

MACKENZIE GREEN ENERGY CENTRE PROJECT

ASSESSMENT REPORT

With respect to

Review of an Application for an Environmental Assessment Certificate
Pursuant to the British Columbia *Environmental Assessment Act*, SBC 2002, c. 43

and

SCREENING REPORT

With respect to

Requirements of a Screening Report pursuant to the *Canadian Environmental Assessment Act*, SC 1992, c.37

October 17, 2007

**Prepared by:
Environmental Assessment Office**

And

**Canadian Environmental Assessment Agency
Natural Resources Canada**



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EXECUTIVE SUMMARY

Background

The Mackenzie Green Energy Centre Project (Project) is a proposed biomass cogeneration (power and steam) facility to be located in the District of Mackenzie, British Columbia (Figure 1-1) and within the area claimed by Treaty 8 First Nations. The Project is being developed by Mackenzie Green Energy Limited Partnership (Proponent) and was awarded an Electricity Purchase Agreement on July 27, 2006 under BC Hydro's 2006 Open Call for Power.

The Project is designed to burn wood residues from nearby sawmills and pulp mills to produce green power for sale to BC Hydro and high pressure steam for use by local forestry operations. The Project will have a nominal net power output of 59 Megawatts with steam sales of 272 Giga Joules/hour and a peak power output of 75 Megawatts with no steam sales. The use of wood residue will facilitate the closure of, or the reduction of emissions from, Tier 2 beehive burners at sawmills in Fort St. James, Mackenzie, Chetwynd and Bear Lake.

The provision of steam to the adjacent Pope & Talbot pulp mill and, perhaps, the Canfor sawmill, will enable these facilities to reduce the amount of natural gas and wood residues that they would otherwise consume to meet their steam requirements. The Project will be a new facility employing current technologies that are more efficient and have lower emissions than the existing wood and natural gas-fired boiler at the Pope & Talbot Pulp Mill. Existing infrastructure will be used for primary road access, water supply (under Pope & Talbot Water License), waste treatment (Pope & Talbot Environmental Management Permit), delivery of electric power to the grid and access to natural gas.

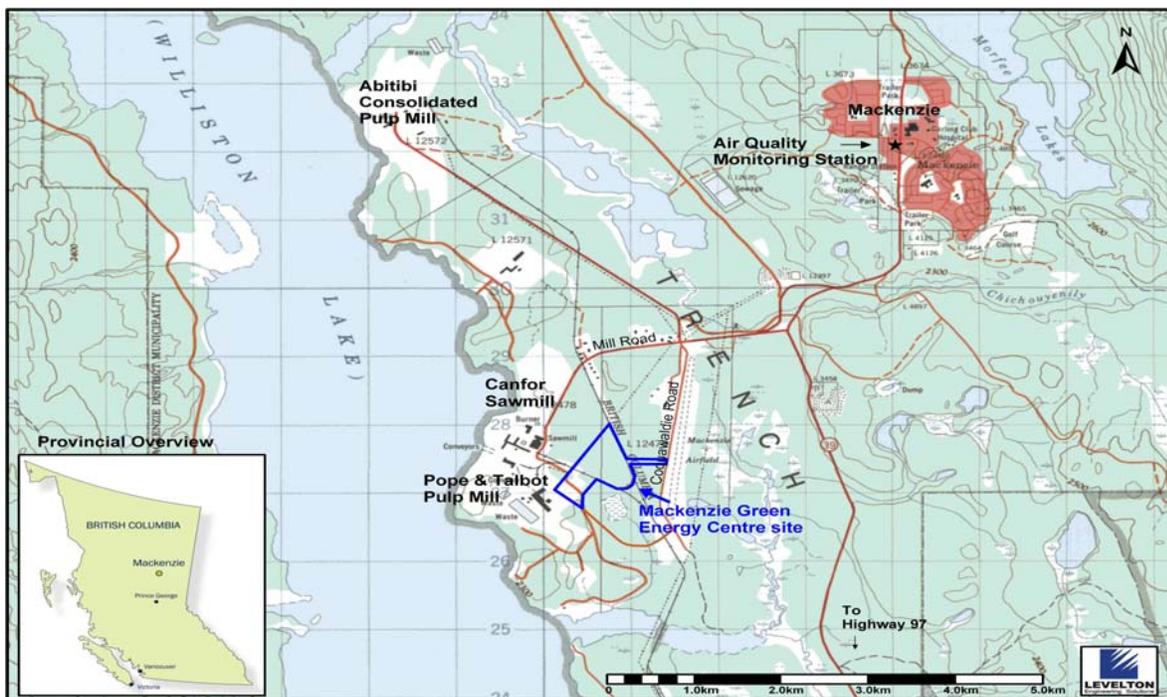


Figure 1-1: General Location of the Project

Environmental Assessment Review Process

The Project is a reviewable project under the British Columbia *Environmental Assessment Act* as it will have a rated nameplate capacity of more than 50 Megawatts.

Pre-Application Stage of Review

Section 10 and 11 Orders were issued to the Proponents by the Environmental Assessment Office on March 9, 2006 and June 19, 2006 respectively. A Working Group, comprised of representatives of First Nations, local and regional governments and provincial and federal agencies was established by the British Columbia Environmental Assessment Office to facilitate the review process.

The draft Application Terms of Reference and the Environmental Assessment Application (Application) were made available for review and comment to the public and members of the Working Group.

Application Stage of Review

During the review of the Application, the Proponent's application for funding under the federal ecoEnergy Renewable Initiative was accepted by Natural Resources Canada. This triggered a federal review under the *Canadian Environmental Assessment Act*. Arrangements were made in June, 2007, for the two review processes to be harmonized. Federal agencies (Canadian Environmental Assessment Agency, Natural Resources Canada, Environment Canada, and Health Canada) joined the Working Group.

The expanded Working Group met on July 18, 2007, to discuss the Proponent's responses to issues raised by First Nations and provincial and local agencies. A draft version of this Assessment Report was circulated to all members of the expanded Working Group on July 30, 2007, for comment and to facilitate the review of the Application by federal agencies. After the submission of comments by Health Canada and Environment Canada, the Environmental Assessment Office, Canadian Environmental Assessment Agency and Natural Resources Canada arranged a meeting on September 7, 2007 with the Proponent, Health Canada and Environment Canada to discuss the Proponent's responses to these agencies' comments.

Comments of all review participants have been incorporated into the Assessment Report, so that it can also serve as the Screening Report under the *Canadian Environment Assessment Act* for Natural Resources Canada, the federal Responsible Authority. The Proponent has confirmed that all commitments identified in the Assessment/Screening Report are accurate.

Scope of the Assessment

The scope of the assessment included the consideration of the potential for environmental, economic, social, heritage and health effects as well as potential impacts on First Nations Treaty rights and other interests, and took into account practical means to prevent or reduce to an acceptable level any potential adverse effects of the Project.

In anticipation that a Federal environmental assessment review might also be required, the scope of the assessment established under the section 11 Order also included consideration of the following factors:

- the environmental effects of the Project, including the environmental impact of malfunctions or accidents that may occur in connection with the Project, and any cumulative environmental effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out;
- the significance of these effects;
- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project;
- comments from the public that are received in accordance with the *Canadian Environmental Assessment Act* and regulations; and,
- any other matter relevant to the screening that the Responsible Authority may require to be considered.

First Nations Consultation

The Project is located within the claimed Traditional Territory of the McLeod Lake Indian Band as determined for the Treaty No. 8 Adhesion and Settlement Agreement. The Project is also located within the territory claimed by the Treaty 8 First Nations, although the Project is west of the boundary recognized by the Province. All Treaty 8 First Nations and the Treaty 8 Tribal Association were notified by the Environmental Assessment Office of the Project at the outset of the environmental assessment review. The McLeod Lake Indian Band, the West Moberly, Sauteau and Fort Nelson First Nations and the Treaty 8 Tribal Association participated throughout the pre-Application and Application review stages and the Halfway River First Nation participated in the Application review stage. As members of the Working Group, the Treaty 8 First Nations and the Treaty 8 Tribal Association were invited by the Environmental Assessment Office to participate in activities including:

- a meeting in April, 2006, to discuss the Project Description;
- review of the draft section 11 Order in May, 2006;
- review of the draft Application Terms of Reference in June, 2006;
- a meeting in May, 2007, to discuss the Application;
- a meeting in July, 2007, to discuss the Proponent's responses to review comments and the draft Assessment Report; and,
- review of the draft Assessment Report.

Throughout the pre-Application and Application stages of review, the Proponent had various meetings and conversations with chiefs, band council members and designated representatives of the First Nations who participated in the review. The Proponent funded an independent consultant, LGL, to assist First Nations with their review of the draft section 11 Order and the draft Application Terms of Reference and co-funded a different independent consultant, Rescan, to assist First Nations with the review of the Application. Shortly after the receipt of First Nations' comments on the draft Application Terms of Reference and the Application, the Proponent responded to each of the issues raised. The Proponent has committed to continue meeting with First Nations throughout the detailed design, construction, operation, and decommissioning of the Project.

During the review of the draft Environmental Assessment Report, some First Nations expressed concern that the assessment of potential effects of the Project on socio-economic conditions, traditional land use and Treaty rights was not adequate. They also stated that due to the large number of projects under review in the Treaty 8 territory, and with their limited staff

resources and capacity, they had not had sufficient time to review the draft Assessment Report. The Environmental Assessment Office is aware of Treaty 8 First Nations' concerns about capacity and has arranged to meet with them in the near future to develop long-term solutions. The Environmental Assessment Office is satisfied that timelines for the review of this Project have been reasonable and that this report adequately addresses the First Nations' issues and concerns related to this Project.

Agency Consultation

Early in the review of the Project, a Working Group was established by the Environmental Assessment Office. The Working Group, chaired by the Environmental Assessment Office, included representatives from the Ministry of Environment, the Ministry of Community Services, the Northern Health Authority, the Regional District of Fraser/Fort George, the District of Mackenzie and the Canadian Environmental Assessment Agency. In addition to providing written comments on the draft Application Terms of Reference, these agencies participated in the review of the Application and in the preparation of the Assessment Report.

Key Issues

During the pre-Application and Application stages of the review, a number of issues were raised by First Nations, the public, and local, provincial and federal government agencies, including potential impacts on:

- air quality due to emissions;
- effluent discharges and leachates on surface water and groundwater quality;
- protection of wildlife and wildlife habitat;
- protection of vegetation, including a wetland;
- traffic volume and effects of truck traffic collisions with wildlife;
- noise levels;
- the ability for First Nations to continue to practice their Treaty rights (fishing, gathering plants, and hunting) in the area of the Project, as part of continuing a traditional mode of life;
- protection of archaeological sites and resources; and,
- the ability for local residents and First Nations to obtain business contracts and employment.

The key issues that were raised are detailed in sections 5.1 and 5.2 (First Nations), 6.3 (government agencies), and 7.3 (public) of this report.

Key Mitigation Measures

In its Application and in response to the comments raised by the Working Group, the Proponent has committed to mitigation and monitoring measures as summarized below and set out in detail in Appendix C, *Compendium of Commitments*:

- implement a plan to conserve soil and existing vegetation during Project construction;
- implement a plan for storm-water management and sediment control during construction;
- ensure that design, operation and monitoring of Project emissions protects air quality;

- conduct a screening level test of emissions of polycyclic aromatic hydrocarbons, dioxin and furan in triplicate in the first year of operation and report the results of this test to Environment Canada and the British Columbia Ministry of Environment;
- utilize design and operating procedures to maintain noise levels below 65 decibels;
- design and operate wood residue storage pile to protect groundwater quality;
- design and operate ash landfill to protect surface water quality and wildlife;
- implement a baseline water quality monitoring program for the domestic sewage treatment plant, ash pond and wetland, and monitor effluent from the ash pond on a quarterly basis for one year;
- monitor groundwater around wood residue storage area and ash landfill;
- construct up to five nesting platforms on site for birds;
- require trucking contractors to report all collisions with large mammals; maintain a record of all collisions and attempt to implement changes in important areas experiencing higher rates of impact;
- consult further with the McLeod Lake Indian Band members who harvest country foods along the Mackenzie to Fort St. James forest service road;
- design and operate the Project to maximize re-use/recycling of process water;
- avoid use of pesticides and herbicides; where possible provide First Nations with a copy of the Landscape Design and Restoration Plan;
- continue to consult with First Nations during Project construction and operation;
- provide information on First Nations businesses to General Contractor;
- provide information on potential jobs and contracts to First Nations;
- provide two “job shadowing” positions for First Nations during construction;
- recognize National Aboriginal Day;
- provide apprentice positions for two First Nations individuals during operation;
- consider any displaced pulp mill employees for employment with the Project;
- encourage construction workers to stay at Camp Watters;
- work with the District, Ministry of Transportation and police on transportation issues; and,
- work with the District and related agencies on provision of adequate services (fire, police, ambulance, emergency response, health and utilities).

Review Conclusions

The Proponent responded to all comments raised by the public and members of the Working Group and made revisions to its proposed Project plans, mitigation measures and monitoring programs as well as other commitments to address the concerns raised. These revisions were reviewed by and discussed with the Working Group, enabling the Working Group to determine whether practical means had been proposed to prevent or reduce any potential adverse effects of the Project to an acceptable level.

Based on the information provided during the review of the Project, the Environmental Assessment Office is satisfied that:

- the Application adequately identified and assessed the potential significant adverse environmental, economic, social, heritage and health effects of the Project; and potential impacts to First Nations’ Treaty rights;
- public and First Nations consultation, and the distribution of information about the Project have been adequately carried out by the Proponent;

- issues identified by First Nations, provincial, federal and local government agencies and the public, which were within the scope of the environmental assessment, were adequately addressed by the Proponent during the review of the Application;
- there will be no adverse impacts on the Treaty Rights of First Nations as a result of the Project; and,
- practical means have been identified to prevent or reduce to an acceptable level any potential adverse effects of the Project.

As a result of this Environmental Assessment, Natural Resources Canada and the Canadian Environmental Assessment Agency have determined that there are no likely significant adverse environmental effects as a result of the Mackenzie Green Energy Project, providing that all proposed mitigation, commitments, including compliance, effects monitoring and follow-up measures are implemented.

