone	Employment
Sept 20 2006	Gordie O'Neil	Email	employment
Sept 21, 2006	Dwayne Theriault	Walk in	Support – will try to get the young people from Digby Neck to a meeting
Sept 21, 2006	Dwayne Theriault	Email	Letter to the panel - support
Sept 22, 2006	Dwayne Theriault and Stephen Newman	Walk in	Traditional Fishing Knowledge conversation – see notes
Sept 26, 2006	Ken MacPherson – Valley Today Newspaper	Email	Request to do an interview
Sept 29, 2006	Kenneth Alan Clark – Long Island	Telephone	Lost his job at Kenney's fish plant-worked there 7 years. Jr. Theriault told him to call us. Will be in on Tuesday.
Oct 2, 2006	Brandon Comeau	Telephone	Called to ask about meeting on Digby Neck – Tonight at 6:30
Oct 2, 2006	23 people in total	Attendees	Meeting at Towle House - employment
Oct 2, 2006	Jacqueline Titus	Freeport	Meeting at Towle House - employment
	Brandon Comeau	Sandy Cove	
	Clayton Barnaby (?)	Freeport	
	Josh Comeau	Sandy Cove	
	Kyle Ryan	Little River	Called Tony Kelly to ask about his involvement in Stop the Quarry
	Rodney ?	Bear River	
	Kyle Theriault	Little River	
	Joey Newman	Tiddville	

Appendix 2 – Communications Log

	Tyler Nesbitt	Freeport	
	Kaylen Theriault	Digby	
	Matthew ?	Bear River	
	Randy Nesbitt	Freeport	
	Brent Newell	East Ferry	
	Aaron Trask	Gilbert's Cove	
	Tyler Harris	East Ferry	
	Nathan Tidd	Sandy Cove	
	Dwayne Theriault	Little River	
Oct 3, 2006	Kenneth Alan Clark – Long Island	Telephone	Lost his job at Kenney's fish plant-worked there 7 years. Jr. Theriault told him to call us. – called car starter isn't working, desperate for work, gave him a lead at AF Theriault, will be in next week
Oct 4, 2006	Paul Dugas-Weymouth		Employment
Oct 5, 2006	Chris Barrington	Digby	Employment
Oct 12, 2006	Kathy Millett	Telephoned: Digby	Employment - admin – saw the quarry manpower flyer
Oct 12, 2006	Rex and Beula Trask	Little River- Walk in	Re: well letter, supplying the people across the road, wants to sell their property to Bilcon, support the quarry
Oct 13, 2006	Dean Gosson	Seabrook – Walk in	Took the heavy equip course, brought in an updated resume
Oct 14, 2006	Digby Women in Business Tradeshow at Digby Curling Club 10:00 am to 3:00 pm		38 people stopped by the booth – 2 were openly anti quarry-job applications, newsletters, were handed out.
Oct 16, 2006	Paul Dugas-		Employment-

Appendix 2 – Communications Log

	Weymouth		Brought in Resume
Oct 16, 2006	Anonymous	Telephone	Employment - Thought we were up and running and ready to start in Dec. Has her application on file.
Oct 18, 2006	October Newsletter sent out		
Oct 18, 2006	Steven Millett	Fax – Chester Basin, NS	Employment Application
Oct 20, 2006	Don White	Walk in	Employment
Oct 20, 2006	Scott Bush – Waterford	Telephone	Employment Water truck driver Fuel Man/Greaser Occupational Health and Safety Officer
Oct 20, 2006	Judy McGarrett	Telephone	Occupational health and safety officer
Oct 20, 2006	Terry Height	Walk in	employment
Oct 20, 2006	Curtis Addington	Telephone	Would like to have a new well drilled-spoke with Paul Buxton
Oct 20, 2006	Edward Bunker – Brent Newell's cousin	Brent dropped off resume – lives in Dartmouth, but wants to relocate back to the Neck	employment
Oct 23, 2006	Arnold Doty	Email from Alberta where he moved	employment
Oct 23, 2006	Merwin Haight Jr.	Bloomfield	Vice President Agricultural Association of Digby County - Employment
Oct 25, 2006	Scott Milne	Working in BC, application on file	Employment
Oct 26, 2006	Sandra Blandin - Freeport Employment Centre	Walk in	Freeport Employment Centre is closing – she is

Appendix 2 – Communications Log

			looking for work. Was in the militia – transport – encouraged her to look into heavy equipment operator's course
Oct 26, 2006	Cindy Van Tassell - Digby	Walk-in	employment
Oct 26, 2006	Lyle Harris – Clementsvale	Mail	resume
Oct 26, 2006	Brian Thurber - Freeport	Mail	resume
Oct 26, 2006	Bridgette Height - Rossway	Mail	Resume- referred by Jr. Theriault MLA
Oct 27, 2006	Maxwell Amero	Walk in- Digby	resume
Oct 28, 2006	Andrew Lombard	Walk in	employment
Oct 31, 2006	Barry Conrad	Walk in	employment
Nov 1, 2006	Charlie Thibodeau	Walk in	sign
Nov 7, 2006	Bruce Titus	Walk in	sign
Nov 8, 2006	Brad Mansfield –	Walk in	employment
Nov 8, 2006	Kevin Brown	Walk in	resume
Nov 8, 2006	Carolyn Ferguson – Tiverton	Walk in	Job application
Nov 9, 2006	Andrew Lombard	Walk in - Centreville	Resume
Nov 9, 2006	Charles Stewart – Cornwallis	Walk in	Employment
Nov 9, 2006	Shirley Foley – Cornwallis	Walk in	employment
Nov 9, 2006	Anonymous	Walk in	employment
Nov 10, 2006	Vincent Deveau – Meteghan	Telephone/fax	resume