Section 13 of this report summarizes the permits, licences and authorizations that may be required for the Project. Under the Act, a proponent may request that applications for provincial approvals under other statutes be processed concurrently with the environmental assessment review of a project. The Proponent did not apply for any such approvals potentially related to the Project.

ARTICLE I. ACKNOWLEDGEMENTS

The Environmental Assessment Office wishes to acknowledge the time and effort contributed to the review of the Mackenzie Green Energy Centre Project by the members of the Working Group. This Group included representatives of the West Moberly First Nations, Sauleau First Nations, McLeod Lake Indian Band, Halfway River First Nation, Fort Nelson First Nation and the Treaty 8 Tribal Association as well as representatives of local and regional governments (District of Mackenzie and Regional District of Fraser-Fort George), provincial agencies (Ministry of Environment, Ministry of Community Services, Ministry of Health – Northern Health Authority and Ministry of Energy, Mines & Petroleum Resources) and federal agencies (Canadian Environmental Assessment Agency, Natural Resources Canada, Health Canada and Environment Canada).

The Environmental Assessment Office also appreciates the interest and input from the members of the public at various stages of the assessment and the effort that Mackenzie Green Energy Limited Partnership has put into all aspects of issue resolution throughout the review.

The Environmental Assessment Office Project team was led by David Parsons, Project Assessment Manager, (following initial Project management by Kim Chollette and Alan Calder) with primary support sequentially from Sara Wilson and Joanna Tombs, Project Assessment Officers, and Amber Sebastian, Chantal Stretten, and Rosa Woolfrey, Administrative Assistants.

Part A Introduction

1 PURPOSE OF THIS REPORT

This Report is a provincial Assessment Report presenting the results of the review of an Application by Mackenzie Green Energy Limited Partnership (Proponent) for an Environmental Assessment Certificate to enable them to construct and operate the Mackenzie Green Energy Centre Project (Project).

This Report is also a federal Screening Report. Although the *Canadian Environmental Assessment Act* was not triggered at the time when the Application was submitted in March, 2007, the Proponent opted to proceed with Project planning as if it were triggered, in the event that a federal renewable energy initiative program was introduced prior to development of the Project. With the announcement of the federal ecoENERGY Renewable Initiative in early 2007, and the acceptance by Natural Resources Canada of the Proponent's application for funding under this program, a federal review was triggered in June, 2007.

Under the British Columbia *Environmental Assessment Act*, the purpose of the provincial Assessment Report is to:

- provide an overview description of the Project;
- summarize the process for the review of the Application;
- report on the adequacy of the public and First Nations consultation, and on the distribution of information on the Project by the Proponent during the review of the Application;
- report on whether the Application has adequately identified and assessed the potential significant adverse environmental, economic, social, heritage or health effects of the Project, including any potential impacts on First Nations Treaty rights and other interests;
- summarize the issues considered during the review of the Application; and,
- determine whether potentially significant adverse effects can be prevented or reduced to an acceptable level through practical means.

Under the *Canadian Environmental Assessment Act*, the purpose of the federal Screening Report is to:

- identify the potential environmental effects of the Project, including the environmental effects of any accidents or malfunctions that may occur in connection with the Project, and any cumulative effects that are likely to result from the Project in combination with other projects or activities that have been, or will be, carried out;
- consider the significance of the effects;
- report on comments from the public; and,
- describe measures that are technically and economically feasible to mitigate any adverse environmental effects of the Project.

The Assessment Report, together with the Application, will be submitted to the Provincial Ministers of Environment and Energy, Mines and Petroleum Resources for their review and decision on whether to issue an Environmental Assessment Certificate for the Project. The Screening Report will be used by the federal Responsible Authority as part of the federal environmental assessment screening decision-making process.

2 PROJECT OVERVIEW

2.1 Proponent

Mackenzie Green Energy Limited Partnership, the Proponent of the Project, is a partnership between Pristine Power Inc., Balanced Power Inc. and Harbert Power LLC.

2.2 Project Purpose

The Project will be a biomass energy cogeneration facility designed to deliver an average of 59 Megawatts of electricity to BC Hydro and approximately 272 Gigajoules/hour of steam to the Pope and Talbot pulp mill and potentially the adjacent sawmill. Up to 1,000,000 tonnes of wood residue from area sawmills will be used as fuel for the Project.

The Project was awarded an Electricity Purchase Agreement on July 27, 2006, under BC Hydro's fall, 2006, Open Call for Power. If it receives an Environmental Assessment Certificate, the Project will deliver 480 Gigawatt hours of electricity annually starting in December 31, 2009, enough to meet the annual needs of approximately 50,000 households over the Project's 30-year lifespan.

The provision of thermal energy (steam) to the adjacent pulp mill and potentially the sawmill, will allow these facilities to decrease their use of wood and natural gas that would have otherwise been consumed to meet their steam requirements, making them more competitive.

2.3 Project Description

Figure 2-1 below shows the anticipated general layout of the proposed Project relative to the existing Pope & Talbot Pulp Mill and the Canfor Sawmill. Figure 2-2 illustrates the configuration of the principal equipment required for the Project.



Figure 2-1: General Layout of the Proposed Project

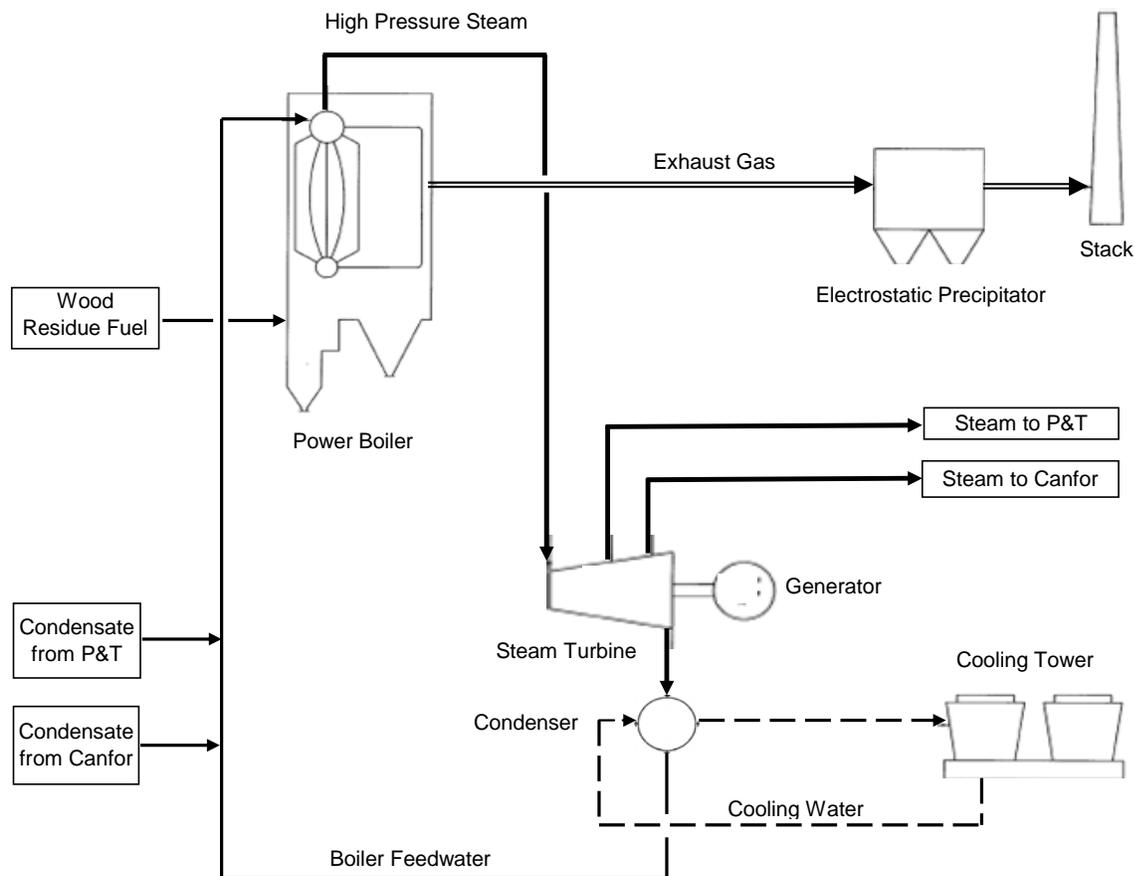


Figure 2-2 Equipment Configuration for the Project

A boiler will be used to combust wood residue for the purpose of generating high pressure steam. A steam turbine generator, fed by steam from the boiler, will be used to produce electrical power. Steam extractions from the turbine will be used to meet steam demands at the pulp mill to offset its use of wood and natural gas in an existing power boiler. Steam may also be used instead of natural gas in wood drying kilns at the adjacent sawmill. Steam condensate will be returned to the cogeneration facility to complete the energy cycle.

The fuel supply will be comprised of wood residue from the Pope & Talbot Pulp Mill and sawmills in Mackenzie, Bear Lake, Chetwynd, and Fort St. James. Forest slash, which is currently burned in open piles, may also be considered as a source of wood residue. It is the intention of the Proponent to use those sources of local wood residue that can be reasonably secured.

The Project will obtain its water supply from the adjacent pulp mill under Pope & Talbot's existing water license. Natural gas for the project will be supplied by Terasen through a short feeder line from an existing gas line. Effluent from the Project will be treated and discharged through Pope & Talbot's existing, permitted facilities. The Project will be electrically connected to the nearby BC Hydro grid by a means of a short transmission line. Access to the facility and the transport of wood residue to the facility will be via existing roadways.

2.4 Project Scope

The scope of the Project, as outlined in the section 11 Order and in Section 3.9 of the Application, includes the following on-site and off-site facilities and activities associated with construction, operation, maintenance and decommissioning:

- a wood residue-fired boiler with supplemental natural gas-firing capability;
- a steam turbine generator capable of producing up to 82 Megawatts (gross) of electricity;
- natural gas-fired auxiliary boilers for backup steam supply;
- steam and condensate pipelines to provide steam to local mills and return condensate to the Project for re-use in the boiler;
- wood residue and primary clarifier sludge unloading equipment, storage area, and reclamation, conveying, and feeding equipment;
- kraft soap storage, handling and feeding equipment;
- particulate matter emission control equipment and stacks for discharge of flue gases;
- a cooling tower;
- an onsite electrical substation and switch gear, and a short power transmission line to connect to the BC Hydro power transmission line;
- a short natural gas feeder pipeline and a metering and regulation station to provide fuel needed for plant start-ups, in case of upsets in wood firing, and for the auxiliary boilers;
- water supply and pipeline from Pope & Talbot under its existing water license;
- wastewater effluent discharge to the advanced effluent treatment system at the Pope & Talbot's Pulp Mill;
- sanitary sewer discharge to Pope & Talbot's sanitary waste treatment system;
- an onsite landfill for disposal of wood ash for the 30-year service lifetime of the Project;
- a building to house the power boiler, auxiliary boilers, steam turbine and ancillary equipment; and,
- primary and secondary truck and vehicle access to the Project site from existing industrial roads.

3 ENVIRONMENTAL ASSESSMENT PROCESS

3.1 Provincial Environmental Assessment Process

Pre-Application Stage

The Project will be capable of generating an average of 59 Megawatts of electricity. Since it has a rated nameplate capacity of 50 Megawatts or more of electricity, it is therefore a reviewable project under part 4 Energy Projects, *Reviewable Projects Regulation* (B.C. Reg. 370/02).

In March, 2006, the Proponent submitted the "Mackenzie Green Energy Centre Project Description" to the Environmental Assessment Office which described the Project and the key potential environmental and social effects of the Project. On March 9, 2006, the Environmental Assessment Office issued a section 10 Order stating that the Project was reviewable under the *Environmental Assessment Act* and that an Environmental Assessment Certificate would be required.

The British Columbia Environmental Assessment review process consists of two stages: pre-application stage and application review stage. Early in the pre-Application stage, the Environmental Assessment Office established a Mackenzie Green Energy Centre Project

Working Group, comprised of representatives of federal, provincial and local government agencies and representatives of the West Moberly First Nations, McLeod Lake Indian Band, Fort Nelson First Nation and the Treaty 8 Tribal Association. The Saulneau First Nations joined the Working Group in June, 2006, and the Halfway River First Nation joined the Working Group in April 2007. The Working Group members are identified in Appendix B.

The section 11 Order issued June 19, 2006, stipulated the scope of the Project, the scope of the assessment and the procedures and methods for the review of the Application and outlined specific procedures for both stages of the assessment, including notification procedures, opportunities for agencies, First Nations and the public to provide comments, and time limits for various steps in the assessment procedure.

Draft Terms of Reference for the Application were prepared by the Proponent and submitted to the Environmental Assessment Office on May 26, 2006. The Draft Terms of Reference were made available for review by representatives of government agencies and First Nations for comment, prior to their approval by the Environmental Assessment Office. The public were consulted on the draft Terms of Reference through a 30-day, pre-Application public comment period held from June 22 to July 21, 2006. The Final Application Terms of Reference were approved by the Environmental Assessment Office on January 31, 2007.

On March 5, 2007, the Proponent submitted its Application to the Environmental Assessment Office for evaluation. The Application was evaluated against the Approved Application Terms of Reference and was accepted for review on April 5, 2007. The Proponent's plans for consultation with First Nations and the public, as outlined in the Application, were also evaluated and determined to be acceptable to the Environmental Assessment Office.

Application Stage

The Application review process was initiated on April 20, 2007, when copies of the Application were received for review by all Treaty 8 First Nations, Working Group members and the Environmental Assessment Office. In addition to the members of the Working Group that had participated in the pre-application stage, a representative of the Halfway River First Nation and federal representatives of the Canadian Environmental Assessment Agency, Natural Resources Canada, Environment Canada and Health Canada also participated in the review of the Application.

A 30-day public comment period was held during the Application review stage from May 4, 2007, to June 3, 2007. Provincial, local and regional agencies and First Nations were asked to provide their comments by June 20, 2007.

The Proponent's responses to comments from First Nations and provincial, local and regional government agencies were posted on the Environmental Assessment Office website and distributed to members of the Working Group for review and determination of the adequacy of the Proponent's responses.

During the review of the Application, the Proponent's application for funding under the federal ecoEnergy Renewable Initiative was accepted by Natural Resources Canada. This triggered a federal review under the *Canadian Environmental Assessment Act*. Arrangements were made in June, 2007, for the two review processes to be harmonized. Federal agencies (Canadian Environmental Assessment Agency, Natural Resources Canada, Environment Canada and Health Canada) joined the Working Group.

Members of the Working Group attended meetings with the Environmental Assessment Office and the Proponent on several occasions to discuss the Application and to discuss the Proponent's responses to review comments.

3.2 Federal Environmental Assessment Process

The Canadian Environmental Assessment Agency is the legal basis for the federal environmental assessment process. The *Canadian Environmental Assessment Act* outlines the responsibilities, requirements and procedures for the assessment of projects and establishes a process for assessing the potential environmental effects of projects in which the Government of Canada has a decision-making responsibility.

The *Canadian Environmental Assessment Act* is a planning tool to identify, understand, assess and mitigate, where possible, the environmental effects of a project. A project is subject to this Act where a federal authority requires a project to be carried out by:

- proposing a project;
- selling, leasing, or otherwise transferring control or administration of federal land;
- contributing money or any other form of financial assistance to a project; or,
- exercising in relation to the Project a regulatory duty (such as issuing a license, permit or approval) that is included in the related *Law List Regulations*.

In January, 2007, Natural Resources Canada announced the ecoEnergy Renewable Initiative, a program that provides funding to Canadian utilities, businesses, municipalities, institutions or organizations to increase Canada's supply of clean electricity from renewable sources such as wind, biomass, low-impact hydro, geothermal, solar photovoltaic and ocean energy.

The Proponent's application for funding under the program was approved on June 14, 2007, and triggered a review under the *Canadian Environmental Assessment Act*. Natural Resources Canada was designated as the Responsible Authority for the Project and determined that the Project required a screening level assessment. The other federal agencies reviewing and providing comment on the Application were Environment Canada and Health Canada. The federal Notice of Commencement confirming the scope of the Project for the assessment was posted on the Canadian Environmental Assessment Agency Registry website on July 24, 2007.

Before the Responsible Authority can make a decision to allow the Project to proceed in whole or in part, it must ensure that an environmental assessment is carried out and that a screening report is prepared, and they must consider the environmental assessment findings before taking a course of action as per section 20(1) of the *Canadian Environmental Assessment Act*. The conclusions of the Responsible Authority (Natural Resources Canada) are summarized in Section 15 of this report.

3.3 Harmonized Federal/Provincial Environmental Assessment Process

The provincial and federal legislation both enable agreements between jurisdictions in order to reduce or eliminate overlap and duplication. Using a framework developed by the Council of Ministers of the Environment, the federal and provincial governments have negotiated the "Canada-British Columbia Agreement for Environmental Assessment Cooperation (2004)". Under this bilateral agreement, projects that require a review under both federal and provincial environmental assessment legislation, such as the Project, undergo a single, harmonized assessment meeting the legal requirements of both governments while maintaining the existing roles and responsibilities of each level of government.

In the case of this Project, the assessment has been led by the Environmental Assessment Office. A project work plan was developed at the outset of the Pre-Application stage of the review to identify the process for a harmonized review, but could not be implemented until the ecoENERGY Renewable Initiative had been announced and the Proponent's application for funding had been submitted and approved. Federal agencies were invited to comment on key documents prepared by the Proponent including the draft Application Terms of Reference and the Application, and were also invited to participate in the interagency Working Group to ensure that issues of federal concern were identified in the review of the Project.

The federal Responsible Authority and the Environmental Assessment Office jointly produced this report which meets the requirements for an Assessment Report under the British Columbia *Environmental Assessment Act* and a Screening Report under the *Canadian Environmental Assessment Act*. Each government will make its individual decision regarding approval of the Project based on the shared information gathered and analyzed through the cooperative review process.

3.4 Scope of Assessment

On June 19, 2006, the Environmental Assessment Office issued a procedural Order under section 11 of the Act specifying the scope of the assessment to be undertaken for the Project. The scope of the assessment included the consideration of the potential for environmental, economic, social, heritage and health effects, including potential effects on First Nations Treaty rights and other interests, and was to take into account practical means to prevent or reduce to an acceptable level any potential adverse effects of the Project.

In anticipation that a federal environmental assessment review might also be required, the scope of the assessment established under the section 11 Order also included consideration of the following factors:

- the environmental effects of the Project, including the environmental impact of malfunctions or accidents that may occur in connection with the Project, and any cumulative environmental effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out;
- the significance of these effects;
- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project;
- comments from the public that are received in accordance with the *Canadian Environmental Assessment Act* and regulations; and,
- any other matter relevant to the screening that the Responsible Authority may require to be considered.

3.5 Working Group

Working Groups are used by the Environmental Assessment Office as the primary source of policy and technical expertise for considering issues identified during project assessments.

Working Group members undertook the following activities, based on the mandate of the organizations they represent:

- reviewing and commenting on drafts of the section 11 Order;

- reviewing and commenting on drafts of the Application Terms of Reference;
- reviewing and commenting on the Application;
- providing advice on issues raised during the course of the assessment of the Project; and,
- providing advice on the assessment findings to be reported to provincial Ministers and the federal Responsible Authority (Natural Resources Canada) at the conclusion of the environmental assessment.

Part B Information Distribution and Consultation

4 ACCESS TO REVIEW DOCUMENTATION

Copies of the Project Description, draft Application Terms of Reference and the Application were provided to Treaty 8 First Nations, the Treaty 8 Tribal Association, and local, regional, provincial and federal agencies that participated in the review. The draft Application Terms of Reference and the Application were also made available to the public at the Mackenzie Public Library during each public review and comment period. The Application was also made available in the Chetwynd Library.

The Environmental Assessment Office maintains an electronic Project Information Centre, available through the Environmental Assessment Office website, www.eao.gov.bc.ca, for the purpose of facilitating public access to information on projects under review. The section 10 and section 11 Orders, the Project Description, the draft and final Application Terms of Reference, the Application and notices advising the public of opportunities to review and comment on the draft Terms of Reference and the Application were posted on this website. Other information related to the review of the Project (such as First Nations, agency and public comments on the Environmental Assessment Application and the Proponent's responses to these comments) was also posted. This includes the documentation and correspondence received from the Proponent about the Project listed in Appendix A.

Information on the Project was also made available to the public through the federal environmental assessment process at the office of the Canadian Environmental Assessment Agency and the Canadian Environmental Assessment Registry website, www.ceaa-acee.gc.ca. The Notice of Public Commencement for the Project was posted on July 24, 2007.

The Application was also available on the Project web site set up by the Proponent at www.mackenziegreenenergy.ca.

5 FIRST NATION CONSULTATION

5.1 Pre-Application Stage

Measures Undertaken by the Proponent

The Proponent held an introductory meeting with the McLeod Lake Indian Band in the summer of 2005 to provide a broad overview of the status of the proposed Project, to solicit input regarding issues of concern, and to determine the McLeod Lake Indian Band's desired level of involvement in the environmental assessment review of the Project.

Throughout 2006 and early 2007, the Proponent had various meetings and conversations with the Project team, Chiefs, band council members and designated representatives of the Fort Nelson First Nation, McLeod Lake Indian Band, Sauteau First Nations and West Moberly First Nations (as identified in Section 2.2.1.2 of the Application).

The Proponent funded an independent third party consultant, LGL, to assist First Nations with their review of the draft section 11 Order and the draft Application Terms of Reference.

Shortly after the receipt of First Nations' comments on the draft Application Terms of Reference, the Proponent responded to each of the issues raised. These responses were incorporated in

the draft Application Terms of Reference and reviewed by First Nations before the Application Terms of Reference were finalized by the Environmental Assessment Office.

The Proponent also had several discussions with the Tsay'Keh Dene, Kwad'acha and Nak'azdli First Nations regarding the potential economic opportunities that might come out of the development of the biomass cogeneration facility.

Measures Undertaken by the Environmental Assessment Office

The Project is located within the Claimed Traditional Territory of the McLeod Lake Indian Band (Figure 5-1) as determined for the Treaty No. 8 Adhesion and Settlement Agreement.

Although the Project is located west of the Treaty 8 boundary recognized by the Province, it is within the area which the Treaty 8 First Nations have claimed as their territory, as defined by the Treaty. Since the Project is situated within the lands claimed by Treaty 8 First Nations, the Environmental Assessment Office invited Treaty 8 First Nations on March 13, 2006, to participate in the review of the Project, including the West Moberly First Nations, Saulteau First Nations, Halfway River First Nation, Doig River First Nation, Blueberry River First Nations, McLeod Lake Indian Band, Fort Nelson First Nation and Prophet River First Nation. Of these, the West Moberly First Nations, Saulteau First Nations, McLeod Lake Indian Band, and Fort Nelson First Nation expressed a desire to be involved in the environmental assessment review process as members of the Working Group. The Environmental Assessment Office also invited the Treaty 8 Tribal Association to participate in the review process and the Treaty 8 Tribal Association agreed to do so.

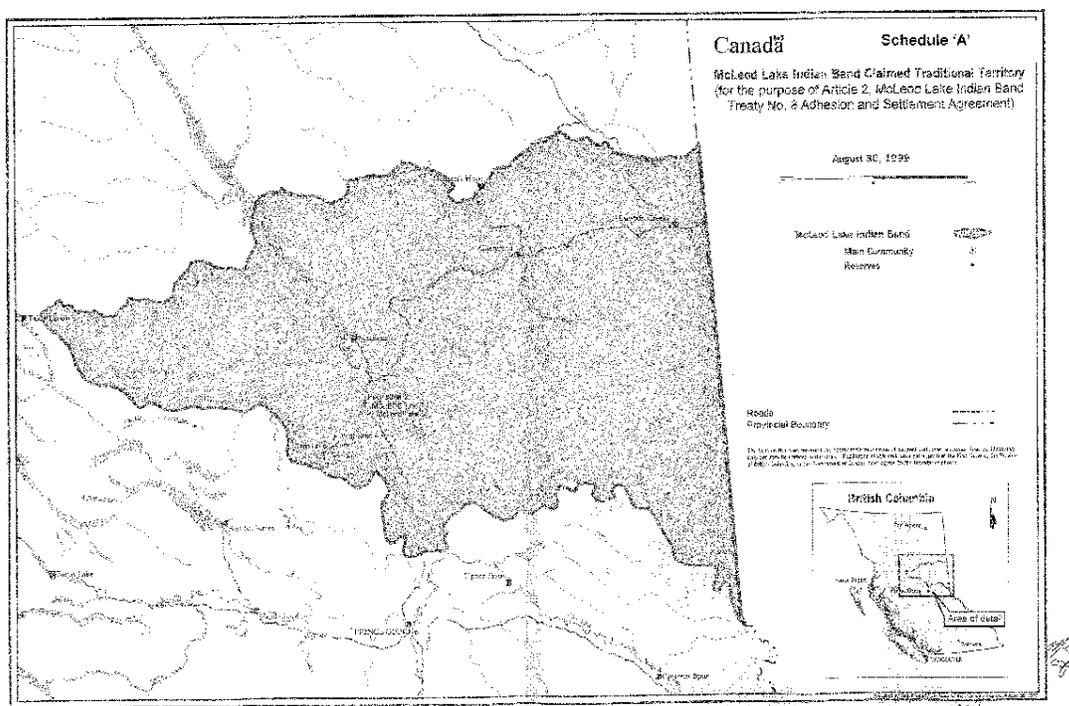


Figure 5-1: McLeod Lake Indian Band Claimed Traditional Territory

The Environmental Assessment Office met with representatives of the West Moberly First Nations, Saulneau First Nations, McLeod Lake Indian Band, Fort Nelson First Nation and the Treaty 8 Tribal Association as part of the first meeting of the Working Group on April 12, 2006, in Prince George. First Nations were invited to comment on the draft section 11 Order and the draft Application Terms of Reference for the Project.

The Environmental Assessment Office also participated in a meeting arranged by the Proponent with the West Moberly First Nations, Saulneau First Nations and Fort Nelson First Nation, as well as the Treaty 8 Tribal Association, to outline the current status of the Project in the environmental assessment review process held July 13, 2006, in Moberly Lake, British Columbia.

The Environmental Assessment Office offered funding grants of \$3,000 to each First Nation to offset some of their costs of participating in the pre-Application review.

As members of the Working Group, First Nations representatives attended meetings in April, 2006, with the Environmental Assessment Office and the Proponent to discuss the Project description. Working Group members, including First Nations also reviewed and provided comments on the draft Application Terms of Reference.

First Nations Feedback

The main issues raised by the First Nations during the pre-Application stage pertained to:

- appropriate recognition of Treaty 8 First Nations, lands and rights through the Application;
- clarification of procedures that will be used for consultation with First Nations;
- clarification of terms such as 'project footprint', 'zone of influence', 'project disturbed area';
- the need for First Nations to be involved in the identification, evaluation and selection of mitigation measures;
- clarification of procedures for determining the significance of Project effects to First Nations;
- the selection of Valued Environmental Components that are culturally sensitive and appropriate;
- the nature of socio-economic impact assessment procedures with respect to First Nations;
- determination of the importance of wetland to migratory birds;
- effects of increased truck traffic on wildlife;
- effects of Project on air quality;
- protection of sensitive vegetation;
- employment opportunities;
- business opportunities; and,
- Treaty 8 rights to use Treaty 8 lands.

5.2 Application Review Stage

Measures Undertaken by the Proponent

The Proponent continued its consultation program with First Nations throughout the Application stage of the review, as outlined in section 2.2.2 of the Application.

The Proponent provided detailed responses to each of the concerns outlined in the Independent Consultant's Report (summarized in Appendix D1). The Proponent discussed these responses with First Nations at the July 18, 2007, Working Group Meeting. At this meeting, First Nations agreed that the Proponent had satisfactorily addressed all of their concerns.

Throughout the Application review phase, contact was maintained with the McLeod Lake Indian Band, West Moberly First Nations, Sauteau First Nations, and Fort Nelson First Nation. E-mails were also sent and phone calls made to the Halfway River First Nation to provide updates and information. Discussions during this phase focused on the open house, working group meeting and means through which to provide project information to First Nations members. The Proponent contributed a major share of the fee for an independent consultant that was retained to assist the First Nations with their review of the Application.

Although the scheduled open house at the Sauteau First Nations community was cancelled due to a death of an Elder, meetings were later held on July 9, 10 and 11, 2007, with the Chief and Council of McLeod Lake Indian Band, Sauteau First Nations, and West Moberly First Nations.

In lieu of these meetings, a newsletter was prepared by the Proponent and distributed during the Application review phase. The newsletter provided information on the following areas:

- Project Overview
- Fuel Supply
- Project Studies
- Employment
- Business Opportunities
- Air Quality
- Water Quality and Water Use
- Traditional Use
- Treaty Rights
- Project Schedule
- Contact Information

As the First Nations indicated that they would prefer to receive the copies of the newsletter and distribute it to their members rather than have the Proponent mail the copies directly to the members, the Proponent sent copies of the newsletter to the First Nations band offices via Canada Post Express on July 11, 2007, (McLeod Lake Indian Band – 300 copies; Sauteau First Nations – 250 copies; West Moberly First Nations – 125 copies). Fort Nelson and Halfway River were also contacted regarding interest in having the Proponent distribute the newsletter to their membership, but neither responded to this enquiry.

The Proponent offered to meet with the Chief and Councils of McLeod Lake Indian Band and the Sauteau, West Moberly, Fort Nelson, and Halfway River First Nations and, as noted earlier, meetings were held with the Sauteau and West Moberly First Nations and the McLeod Lake Indian Band.

A presentation to the McLeod Lake Indian Band office was made on July 9, 2007. The presentation was attended by the Chief, Councillors and the Governance Officer. Key points of discussion included:

- Traffic volumes
- Cumulative effects
- Required certification
- Governance of MGEC
- Effect of Canfor shut down
- Waste management
- Ongoing environmental reporting
- Potential economic benefits

A presentation was made by the Proponent on July 10, 2007, to the Saluteau First Nations. The presentation was attended by the Chief, Councillors, the Lands Manager and the Industrial Relations Manager. Key points of discussion included:

- Location of similar plants
- Project status
- First Nations hiring policy
- Greenhouse opportunities
- Definition of hog fuel
- Trucking opportunities
- Use of pine beetle killed wood
- Contracting opportunities
- Apprenticeship positions
- Job shadowing

Similarly, the Proponent made a presentation on July 11, 2007, to the West Moberly Lake First Nations. The presentation was attended by the Chief and Councillors. Key points of discussion included:

- Effect of Canfor closure
- Carbon dioxide emissions
- Closure of beehive burners
- Use of Canfor Chetwynd waste
- Monitoring of ash runoff/means for addressing potential problems
- Alternative uses for ash
- Water usage volumes, source
- Definition of sludge
- Landfill capping
- Fuel volume
- Fuel source
- Project status
- Project benefits
- Query re previous questions sent
- Future meetings
- Presentation of West Moberly position in Application (environmental concerns and economic benefits)

Measures Undertaken by the Environmental Assessment Office

The Treaty 8 First Nations and Treaty 8 Tribal Association representatives on the Working Group were asked to assist the Environmental Assessment Office in its evaluation of the Application and the adequacy of the Proponent's pre-Application consultation program with First Nations.

An independent consultant, Rescan Environmental Services Ltd., was retained by the Environmental Assessment Office and the Proponent to assist First Nations with the review of the Project during the Application review stage. The McLeod Lake Indian Band confirmed they would not require the assistance of the independent consultant.

The Environmental Assessment Office also offered funding grants of \$2,000 to each First Nation to offset some of their costs of participating in the Application review.

Due to limited resources and time, First Nations were unable to complete their evaluation of whether the Application met the requirements of the Terms of Reference within the 30-day legislated time frame. The Application was accepted for review on April 5, 2007, but the Environmental Assessment Office arranged for the First Nations to have an opportunity to provide additional evaluation comments on the Application at the first Working Group meeting during the Application review stage. The Environmental Assessment Office also concluded that the Proponent's consultation program and the Application were complete and acceptable.

Following acceptance of the Application, copies were sent to all Treaty 8 First Nations and the Treaty 8 Tribal Association. The Environmental Assessment Office asked each First Nation to indicate if it wished to participate on the Working Group for the review of the Application. The Fort Nelson First Nation, Halfway River First Nation, McLeod Lake Indian Band, Sauleau First Nations, and West Moberly First Nations and the Treaty 8 Tribal Association confirmed that they would participate in the Application review.

The participating First Nations, the Treaty 8 Tribal Association and the independent consultant were invited to attend a Working Group Meeting on May 15, 2007, to discuss the First Nations evaluation comments and initial concerns regarding the Application. A Project site visit was also held on May 15, 2007, with members of the Working Group, including the independent consultant.

The Environmental Assessment Office met with the Chief and Council and representatives of the West Moberly First Nations, and a representative of the Halfway River First Nation, on May 16, 2007, to further discuss First Nations concerns regarding the environmental assessment review of the Project.

First Nations Feedback

The main issues raised by the First Nations during the review of the Application included potential biophysical and socio-economic impacts of the Project, including:

- ash analysis, characteristics, disposal and/or re-use;
- potential presence of contaminants in wood residue;
- nature and selection of Valued Environmental Components;
- better definition of transportation routes relative to traditional territories of First Nations;
- identification of business opportunities for First Nations in each phase;
- potential for salvage of materials during decommissioning of the facility;
- potential impacts of a potential Canfor mill closure on viability of the Project;
- description of cogeneration plant emissions;
- clarification of results of dispersion modelling;
- estimates of greenhouse gas emissions from trucks transporting wood residue;
- effects of using beetle-killed wood on plant operation and emissions;
- soil monitoring, assessment and mapping;
- potential effects of the Project on water quality in Williston Lake;
- wetlands toxicity testing;
- potential effects of the Project on vegetation and wildlife habitat;
- potential for the site to act as an attractant for wildlife and the need for perimeter fencing;
- potential impact of trucks transporting wood residue on caribou;
- potential for swans (a spiritual animal to First Nations) to be affected by the Project;
- use of pesticides and herbicides on the site;
- use of native vegetation at the site;
- socio-cultural information and business opportunities;
- links to Official Community Plans; and,
- need for First Nations to be involved in Traditional Use and Knowledge studies.

First Nations and the Independent Consultant participated in the July 18, 2007, Working Group meeting to:

- review the Proponent's responses to agency and First Nation comments;
- discuss how the federal review of the Project would be harmonized with the provincial review process; and,
- discuss how the Assessment Report would be prepared.

At this meeting, it was concluded that the Proponent's responses to all issues raised were appropriate and that each issue had been addressed in a satisfactory manner.

Following this meeting, the Environmental Assessment Office asked the First Nations and the Treaty 8 Tribal Association to provide comments on several versions of the draft Assessment Report. While several of the Treaty 8 First Nations requested additional time to review the final draft Assessment Report because of capacity limitations and the workload of multiple projects in the Treaty 8 area, the Environmental Assessment Office responded that it was satisfied that the Project timelines and review process for this Project had been reasonable, particularly given the nature of this Project which is expected to have environmental benefits and does not appear to have any significant adverse impact on First Nation interests. Furthermore, the Environmental Assessment Office considers that this report adequately addresses the First Nations issues and concerns related to this Project as outlined in the final Application Terms of Reference.

All of the Project-related issues raised by the First Nations have been addressed by the Proponent. Further details of these issues are provided in Sections 9 and 10 of this report and in Appendix D.

6 CONSULTATION WITH GOVERNMENT AGENCIES

6.1 Consultation During the Pre-Application Stage

Measures Undertaken by the Proponent

The Proponent worked closely with government agencies throughout the environmental assessment review process. During the pre-Application period, consultation focused on discussing the Project and the draft Application Terms of Reference with the individual government agencies and the Working Group.

During the pre-Application review period, the Proponent met or held discussions with:

- local government (District of Mackenzie and Regional District of Fraser-Fort George);
- provincial agencies (Ministry of Environment, Ministry of Energy, Mines and Petroleum Resources, Ministry of Forests, Environmental Assessment Office, British Columbia Treaty Commission); and,
- federal agencies (Canadian Environmental Assessment Agency, Canada Mortgage and Housing Corporation, Environment Canada, Indian and Northern Affairs Canada, Human Resources and Social Development Canada, Natural Resources Canada).

Consultation Undertaken by the Environmental Assessment Office

At the outset of the pre-Application review period in 2006, local, regional, provincial and federal agencies were notified of the Proponent's plans to develop the Project and were invited to

become members of the Working Group. The District of Mackenzie, the Regional District of Fraser-Fort George and the provincial Ministries of Environment (Environmental Protection Division), the Northern Health Authority, Community Services and Energy, Mines and Petroleum Resources (Electricity and Alternative Energy Division) participated throughout the review. Federal agencies (Canadian Environmental Assessment Agency and Natural Resources Canada) were made aware of the Project at the outset of the review, but since there was no trigger, they did not participate actively in the pre-Application stage.

During the pre-Application period, a number of questions were raised and items identified for inclusion in the Application Terms of Reference to ensure that all aspects of the project and potential effects were adequately assessed. A summary of the items raised by government agencies with respect to the draft Application Terms of Reference is presented below:

- facility design;
- sanitary sewer, effluent and water systems;
- emission control technologies;
- hog fuel handling and storage;
- ash handling;
- modelling criteria/details for air quality assessment;
- water quality monitoring;
- employee housing;
- Environmental Management Plans;
- waste management;
- site selection; and,
- economic impact.

6.2 Consultation During the Application Review Stage

Measures Undertaken by the Proponent

During the Application review period, consultation with government agencies occurred through:

- participating in the Working Group meetings held in Mackenzie and Fort St. John;
- participating in the Application review Open House held in Mackenzie;
- meeting with agencies to discuss project updates and specific concerns;
- submission of responses to questions raised during the Application review period; and,
- meeting with federal agencies in Vancouver to assist them in their review of the Application.

Measures Undertaken by the Environmental Assessment Office

During the Application review period, the Environmental Assessment Office continued to consult with government agencies through:

- leading Working Group meetings in Mackenzie and in Fort St. John;
- participating in an Application review Open House held in Mackenzie;
- meeting with the Canadian Environmental Assessment Agency, Natural Resources Canada and Health Canada, in Vancouver, on June 20 and July 11, 2007, to harmonize the environmental assessment reviews;

- meeting with Health Canada, Environment Canada and the Proponent to discuss specific concerns;
- facilitating the review of the Application by federal agencies; and,
- discussing drafts of the Assessment Report with local, provincial and federal agencies.

6.3 Agencies' Issues and Concerns

A number of technical issues were raised during the review of the Application by the Ministry of Environment, including the need for further information on:

- emission control technologies;
- how the use of beetle-killed wood might affect Project design;
- the expected moisture content of bottom ash;
- how the use of kraft soap might affect sulphur dioxide emissions;
- the lining of perimeter ditches and detention pond;
- the compatibility of a bentonite liner with the pH of the ash landfill;
- plans for any on-site maintenance of vehicles;
- how spills of fuel from vehicles will be prevented;
- the assessment of the site of the former PCB storage building;
- the plan for disposal of hog fuel in the existing landfill;
- the need to use the backup boilers for 7% of the time;
- how effluent from the ash landfill and hog fuel pile will be treated;
- whether it would be sensible to increase the depth of the ash pond prior to start-up;
- the applicability of a cedar leachate study in Mission to this Project; and,
- the operating and monitoring plans for the wetland.

Issues raised by the Northern Health Authority included:

- ability of Pope & Talbot sewage treatment system to accept flows from the Project;
- ability of Pope & Talbot water supply system to provide water to the Project;
- source of potable water for the Project; and,
- nature of any food handling services at the Project.

During the review of the Application, Health Canada raised several issues, including:

- assessment of the potential impact of the Project on country foods harvested by hunting, fishing or small scale farming, and produce grown in vegetable gardens and orchards or from naturally occurring sources;
- assessment of the potential impact of road dust, from increased truck traffic, on plants harvested for food;
- evaluation of the potential contribution of the Project to atmospheric deposition on plants gathered for food;
- impact of the Project on the availability of wild game for hunting, due to increased trucks on the roads and wild game being killed by large transportation vehicles;
- a recommendation that the Proponent undertake an analysis of the effects of the Project on ground level ozone;
- the inclusion of parameters such as polycyclic aromatic hydrocarbon, dioxins and furans in the air quality monitoring plan;
- an explanation of how the Proponent will ensure it is not accepting treated or contaminated wood as a fuel source to operate the cogeneration facility;

- an explanation of why air quality modeling did not consider the start-up of the Project operation, which would occur throughout the year, after maintenance or malfunction;
- provision of information on the differences between air emissions from kraft soap, clarifier sludge, and wood residue;
- an explanation of the maximum percentage of kraft soap and clarifier sludge that could enter the boiler, and how a higher percentage might change the composition of the emissions;
- inclusion of a section in the Environmental Management Plan that deals with the potential escape of leachate from the ash landfill or wood residue storage area detention pond;
- a more detailed explanation of the groundwater well monitoring plan in the Environmental Management Plan, with information on the number of years monitoring will be carried out, parameters tested, frequency of monitoring, trigger concentrations for action and type of action taken; and,
- an assessment of whether sound levels related to the Project could have an impact on human health and may need mitigation.

Issues raised by Environment Canada included:

- recognition that the Pope & Talbot pulp mill would likely be subject to new federal regulations under the Clean Air Regulatory Agenda and that the “business-as-usual” scenario would likely involve significant reductions in emissions from this facility;
- provision of additional rationale for the determinations of Best Available Control Technology for carbon monoxide, nitrogen oxides and volatile organic compounds;
- provision of an explanation of why it is not necessary to further mitigate nitrogen dioxide emissions;
- potential need to establish a permit level and monitoring program for sulphur dioxide;
- provision of information on the design emission rate for volatile organic compounds;
- provision of information on the proposed boiler design;
- provision of an explanation as to why primary clarifier sludge is currently land filled and why it will be co-fired if the Project proceeds;
- description of the precautions that will be taken when co-firing sludge to avoid emissions of polycyclic aromatic hydrocarbon, carbon monoxide, particulate matter and other pollutants;
- additional information on the composition of feed materials;
- clarification of what is meant by “good combustion practice”;
- need for a commitment to implement measures that will minimize emissions of dioxins, furans, polycyclic aromatic hydrocarbon and other hazardous pollutants;
- the inclusion of parameters such as polycyclic aromatic hydrocarbon, dioxins and furans in the air quality monitoring plan;
- recommendation to increase stack testing to a quarterly basis for several years;
- clarification of any measures to keep wood waste as dry as possible;
- assessment of effects of sulphur dioxide and nitrogen oxides emissions on secondary particulate matter;
- assessment of effects of truck transport on air quality, particularly diesel particulates;
- assessment of effects of particulate emissions from natural gas backup boilers;
- explanation of effects of operational problems on maximum hourly emissions;
- clarification of whether there are any commitments to shut down the Pope & Talbot power boiler or the “beehive burners” at any sawmills if the Project goes ahead or if the mountain pine beetle epidemic could affect the closure of any of these burners;

- recommendation to consider additional measures should fugitive dust become a concern during operation;
- evaluation of the potential impacts of additional road dust on sensitive receptors;
- recommendation that carbon monoxide be monitored on a continuous basis;
- clarification of whether wood waste is expected to be from sustainably managed forests;
- questioned whether facility would meet Environmental Choice Program certification for Electricity-Renewable Low-Impact;
- clarification of mountain pine beetle epidemic with respect to assessment of cumulative effects;
- provision of improved estimate for mercury in emissions and whether additional control or pollution prevention options should be considered;
- provision of field study programs and results for migratory birds;
- provision of summary of the observations and recommendations within areas designated as wetland;
- indicated requirements of the *Migratory Birds Convention Act* and identified need for nest survey program should project activities overlap with the migratory bird breeding season;
- provide clarification on the swan flyway issue; and,
- provide suggestions regarding off-set initiatives for wildlife, including recommendation for further discussion with Canadian Wildlife Service.

The issues raised by federal government agencies, along with responses from the Proponent, are presented in detail in Appendix E.

7 PUBLIC CONSULTATION

7.1 Consultation during the Pre-Application Stage

Consultation Measures Undertaken by the Proponent

The Proponent's pre-Application public consultation activities were initiated in early 2006, mainly within the District of Mackenzie, the closest community to the Project area.

The Proponent held numerous meetings and corresponded with stakeholders and elected officials during the pre-application stage. In addition, the Proponent participated in community meetings with local residents, businesses and the Chamber of Commerce. In preparing its Application, the Proponent continued to meet with the public, local and regional government and key stakeholders in the Project area.

Consultation Measures Undertaken by the Environmental Assessment Office

The Environmental Assessment Office posted the Project description and the section 10 and 11 Orders on its website. The Environmental Assessment Office also established a 30-day public comment period and invited the public to provide comments on the Draft Terms of Reference for the Application from June 22 to July 21, 2006. Notice of the public comment period was advertised in local newspapers; documents relating to the review were posted on the Environmental Assessment Office's Project Information Centre.

7.2 Consultation During the Application Review Period

Consultation Measures Undertaken by the Proponent

In accepting the Application for review, the Environmental Assessment Office determined that the detailed public consultation plan for public review of the Application, as proposed, was adequate. Consistent with this plan, the Proponent:

- held an Open House in Mackenzie that was advertised in advance in local newspapers and attended by about 35 members of the public;
- responded to comments submitted during the public review of the Application (outlined in Appendix F); and,
- continued to meet with interested individuals, businesses and local governments.

Consultation Measures Undertaken by the Environmental Assessment Office

The Environmental Assessment Office posted the Application on its website and established a formal 30-day comment period for the Application review (May 4 to June 3, 2007) to enable the public to provide comments on the Application. Notice of the public comment period was advertised in local newspapers and posted on the Environmental Assessment Office's website. Public comments were also posted on the website. The Environmental Assessment Office participated in an Open House on May 14, 2007 in Mackenzie, British Columbia, and provided displays and information on the environmental assessment process.

7.3 Public Opinion and Issues

Although the Environmental Assessment Office and the Proponent did not receive any comments during the 30-day public comment period, 8 public comment forms were submitted during the Open House. The issues identified in written submissions are summarized below:

- the potential effects of increased truck traffic transporting wood waste, especially between Fort St. John and Mackenzie, British Columbia;
- the need for assurance that the Proponent would hire local workers and contractors to construct and operate the Project; and,
- the need for the Proponent to keep the public informed about employment and contracting opportunities related to development and operation of the Project.

Part C Review of the Application

8 OVERVIEW OF POTENTIALLY SIGNIFICANT PROJECT EFFECTS

The Proponent assessed the potential for each of the Project phases to interact with Valued Environmental Components of the natural or human environment, including:

- Geophysical Environment;
- Air Quality;
- Climate Change and Greenhouse Gas Emissions;
- Noise;
- Surface Water and Groundwater Quality;
- Water Supply;
- Aquatic Habitat and Fauna;
- Vegetation;
- Wildlife Habitat and Species;
- Truck Traffic;
- Archaeology, Culture and Heritage Resources;
- Land Use;
- Waste Management; and,
- Socio-economics.

The discussion of potential Project effects in this Report incorporates the Proponent's responses to comments from the Working Group, the public and First Nations.

8.1 Geophysical Environment

Background

Section 5.3 of the Application provides detailed information on the Geophysical Environment, including the geology, soils, surficial geology and stratigraphy of the Project area.

Potential Effects

Given that the site is underlain by well-drained soils, no significant issues are evident with regard to its suitability as a foundation. The seismic risk level is relatively low. The adjacent lake level will be controlled such that there is no potential for flooding.

Enhancement, Mitigation and Monitoring

Environmental mitigation for this area will involve avoiding soil disturbance. In the area to be developed for the ash landfill, top soil will be conserved and stockpiled for landscaping upon completion of construction. Implementation of the Storm Water Management Plan will minimize potential impacts to soils and surface water.

Issues Raised and Proponent's Responses

Issue:

First Nations asked if soils would be monitored to identify potential effects of emissions.

Proponent's Response:

Changes in soil chemistry are not anticipated because of the substances that will be emitted and the predicted dispersion of these emissions.

Issue:

First Nations asked if a detailed soil assessment would be completed.

Proponent's Response:

Soils have been altered extensively by past development and imported fill materials. The Proponent believes the assessment of impacts from the Project on soils presented in the Application is adequate.

Issue:

First Nations requested the Proponent to provide a detailed soils map.

Proponent's Response:

Mapping of soils in this area would not be useful for assessing impacts to soils as it would simply reflect the known presence of imported fill materials and disturbance from construction work.

Issue:

Ministry of Environment requested details of plans for the disposal of hog fuel buried at the site.

Proponent's Response:

Options being considered are screening and use as fuel in the pulp mill's power boiler, incineration and disposal in an existing landfill authorized for wood residue disposal.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on the geophysical environment.

8.2 Air Quality

8.2.1 Stack Emissions

Background

The Project will utilize up to 1,000,000 tonnes of wood residue per year that is currently land filled or burned in "beehive" burners in Chetwynd, Mackenzie, Bear Lake or Fort St. James. The burning of wood residue will enable the old power boiler at the Pope & Talbot Pulp Mill in Mackenzie to be shut down. The Project will utilize natural gas in its backup boiler for up to 7% of the operating time.

Potential Effects

Compared to the baseline modelling results for permitted sources at the pulp mill, combined emissions from the Project and the pulp mill are predicted to result in the following changes in air quality:

- Maximum coarse and fine particulate matter concentrations will decrease.
- Maximum sulphur dioxide concentrations will be unchanged.
- Maximum nitrogen dioxide and carbon monoxide concentrations will increase (a worst-case based on the manufacturer's performance guarantee and not on average stack concentration, which will likely be lower).

The predicted effects of the Project on air quality in the town of Mackenzie are:

- Maximum 24 hour average coarse and fine particulate matter concentrations will decrease from existing levels and remain well below the strictest air quality objective or standard.
- Maximum sulphur dioxide, nitrogen dioxide and carbon monoxide concentrations will be significantly below objective levels.

Enhancement, Mitigation and Monitoring

The operation of the cogeneration plant burning wood residue at least 93% of the time will enhance the air quality and reduce the concentration of particulate emissions in the area.

Issues Raised and Proponent's Responses

Issue:

First Nations asked how far away from the Project coarse and fine particulate matter will disperse.

Proponent's Response:

The greatest effects on particulate matter concentrations will occur within one kilometre of the site fence line, but small reductions will also occur in Mackenzie and elsewhere in the region.

Issue:

Health Canada recommended the Proponent undertake an analysis of the effects of the Project on ground level ozone.

Proponent's Response:

Although the Project will emit nitrogen dioxide and volatile organic carbon, ground level ozone is not expected to be a problem at Mackenzie because of reduced solar insolation due to the site's high latitude (ozone concentrations are not a problem at Williams Lake, and Mackenzie is further north), moderate peak summer temperatures, and the lack of a confining valley.

Issue:

Health Canada and Environment Canada asked the Proponent to provide an explanation of why it expects carbon monoxide and nitrogen dioxide levels to be lower than what was modelled, including descriptions of:

- Good Combustion Practices that would be implemented;
- sludge handling practices employed at the Project;
- a comparison of the carbon monoxide emission testing results for the Northwood power boiler to that proposed for the Mackenzie Green Energy Project;
- nitrogen dioxide and carbon monoxide emission results from the Williams Lake Power Plant from the National Pollutant Release Inventory compared to the permit levels; and,
- emission rates used in the assessment of the Project.

Proponent's Response:

The Proponent responded in writing to Environment Canada on September 20, 2007. The detailed response is in the Proponent's responses to comments on the Application from Environment Canada and Health Canada (meeting September 7, 2007 and letter September 10, 2007) in Appendix E7 of the Assessment Report.

Issue:

The Proponent was asked by Environment Canada to provide documentation about how the metals levels in primary clarifier sludge ash compare with ash from wood residue and, in regard to mercury, and to coal. The Proponent was also asked to confirm that emissions of metals are expected to be low.

Proponent's Response:

The Proponent responded in writing to Environment Canada on September 20, 2007. The detailed response is in the Proponent's responses to comments on the Application from Environment Canada and Health Canada (meeting September 7, 2007 and letter September 10, 2007) in Appendix E7 of the Assessment Report.

The distribution of metals in the particulate matter that will be emitted by the Project was estimated from the concentration of metals measured in the ash in the wood residue and the primary clarifier sludge. The relative contribution of the different fuels to the estimated metals emissions was also determined. The analysis consisted of the following steps:

- estimate the total ash from each fuel that goes into the boiler;
- estimate the metals input to the boiler from each fuel based on chemical analysis of ash samples;
- estimate the emissions from the stack of the mineral (inorganic) component of the particulate matter; and,
- pro-rate the metals input to the boiler from each fuel to the emitted mineral particulate matter based on the contribution of each fuel to the total ash input.

Based on this analysis of metals, the Proponent concluded that the emissions of metals from the Mackenzie Green Energy Centre will be low.

Issue:

Health Canada indicated that it would like the Proponent to include salt as one of the materials that it will not accept in wood delivered to the Project.

Proponent's Response:

The Proponent pointed out that this requirement will seem strange to wood suppliers in the Interior, as salt-laden wood is not readily available, but that it would do so.

Issue:

During discussions with the Proponent, September 7, 2007, Environment Canada explained that the approach to regulating polycyclic aromatic hydrocarbon, dioxins and furans is evolving toward virtual elimination of these contaminants from emissions and that monitoring for them is becoming a basic requirement for wood-fired boilers.

Proponent's Response:

The Proponent felt that the low risk predicted by science should be recognized and that the standards for polycyclic aromatic hydrocarbon, dioxins and furans applied to coastal mills combusting salt-laden wood and facilities burning municipal solid waste. Additionally, the Proponent felt that the money that would be spent on such a monitoring program could be better used in its "Sustainability Fund". This Fund provides funding for environmental, social or energy efficiency initiatives that have direct, positive benefits in the community.

Issue:

Environment Canada asked the Proponent to clarify their proposal to establish a Sustainability Fund.

Proponent's Response:

The Proponent proposes the implementation of a Sustainability Fund as part of its Project commitments. The intent of this program is to provide funding to the community in support of environmental or energy efficiency initiatives.

The guiding principles of the fund are anticipated to be as follows:

- support community and First Nations environmental or energy efficiency goals;
- provide seed funding for environmental or energy efficiency projects; and,
- potentially leverage funding from the Sustainability Fund with outside sources of money to achieve broader environmental or energy efficiency goals.

Issue:

Health Canada and Environment Canada raised the issue that the Project has the potential to emit air toxins such as polycyclic aromatic hydrocarbon, dioxins and furans; therefore, a monitoring plan should include consideration of such parameters.

Proponent's Response:

The Proponent's detailed written response to Environment Canada and Health Canada's issue above is detailed in Appendix E3, attached to the Assessment Report. The Proponent's response explains how polycyclic aromatic hydrocarbon, dioxins and furans will be minimized. The Proponent concludes that:

- Emissions of polycyclic aromatic hydrocarbon and dioxin/furans from the Project will be minimized and controlled by the used of a state-of-the-art boiler and associated control system, a high efficiency electrostatic precipitator, and operation of the boiler using Good Combustion Practice.

- The wood residue fired in the boiler will contain only natural constituents and be free of preservatives, paints, construction debris, or salt-laden wood from coastal areas of British Columbia. This will minimize the potential for formation of dioxin and furans.
- Dioxin and furan emissions from the Project are expected to be less than 1% of the Canada-Wide Standard for new wood-fired power boilers at pulp and paper mills based on testing using similar wood residue fuel at the Northwood Pulp and Paper Mill. Using a more conservative National Pollutant Release Inventory emission factor that is based on a variety of fuels, boiler designs, and firing conditions, dioxin and furan emissions from the Project may be 9% of the Canada-Wide Standard for new wood-fired power boilers at pulp and paper mills.
- Under operator supervision, a sophisticated computer control system will continually monitor and adjust combustion conditions in the boiler furnace to achieve high combustion efficiency and low emission levels. The control system will utilize data from continuous carbon monoxide, oxygen, and nitrogen dioxide monitors, as well as data from a variety of process monitoring instruments.
- The carbon monoxide concentration in the flue gas will likely be approximately 40% less than the boiler vendor guaranteed emission limit and similar to that observed at the 70 Megawatt wood-fired Williams Lake Power Plant. This suggests efficient combustion conditions will be maintained in the boiler to minimize emissions of polycyclic aromatic hydrocarbon.
- A continuous emission monitoring system will provide continuous feedback to boiler operators on stack gas concentrations and flow rate and indicate compliance with permit conditions. The system will monitor the parameters specified in the air permit from the British Columbia Ministry of Environment.
- For the initial one to two years of operation, the wood-fired boiler exhaust gas will be tested quarterly to measure the concentrations of filterable particulate matter, nitrogen dioxide, and oxygen, and the dry gas flow rate to demonstrate compliance with permit criteria. The subsequent monitoring program could then be revised based on previous results. This monitoring will provide further confirmation of compliance with the conditions of the air permit and verify that plant equipment is working properly and that Good Combustion Practices are reducing emissions.

Furthermore, during discussions, the Proponent explained that the Canada Wide Standard for dioxin and furan emissions for the pulp and paper sector is for boilers burning salt-laden wood. The wood residue combusted in the facility will not be salt-laden as it will be transported by trucks from Interior locations; none of the wood will be transported or stored in the ocean. The Proponent reported on two emission tests of burning Interior wood residues in a power boiler at the Northwood Pulp Mill in Prince George that demonstrated dioxin and furan emissions were 1% of the Canada Wide Standard for new power boilers.

Should federal agencies determine that the Proponent must conduct full scale dioxin and furan testing (there is no legislated requirement for dioxin and furan testing for facilities such as the Mackenzie Green Energy Centre Project), the Proponent would divert funds from the Sustainability Fund in order to conduct such testing. Recent cost estimates for dioxin and furan testing indicate a cost of approximately \$100,000. This would represent a significant portion of the Sustainability Fund. The Proponent's opinion is that money from the Sustainability Fund could be more meaningfully spent directly in the community to support environmental or energy efficiency initiatives.

Considering the above information, the Proponent concludes that, because there is such a low risk of generating polycyclic aromatic hydrocarbon, dioxins, and furans at the Project, implementing an expensive monitoring program for these contaminants is unwarranted.

Issue:

Subsequent to discussions on foregoing issues, Environment Canada recommended that the Proponent commit to a single screening level test for trace organics, to be conducted with one of the already planned quarterly manual stack tests for other regulated pollutants during the first year of operation. Standard protocol for trace organics monitoring would entail testing in triplicate. The recommendation for a single run is in recognition that the risk for elevated trace organics emissions from the proposed facility is relatively low. This recommendation would also allow the Proponent to save substantially on the cost of testing. Environment Canada believes that the incremental cost for this monitoring and analysis work would be in the order of \$6,000 to \$8,000.

Proponent's Response:

The Proponent reiterated that tests of a similar wood-fired power boiler in Prince George at the Northwood Pulp and Paper Mill, which is equipped with a multiclone for particulate matter control, found concentrations of polycyclic aromatic hydrocarbons and dioxin/furan concentrations were well below Environment Canada's Limit of Quantification. The Project will be equipped with an electrostatic precipitator to achieve much lower particulate matter emissions, which will also reduce emissions of trace organic compounds. Furthermore, the concentration of particulate matter discharged from the Northwood power boiler was several times higher than that which is proposed as the permit limit for the Project.

The dioxin/furan emissions measured in the tests of the Northwood power boiler are less than 1% of the Canada Wide Standard for new pulp and paper mill boilers burning salt-laden wood residue

The Proponent also provided results from duplicate tests of polycyclic aromatic hydrocarbons and dioxin/furan emissions from the wood residue fired Williams Lake Power Plant. This plant has the same type of boiler, particulate matter emission control equipment, and fuel proposed for the Project and is similar in size. These tests provide an excellent indication of the concentration of trace organics that could potentially be emitted from the Project. The average concentration of dioxins/furans in the tests with clean wood residues was 4% of Environment Canada's Limit of Quantification for dioxins and furans and 1% of the Canada Wide Standard for pulp and paper power boilers burning salt laden wood. The average concentration of total polycyclic organic hydrocarbons was 1% of the guideline suggested by Environment Canada for screening level testing.

The regional office of the British Columbia Ministry of Environment has confirmed to Environment Canada and the Environmental Assessment Office that monitoring of dioxins, furans, or polycyclic aromatic hydrocarbons has not been required for boilers burning clean wood waste.

The Proponent believes that the testing program recommended by Environment Canada is not warranted for the Project because of the low levels of trace organics known to be emitted by modern and efficient power boilers burning clean wood residue, evidence of very low measured concentrations of trace organics compared to the standards reference by Environment Canada, and that such testing is not required for other similar facilities in British Columbia.

However, the Proponent voluntarily agreed to conduct a single screening level test of emissions of polycyclic aromatic hydrocarbons, dioxin and furan in triplicate in the first year of operation and report the results of this test to Environment Canada and the British Columbia Ministry of Environment.

Issue:

Health Canada asked the Proponent why the air quality monitoring did not consider the start up of the Project operation.

Proponent's Response:

The Proponent explained that a review of emission upset scenarios had determined that highest hourly average emissions were most likely to occur under maximum continuous operating conditions and that this was therefore the "worst-case" situation that was modelled for the Application.

Start-ups were not considered likely to cause high emissions because:

- Start-up is accomplished by using natural gas-fired backup burners that emit low levels of nitrogen dioxide, to warm up the boiler;
- the firing of wood residues will be increased gradually; and,
- the electrostatic precipitator will be operating at all times, including start-up, to maintain low levels of particulate emissions.

Issue:

Health Canada asked the Proponent to explain the maximum percentage of kraft soap and primary clarifier sludge that could enter the boiler, and how the higher percentage may change the composition of the emissions and emission levels.

Proponent's Response:

The Proponent explained that the mix of fuels will include up to 1% of primary clarifier sludge and up to 10% of kraft soap, based on total heat input. These percentages were used by the boiler vendors in developing their guarantees with respect to emission levels from the equipment. Average and maximum percentages were both used in the Application.

Issue:

Health Canada asked the Proponent to explain the differences in emissions from various types of fuels used at the Project.

Proponent's Response:

The Proponent explained that primary clarifier sludge has a moisture content of about 65% and that the solids are comprised primarily of wood fibre and mineral matter. This material will make up no more than 1% of the fuel supply and it will be distributed over the wood residue storage pile and mixed well with wood residue as it is delivered to the boiler. Emissions from burning this material are expected to be very similar to those from burning typical wood residue.

Kraft soap is a by-product of the pulping process and is essentially unrefined tall oil. It has a high heating value. Recent Swedish studies indicate that volatile organic carbon and nitrogen dioxide emissions from boilers burning tall oil are less than those burning wood fibre.

Issue:

Environment Canada disagreed with the Proponent's conclusions in the Application (section 3.12 of the Application) on the Best Available Control Technology analysis for carbon monoxide, nitrogen dioxide and volatile organic carbon, and proposed emission rate for the Project without a detailed explanation and rationale of why Best Available Control Technology is not necessary. Environment Canada asked the Proponent to explain how Best Available Control Technology principles had been applied to Project design and evaluation.

Proponent's Response:

The detailed rationale for the Proponent's conclusion and the Proponent's detailed response to comments on the Application from Environment Canada (dated August 20, 2007) are included in Appendix E4 of the Assessment Report.

The Proponent explained that results from the review of Best Available Control Technology determinations for power plants in regions of the United States are useful as a general indicator of the potential performance of emission control technologies, as presented in the Application; however, they should not be presumed to apply equally well in British Columbia because of substantial differences that can exist in air quality, economic conditions in the industry, and regulations. The most stringent Best Available Control Technology emission limits originate in United States' states with severe problems with air quality and persistent and large exceedances of federal United States ambient air quality standards. Very low United States Best Available Control Technology levels for nitrogen oxide, volatile organic carbon and carbon monoxide, such as those in California or Massachusetts, are driven by a need to reduce emissions of precursors of ground-level ozone formation and comply with ambient ozone standards.

The Proponent further explained that the analysis provided in the Application was an indicator of the potential performance of emission control technologies and that it had been used in conjunction with two other factors – ensuring that the technology is economically achievable, and that Good Combustion Practices are employed.

Modelling was conducted on the basis of maximum permitted levels of contaminants and that actual emissions would be less than this (at Williams Lake, for instance, the actual average nitrogen dioxide emissions from a similar power plant are 55% of permitted levels).

The Proponent indicated that post-combustion nitrogen dioxide control processes resulted in little improvement in emission quality and that the addition of ammonia or the disposal of catalysts presented new environmental issues.

Issue:

Environment Canada noted that the proposed carbon monoxide permit level appeared high compared to values for similar existing boilers and expressed concern that high carbon monoxide levels would suggest that there is a potential for toxins to be emitted, particularly if lots of wet primary clarifier sludge were to be burned.

Proponent's Response:

The Proponent indicated that this level was based on vendor's guarantees, and that actual emission rates will typically be lower than this. The carbon monoxide guarantee for the Project is equivalent to a stack concentration of approximately 350 parts per million. The tests of the

Northwood boiler showed that average carbon monoxide levels were 440 parts per million in one test and 650 parts per million in a second test, significantly more than are predicted for the Project.

Issue:

Environment Canada requested clarification of why Pope & Talbot was landfilling primary clarifier sludge rather than co-firing it with wood residue.

Proponent's Response:

The Proponent explained that sludge is currently landfilled by Pope & Talbot because it cannot burn the sludge in its old system. The pulp mill already has to co-fire natural gas with wood residue to achieve acceptable particulate emission levels. Burning sludge would require Pope & Talbot to use more natural gas; to avoid this cost, the sludge is landfilled.

Issue:

Environment Canada asked how the sludge would be managed to prevent high emissions of pollutants.

Proponent's Response:

The Proponent explained that the sludge will be spread on the wood residue storage pile and mixed with the residue as the pile is worked. The sludge will be mixed further with residue as it is delivered to the cogeneration facility and as it is forcefully blown into the furnace. With these measures, the sludge will not adversely affect combustion or cause the emission of contaminants such as polycyclic aromatic hydrocarbon, carbon monoxide or particulate matter.

Issue:

Environment Canada requested clarification of the metal content of primary clarifier sludge and kraft soap.

Proponent's Response:

The Proponent demonstrated that the metal levels in the primary clarifier sludge ash were low, and agreed to provide additional information about how these levels compare with ash from wood residue and, in regard to mercury, and to coal. The Proponent also agreed to confirm that emissions of metals are expected to be low. Additional information is detailed in the Proponent's September 20, 2007, responses to comments on the Application from Environment Canada/Health Canada (meeting September 7, 2007 and letter September 10, 2007) included in Appendix E7 of the Assessment Report.

Issue:

Environment Canada requested modelling of secondary particulate from sulphur dioxide and nitrogen oxides emissions.

Proponent's Response:

The Proponent completed air quality modelling of secondary particulate emissions as requested by Environment Canada. This modelling showed that changes to particulate matter close to the plant or in Mackenzie were minor, with the maximum change predicted of two micrograms per cubic metre to be 7 – 10 km south-southwest of the Project site.

Issue:

Environment Canada requested information on particulate emissions from the backup boiler.

Proponent's Response:

The Proponent agreed with Environment Canada that the backup boiler is estimated to emit up to 0.7 grams/second of particulate matter when operating, or about 10% of the emissions from the power boiler. Annual particulate matter emissions would be 0.2 tonnes.

Issue:

Environment Canada supports the Proponent's plans to use a Continuous Emission Monitoring System, particularly if carbon monoxide monitoring is included.

Proponent's Response:

The Proponent provided assurance that carbon monoxide and oxygen levels in the flue gas would be monitored continuously, as part of the system to ensure that Good Combustion Practices are employed at the facility.

Issue:

Environment Canada had also identified a number of more minor issues as included in Section 6.3 and Appendix E of this Assessment Report.

Proponent's Response:

The Proponent's responses are detailed in the various Proponent response documents included in Appendix E of this Assessment Report.

8.2.2 Reduction in Emissions from Existing Wood-Waste Incinerators

Background

Reducing incineration of wood residue in beehive burners in these communities will enable the use of beehive burners in several communities to be reduced or eliminated.

Potential Effects

The shutdown of beehive burners in fuel supply areas that will be enabled by the Project will significantly reduce coarse and fine particulate matter concentrations in the vicinity of these emission sources.

Enhancement, Mitigation and Monitoring

The operation of the Project will improve air quality in Mackenzie, Chetwynd, Bear Lake and Fort St. James.

Issues Raised and Proponent's Response

Issue:

Environment Canada indicated that it would like a commitment that beehive burners will actually be shut down once the Project is operational.

Proponent's Response:

The Proponent stated that it was beyond its control to provide such a commitment, that the Ministry of Environment is responsible for requiring the closure of beehive burners, and that it appears likely that such closures will be regulated in the near future.

Issue:

Environment Canada requested the Proponent to provide a commitment that Pope & Talbot's power boiler would be shut down once the Project is operational.

Proponent's Response:

Pope & Talbot has indicated to the Proponent that it will not burn wood residue in its power boiler once the Project is reliably providing steam to the pulp mill, although it may keep the power boiler on warm standby firing natural gas until this comfort level is achieved. Providing a guarantee that Pope & Talbot will shut down its power boiler is not within the Proponent's control.

8.2.3 Truck Emissions

Background

A preliminary estimate was developed of emissions from heavy duty diesel trucks that will be used to transport wood residue to the Project site. The estimate is conservative as it is based on the number of truck deliveries to the Project site (see Section 3.5.3.2.1 on page 3-50 of the Application). The table in Appendix E4 page 33 summarizes the number of truck deliveries and the estimated one-way and total annual distances travelled by these trucks:

Potential Effects

Based on the information gathered on the annual return distances that would be travelled by trucks and the particulate matter (coarse) and nitrogen oxide emission factors for these types of vehicles, annual emissions from trucks delivering wood residue to the Project site would be approximately:

- particulate matter (coarse) = 1 tonne/year
- nitrogen dioxide = 64 tonne/year

The particulate matter (coarse) emissions from fuel delivery trucks will be less than 1% of the particulate matter (coarse) emissions from the Project site. The nitrogen dioxide emissions from fuel delivery trucks will be approximately 5% of the emissions from the Project facility.

The estimated carbon dioxide equivalent greenhouse gas emissions can be compared to the 25,834 tonne/year reduction in emissions that will be achieved by the Project. Estimated greenhouse gas emissions from fuel delivery trucks are summarized in Table 2, Appendix E4 page 34.

Enhancement, Mitigation and Monitoring

The Project will consume wood residue that is now being used to fuel the power boiler at the Pope & Talbot Pulp Mill as well as wood residue being incinerated in the fuel supply areas. This will reduce some emissions in the fuel supply areas and have benefits to air quality in the vicinity of sections of the roads travelled by trucks delivering fuel to the Project site.

Issues Raised and Proponent's Responses

Issue:

First Nations and Environment Canada requested information on criteria air contaminants and greenhouse gas emissions from trucks delivering wood waste to the Project site.

Proponent's Response:

The response is detailed in the Proponent's September 6, 2007, response to comments on the Application from Environment Canada (dated August 20, 2007) included in Appendix E4 of the Assessment Report.

The Proponent explained that fuel deliveries will be done by independent contractors and that implementing emission reduction measures will be the responsibility of federal or provincial agencies. After assessing the potential emissions from diesel trucks, the Proponent concluded that particulate matter (coarse) emissions from fuel delivery trucks would be less than 1% of the particulate matter (coarse) emissions from the Project; nitrogen dioxide emissions from trucks would be about 5% of the plant emissions. The Proponent estimated that up to 8,803 tonnes per year of carbon dioxide equivalent would be emitted by fuel delivery trucks. This is equivalent to about 1/3 of the 25,834 tonnes/year reduction in carbon dioxide emissions that will be achieved by the Project.

8.2.4 Fugitive Dust Emissions

Background

Fugitive dust may be emitted by trucks delivering wood residue, wind-blown dust from conveyors and the wood residue storage pile, and handling, trucking and land-filling wood ash.

Potential Effects

The potential for fugitive dust emissions from wood residue will be minimized by its high moisture (40 to 60%, by weight) and use of enclosures on belt conveyors.

Enhancement, Mitigation and Monitoring

Dust from wood ash will be controlled by wetting the ash with water.

Issues Raised and Proponent's Responses

Issue:

Environment Canada accepted the proposed mitigation measures to minimize fugitive dust emissions on-site and recommended that, should fugitive dust emissions prove to be a concern

(to the public, workers on-site, or others) once the facility is operational, additional measures should be considered.

Proponent's Response:

The Proponent noted the comment.

8.2.5 Visibility/Fogging/Icing Effects

Background

Section 5.18.2 of the Application provides detailed information on the fogging model that was used by the Proponent.

Potential Effects

Fog and ice induced by water vapour emissions from the cooling tower will have minimal and only localized effects. No plume-induced hours of ground-level fog or ice were predicted at the Mackenzie Airport. Minimal impacts were predicted on nearby roads.

Mitigation and Monitoring

Mitigation or monitoring is not required.

Issues Raised and Proponent's Responses

No issues were raised by government agencies, the public or First Nations.

8.2.6 Conclusion

The Project will:

- make beneficial use of wood residue that would otherwise be burned in beehive burners;
- improve air quality in Mackenzie and potentially other centres (Chetwynd, Fort St. James and Bear Lake); and,
- add to clean energy sources in British Columbia.

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on air quality.

8.3 Noise

Background

The potential for noise levels outside the site boundary to exceed 65 decibels (a typical limit for cities in British Columbia) due to construction, traffic and operation was assessed.

Potential Effects

Cumulative noise levels with the Project in operation are predicted to be well below 65 decibels.

Mitigation and Monitoring

Noise during construction of the facility will be mitigated by implementing noise guidelines to be followed by contractors. The steam turbine and generator will be installed inside a building, which will ensure that operation of the facility complies with noise level restrictions.

Issues Raised and Proponent's Responses

Issue:

Health Canada expressed a concern that noise levels might affect human health.

Proponent's Response:

The Proponent explained that the Project is located in a heavily industrialized area, with existing sources of noise and that the Project has been designed to minimize noise during construction and operation. There will be an incremental increase of up to 3 decibels in noise level in the vicinity of the Project, but cumulative noise levels during operation are predicted to be below 65 decibels outside the Project fence line, the noise limit for industrial operations in the City of Vancouver.

Issue:

Health Canada recommended that if predicted sound levels exceed 50 decibels at the receptor site (outdoors), 45 decibels for regular and tonal noise, and 38 decibels for highly impulsive sound sources, then more specific information, including baseline, predicted levels and duration would be needed in order to predict whether potential impacts to human health and if mitigation measures are required.

Proponent's Response:

The closest residence is two kilometres from the proposed Project, at which distance the Project will be inaudible. The predicted Day/Night level at a site 1.6 kilometres from the Project will be 21.4 decibels – well below Health Canada's maximum allowable level of 38 decibels.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on noise in the surrounding environment.

8.4 Climate Change and Greenhouse Gas Emissions

Background

The Project will use approximately 1,000,000 tonnes of wood residue per year. The combustion of this material will cause emissions of Greenhouse Gases, however, because wood residue from other forestry operations is being used for the fuel supply, it is considered to be "Greenhouse Gas Neutral".

Potential Effects

The average emissions of Greenhouse Gases from the adjacent pulp mill power boiler are considered to be the baseline emission level for the impact assessment in this Application. After the Project is operational and the pulp mill power boiler has been shut down, the Project will result in a 77% reduction in carbon dioxide and a 52% reduction (21,900 tonnes per year) in Greenhouse Gas emissions from baseline conditions in the Mackenzie area.

If the Canfor Sawmill converts its lumber drying kilns from natural gas to steam from the Project, the emission of Greenhouse Gases would be reduced by an extra 17% from baseline.

The emissions of Greenhouse Gases from the Project will be approximately 93% less than from a combined cycle natural gas-fired generation facility and 97% less than the emissions from a coal-fired generation facility of comparable size.

Enhancement, Mitigation and Monitoring

The Project will use proven and efficient commercial boilers and advanced boiler control technologies to maintain the highest possible availability of its wood-fired and natural gas-fired boilers. This will minimize emissions of Greenhouse Gases by maximizing the use of wood fuel, while still providing the high level of reliability needed for steam delivery to the thermal host. The boiler control systems will help to ensure combustion in the boiler is efficient and emissions of methane and nitrous oxide, which have higher greenhouse gas potential than carbon dioxide, are minimized.

Including carbon dioxide from sustainable harvested wood residue, methane and nitrous oxide emissions, the Project will emit approximately 895,996 tonnes carbon dioxide equivalent per year. This is above the reporting threshold under Phase 1 of the federal Greenhouse Gas emission reporting system, therefore, the Proponent expects to report emissions in accordance with government requirements.

Issues Raised and Proponent's Responses

Issue:

The McLeod Lake Indian Band requested a summary of current emissions and future emissions from the pulp mill and cogeneration facility to clarify the air quality improvements that can be expected.

Proponent's Response:

Table 5.4-15 in the Application summarizes the annual emissions for the Pope & Talbot Pulp Mill before and after the Project is operational. Table 5.5-4 in the Application compares Greenhouse Gas emissions before and after the start-up of the Project, as well as, the table illustrates that the Project will achieve a 77% reduction in carbon dioxide, and 52% reduction in carbon dioxide equivalent emissions. The Proponent's response is detailed in Appendix D2.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on climate change and Greenhouse Gas emissions.

8.5 Surface Water Quality

8.5.1 Process Effluent

Background

The process wastewater from the Project will be treated by the Pope & Talbot Pulp Mill system.

Potential Effects

It is anticipated that the process wastewater from the Project will have no measurable impact on the quality of wastewater discharged from the pulp mill's secondary effluent treatment plant, or on the overall water quality, or the aquatic habitat.

Mitigation and Monitoring

Monitoring the quality of the process effluent will be a condition of Pope & Talbot's effluent permit. Monitoring results will be shared with First Nations.

Issues Raised and Proponent's Responses

Issue:

First Nations asked for clarification of the quality of the effluent discharge into Williston Lake.

Proponent's Response:

The annual volume of effluent discharged to the wetland with the Project in operation will be 44,322 cubic metres per year, which is 41% lower than the current level. Pope & Talbot will continue to monitor the quality of the discharge from the wetland. Arrangements will be made with the Ministry of Environment to share the data with First Nations.

8.5.2 Storm Water Runoff

Background

During the lifetime of the plant, rain and snowmelt water collected on the plant site may come into contact with contaminants or cause erosion and entrainment of sediment.

Potential Effects

Runoff from the wood residue storage area, buildings, the ash landfill, roads and rehabilitated areas need to be managed to minimize potential impacts to offsite water resources.

Enhancement, Mitigation and Monitoring

The preliminary Storm Water Management Plan describes the steps that will be implemented during construction to mitigate the potential adverse effects of storm water runoff. The Storm Water Management Plan will be finalized during final design and permitting.

Issues Raised and Proponent's Responses

No issues were raised by government agencies, the public or First Nations.

8.5.3 Runoff Leachate

Background

The Project will decrease the total flow of effluents to the wetland by eliminating the sluicing water that transports fly ash from the Pope & Talbot power boiler to the ash pond. With the

Project in operation, the sources contributing effluent to the wetland will include:

- treated effluent from the Pope & Talbot sewage treatment plant (which will include the sewage flow from the Project);
- treated runoff and wood leachate from the wood residue storage area; and,
- treated runoff and wood ash leachate from the wood ash landfill.

Potential Effects

The quality of the combined effluent prior to discharge to the wetland will be relatively high. There will be a further improvement in the effluent quality as it flows through the wetland. The outflow from the wetland will be similar to that observed historically.

Enhancement, Mitigation and Monitoring

The potential impact on groundwater of leachate from the wood residue storage pile will be mitigated by the design of the surface of the wood storage area, regular turnover of the pile inventory (45-day average) and implementation of good operating practices that will reduce the potential for leachate formation. The ground surface of the wood residue storage area will be constructed using a durable, reduced-permeability working surface for the storage pile and the operation of heavy duty mobile equipment. This working surface will slope at 2% grade towards lined ditches to maximize collection of runoff. The ditches will drain to a lined detention pond with a capacity of 600 cubic metres.

Issues Raised and Proponent's Responses

Issue:

Ministry of Environment staff noted that the surface water quality monitoring proposed during construction and at operations will be discussed further during the permitting stage.

Proponent's Response:

The issue was acknowledged by the Proponent.

Issue:

Health Canada suggested the Proponent include a section in the Environmental Management Plan that deals with the possible escape of leachate from the ash landfill or wood residue storage area detention pond.

Proponent's Response:

The Proponent explained that the groundwater monitoring program details (parameters, frequency and duration) will be finalized as conditions of the Ministry of Environment's operating permit for the ash landfill and the discharge of treated runoff from the wood residue storage area to the wetland. The Preliminary Ash Landfill Management Plan contains triggers for remedial actions if monitoring indicates that a water quality problem might be occurring.

8.5.4 Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on surface water quality.

8.6 Groundwater

Background

The two parts of the project that might generate leachates that could adversely affect groundwater quality are the wood residue storage area and the wood ash landfill.

Potential Effects

The removal of the large wood residue pile now used at the pulp mill and the removal of 6,000 cubic metres of wood residue presently landfilled on the proposed plant site will eliminate current sources of groundwater contaminants. The new fuel storage pile will be designed and operated to avoid leachate problems.

Enhancement, Mitigation and Monitoring

The wood ash landfill will use basal and capping liners to prevent precipitation from entering closed landfill cells and leaching contaminants into the subsoil and to groundwater.

Groundwater monitoring wells will be installed around the perimeter of the ash landfill area and monitored for the life of the landfill, confirm the effectiveness of leachate controls, and provide an early warning of any problems. Groundwater monitoring wells will also be installed around the perimeter of the wood residue storage area.

Issues Raised and Proponent's Responses

Issue:

Health Canada suggested the Proponent include a well monitoring plan with information on the number of years that monitoring will be carried out, the parameters tested during monitoring, frequency of monitoring, trigger concentrations for action, and type of action that would be taken, in the Environmental Management Plan.

Proponent's Response:

The Proponent explained that the groundwater monitoring program details (parameters, frequency and duration) will be finalized as conditions of the Ministry of Environment's operating permit for the ash landfill and the discharge of treated runoff from the wood residue storage area to the wetland.

Issue:

Health Canada asked if there were any groundwater wells that might be affected by the Project.

Proponent's Response:

There are no known wells in use within 2 kilometres of the Project.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on groundwater.

8.7 Water Supply

Background

The proposed facility will use water to generate steam, cool and condense the steam turbine exhaust, and for a variety of other plant processes. The steam system and the condenser cooling system are closed circuit systems and maintain a 98% water re-use rate.

Raw water for the Project will be obtained from the Pope & Talbot Pulp Mill and will undergo treatment to remove natural filterable solids. The balance of water requirements will be for plant wash down and cleanup, once-through cooling for minor cooling loads, and potable water.

Potential Effects

The Project will increase the average diversion of water under Pope & Talbot's water licence (Licence C117357) by 5.4% from 0.67 cubic metres per second to 0.706 cubic metres per second. The maximum flow rate of water that can be diverted by Pope & Talbot under its water licence is 1.13 cubic metres per second.

Enhancement, Mitigation and Monitoring

Water use at the Project site will be continuously monitored.

Issues Raised and Proponent's Responses

Issue:

First Nations asked for clarification of how much the use of water by the Project would increase withdrawals from Williston Reservoir.

Proponent's Response:

Although the withdrawal of water under Pope & Talbot's license might increase by 5%, the water diverted with both the pulp mill and the Project operating at average water consumption rates is 62% of the licensed limit. If both of these facilities are operating simultaneously at maximum water consumption rates, the amount withdrawn will be 88% of the licensed limit.

Issue:

The Northern Health Authority asked about the source of potable water for the Project.

Proponent's Response:

Bottled water will be provided for all potable purposes at the Project site.

Issue:

The Northern Health Authority indicated that if the supply of water to the Project from the pulp mill requires alteration to the works at the pulp mill, then the Proponent will have to seek the approval from the Public Health Engineer for the alterations.

Proponent's Response:

The Proponent has committed to apply to the Public Health Engineer, Northern Health Authority, for permission to alter the works so that water from the pulp mill can be safely supplied to the Project.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on Pope & Talbot's licensed water supply.

8.8 Aquatic Resources

Background

There are no fish or fish habitat within the Project site. There is a wetland complex off-site to the south that has a moderate-high value for amphibians and waterfowl.

Potential Effects

The distance from the site to the wetland mitigates the potential for negative environmental impacts associated with construction and operation of the Project.

Mitigation and Monitoring

Mitigation measures for aquatic habitat will include the management of storm water to reduce the risk of sediment entering the wetland. An environmental monitoring program will be implemented to mitigate the effects of construction on surface water and aquatic habitat.

Prior to plant start-up, the water discharged from the ash pond will be monitored to establish a baseline. During operation, water discharged from the ash pond will be monitored quarterly at the same time that monitoring is conducted for the wetland outflow under the effluent permit.

Issues Raised and Proponent's Responses

Issue:

Ministry of Environment staff asked what further operating and monitoring measures can be put in place to maximize the effectiveness of the pond and minimize impacts on the wetland.

Proponent's Response:

A baseline water quality program has been initiated to provide a basis for future comparison. The ash pond effluent will be monitored when the Project is in operation. In addition, Pope & Talbot will monitor the quality of the wetland discharge in accordance with permit requirements.

Issue:

First Nations have asked whether toxicity testing of the wetland water quality will be undertaken and reported on a regular basis for waterfowl and muskrat in addition to the fish toxicity testing.

Proponent's Response:

Fish toxicity testing results for the wetland show the water quality has been good with zero percent toxicity to rainbow trout. Since the quality of effluent will not change significantly, monitoring of waterfowl or muskrat is concluded to be less effective than fish toxicity monitoring.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on aquatic resources.

8.9 Vegetation

Background

The vegetation on the site includes pine, spruce, poplar ecosystem, and wetlands. No plants listed on the British Columbia Conservation Data Centre: Rare Vascular Plants Tracking List were found.

Potential Effects

As these areas have been extensively disturbed in the past with associated logging, clearing, mill operations and overall development of the area, their ecological values are considered to be low. The site will be landscaped and re-vegetated before completion of the construction phase.

Enhancement, Mitigation and Monitoring

Any vegetation outside of the areas needed for facilities will be disturbed as little as possible. Native trees and shrubs will be used for landscaping planning within disturbed areas when construction is complete.

Issues Raised and Proponent's Responses

Issue:

First Nations are interested in having an invasive species management plan and monitoring of wetland vegetation in view of future changes to conditions.

Proponent's Response:

The Project is not expected to alter vegetation in the wetland as the effluent quality with the Project in operation will be similar to current conditions and the rate of effluent flow will be approximately 41% lower.

Issue:

First Nations asked which plant species will be used in reclamation and if this would contribute to the long term goal of re-vegetation of native species.

Proponent's Response:

The site will be re-vegetated in accordance with the Landscape Design and Restoration Plan. The vegetation used for re-planting will be indigenous to the Sub Boreal Spruce Subzone. This approach will meet the long-term goal of re-vegetation of the site using native species.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on vegetation.

8.10 Wildlife

Background

The Project site is in an industrial area and has been disturbed by past development and on-going use that affects its habitat value and the presence of wildlife. Significant wildlife habitat identified near the site included a wetland complex and a red-tailed hawk nest.

Potential Effects

The potential effects from construction of the Project on waterfowl, raptors, passerines, woodpeckers, short-eared owl, barn swallow, mammals, northern long-eared myotis, amphibians and reptiles are expected to be minimal.

Potential impacts to wildlife and vegetation in the study area during operation of the Project are also expected to be minimal. Impacts at this stage will be limited to vehicular related emergency spills potentially affecting nearby watercourses. Sensory disturbances to wildlife are expected to be minimal because of the proposed noise mitigation measures (Section 5.6.2 of the Application) and acclimatization of wildlife to noise and traffic. Contraventions to the *Migratory Birds Convention Act* (1994) are not expected.

Although construction and operation of the Project will affect and remove existing habitat on the site, the site itself is not considered to be of crucial or of critical value to wildlife due to past site development and disturbances. As well, the site is small and habitat of similar or higher value exists nearby that will remain available for wildlife. Based on the proposed mitigation measures, the residual effects on wildlife and habitat from construction and operation of the Project are expected to be minimal to low.

The number of large animals that may be killed by trucks delivering wood residue to the Project is conservatively estimated to be three to four per year. This estimate is based on accident statistics for bear, deer, elk and moose. The vast majority of the predicted deaths are for deer and moose. The predicted additional animal deaths from truck traffic are very small compared to the number of animals harvested by hunters, varying from 2.5% for deer to less than 1% for bear, elk and moose. The potential impact of truck traffic from the fuel supply areas on wildlife is concluded to be low.

Enhancement, Mitigation and Monitoring

The site will be fenced to prevent large mammals from entering the site. The wetland will be protected to ensure that its continuing function is preserved. Proposed mitigation for the loss of habitat will include:

- construction of up to five nesting platforms for barn swallows and short-eared owls in the areas of the Project site left undisturbed from clearing and site preparation;
- in consultation with Environmental Canada, build bird houses/nest boxes to help offset potential adverse impacts of the Project;
- a minimum 15-metre uncleared buffer area around the perimeter of the site where the ash landfill will be located;

- implementation of a pre-construction wildlife survey prior to any site clearing to confirm presence/absence of species that have migrated into the area to recommend appropriate means of removal/relocation to sites on adjacent property; and,
- an environmental monitor will conduct site inspections (frequency depending on construction activities underway) during the construction phase to assess and resolve unforeseen environmental issues that may arise with regard to biophysical effects of construction work.

Truck traffic impacts will be mitigated by monitoring of impacts and by requesting contractors implement improved driver training and policies if a high frequency of animal deaths is reported.

Issues Raised and Proponent's Responses

Issue:

First Nations asked about fencing any areas that might be an attractant for wildlife.

Proponent's Response:

Most of the Project site will be fenced to keep mammals away from the proposed ash landfill area and the plant facilities. This will limit the use of most of the site by wildlife with the exception of birds and some small mammals.

Issue:

First Nations expressed concern that pollution may affect the swan fly-way near Moberly Lake.

Proponent's Response:

The Proponent has reviewed this issue with the Canadian Wildlife Service to see if there any concerns with migratory birds or swans in the vicinity of the Project. No swans or cranes were observed staging in the wetland over a 10-day study period conducted by the Proponent in June and September, 2006. Every effort will be made to ensure that disturbance to waterfowl using the wetland is minimized.

Issue:

During a meeting between the Proponent and the federal agencies, September 7, 2007, Environment Canada questioned whether the Proponent had searched the site for Sandhill Cranes and had done sufficient work in its raptor and breeding survey.

Environment Canada Canadian Wildlife Service requested further discussion with the Proponent on the work and material presented in the Application, in more detail, and to provide additional information from the field studies.

Proponent's Response:

The Proponent replied that it had assessed the wetland for Sandhill Cranes two to three hours/day over a period of 10 days (following procedures outlined in the Resource Inventory Committee Guidelines), and dedicated five days (three hours/day) to breeding bird survey and another day to visually observe the young of the year.

The Proponent agreed to have a further discussion with Environment Canada Canadian Wildlife Service on the work and material presented in the Application. The Proponent's wildlife biologist specialist met with a representative of the Canadian Wildlife Service of Environment Canada on September 26, 2007, to discuss the methods and findings related to the Application and to respond to questions. As a result of the discussion, the Proponent's specialist provided a summary of the observations/recommendations within the areas designated as wetland.

Issue:

Environment Canada Canadian Wildlife Service outlined the requirements of the *Migratory Birds Convention Act* and identified need for nest survey program should project activities overlap with the migratory bird breeding season.

Proponent's Response:

The Proponent committed to develop a nest survey program, if and where project activities overlap with the migratory bird breeding season. If activities overlap, than a nest survey will be conducted on potential nesting habitat within 500 metres of the proposed Project disturbed area using protocols developed in the Inventory Methods for Forest and Grassland Birds. If nesting activity is documented during this period, a follow up survey will be conducted during both the construction and post construction (operational) phases of the project.

Issue:

Environment Canada Canadian Wildlife Service provided suggestions regarding offset initiatives for wildlife, including recommendation for further discussion with Canadian Wildlife Service.

Proponent's Response:

The Proponent committed to constructing up to five nesting platforms.

Issue:

First Nations and Health Canada raised a concern about the effects of truck traffic on wildlife.

Proponent's Response:

By using data from the Insurance Corporation of British Columbia and the Ministry of Transportation, the Proponent determined that collision mortalities due to trucks transporting wood residues to the Project would be minor (less than 1% of all moose, bear and elk and about 2.5% of the deer killed by hunters in the region).

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on wildlife.

8.11 Archaeology

Background

Approximately 75% of the proposed development area is within a recently cleared area or is part of the Pope & Talbot Pulp Mill property. Additional disturbance is due to the previously constructed gas pipeline, power line right-of-way, railroad tracks and several roads.

Potential Effects

The area proposed for the wood ash landfill was deemed to be of low archaeological potential. Several recent historic culturally modified trees (blazed lodgepole pine trees) were identified within the site. These trees are not protected under the *Heritage Conservation Act*.

Enhancement, Mitigation and Monitoring

The studies found that the Project will have no significant effects on archaeological resources.

The probability of identifying additional archaeological sites during construction of the Project is considered low. In the event that archaeological sites or resources are encountered during land clearing or construction, the Proponent will contact the British Columbia Archaeology Branch immediately.

Issues Raised and Proponent's Responses

No additional issues were raised during the environmental assessment review.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on archaeology resources.

8.12 Waste Management

Background

The Project will generate wastes during plant construction and operations. These wastes will be managed in compliance with all applicable regulations.

Potential Effects

The effect of waste disposal is not expected to be significant.

Mitigation and Monitoring

Any construction wastes that cannot be recycled will be directed to the local (approved) landfill. Wastes generated during operations will be collected and transported offsite to the Mackenzie Regional Landfill for recycling, or contracted to a licensed waste contractor for disposal. Wood ash will be collected, cooled with water and sent to the wood ash landfill, which will be operated in accordance with the Ash Landfill Management Plan. Wastes generated by repairs and maintenance activities will be recycled at the Mackenzie Regional Landfill or by an independent waste management contractor. Any hazardous wastes will be handled and disposed of according to the provincial Hazardous Waste Regulations.

Issues Raised and Proponent's Responses

Issue:

First Nations and Health Canada expressed concern that wood residue may occasionally contain chemicals that might result in deleterious emissions and asked how wood residue would be monitored.

Proponent's Response:

The Proponent indicated that most of the wood residue that will be utilized at the Project is residue from British Columbia interior sawmills and from chipping of logging residues that are currently burnt in beehive burners and from chipping of logging residues open-burned in logged areas. Wood fuel will be procured from suppliers under contract agreements that will stipulate that the Proponent will not accept residue produced from preservative-treated or painted wood, or construction debris and the Proponent will ensure that all potential suppliers understand the importance of meeting this requirement. Wood residues will be monitored for foreign material during operations.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments related to waste management will prevent or reduce to an acceptable level any potential adverse effects of the Project on the environment, the community and on First Nations.

8.13 Land Use

Background

The proposed Project site will be consolidated from two parcels of land - Lot A, which is 19.2 hectares in area and owned by BC Rail Properties Ltd. and Lot B, which is 23.7 hectares in area and owned by Mackenzie Pulp Land Ltd. Lot B is zoned M3 (Heavy Industrial) under the District of Mackenzie Zoning Bylaw No. 1114, 2006, and the Official Community Plan. Lot A is being rezoned to M3.

The District of Mackenzie has confirmed that power generation is permitted in the M3 Zone. The nearest lands zoned for residential use are located two kilometres to the east of the site.

Potential Effects

The proposed Project site has already been disturbed by past developments and logging activities and ongoing use associated with the operation of the adjacent Pope & Talbot Pulp Mill. Therefore, there are no potential effects anticipated.

Mitigation and Monitoring

Mitigation or monitoring is not required.

Issues Raised and Proponent's Responses

Issue:

First Nations asked how the Official Community Plans link to the proposal with regard to wildlife, wildlife habitat and safety.

Proponent's Response:

The District of Mackenzie's Official Community Plan does not include information on habitat, wildlife or safety issues for the site. The surveys conducted to establish baseline information for aquatic life; vegetation and wildlife are best suited to the assessment of potential project effects.

The Proponent will prepare an emergency response plan to protect personnel and plant property, the general public and the environment in the case of potential emergency situations.

Conclusion

As shown in Table 8-1 in Appendix G, the Project will have positive effects on air quality, greenhouse gases (climate change), groundwater, regional management of wood wastes, and land use in the industrial area. No significant adverse impacts are predicted to occur for the remaining Valued Environmental Components assessed, with the magnitude of these being low to nil, except for moderate intermittent noise effects during the construction phase. These results will be achieved with mitigation measures appropriate to each source of potential disturbance, supplemented for some of the Valued Environmental Components with environmental monitoring.

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on land use.

9 FIRST NATIONS INTERESTS

9.1 Socio-economic

Baseline Conditions

The Project is located within the Claimed Traditional Territory of the McLeod Lake Indian Band (Figure 5-1) as that term is defined in the Treaty No. 8 Adhesion and Settlement Agreement. Although the Project is located west of the Treaty No. 8 boundary recognized by the Province, it is within the area which a number of the Treaty 8 First Nations have claimed as being part of the territory encompassed by that Treaty.

Information on socio-economic conditions in four of the eight Treaty 8 First Nations was provided in the Application since the McLeod Lake Indian Band, West Moberly First Nations, Saulteau First Nations and Fort Nelson First Nation had indicated at the outset of the Pre-Application stage of review that they wished to be involved in the review of this Application. The Halfway River First Nation joined the Working Group in the Application Stage of the review.

Potential Project Effects

The Proponent and the Environmental Assessment Office consulted with the McLeod Lake Indian Band, West Moberly First Nations, Saulteau First Nations, Fort Nelson First Nation and the Treaty 8 Tribal Association throughout the environmental assessment review of the Project – and with the Halfway River First Nations in the Application Stage – to identify, discuss and address their issues and concerns related to the potential effects of the Project on socio-economic conditions.

The principal socio-economic concerns raised by First Nations during the review of the Application centred on the potential for communities, businesses and individuals to benefit from construction and operation opportunities.

During the review of the draft Assessment Report, First Nations expressed concern about the appropriateness of the methods utilized by the Proponent to conduct a socio-economic impact assessment of the Project.

Enhancement, Mitigation and Monitoring

As outlined in section 9.4, the Proponent has made a number of commitments that will ensure positive socio-economic benefits are delivered from the Project by First Nations, including:

- provision of two job shadowing positions for First Nations during construction;
- provision of two apprenticeship positions for First Nations during operations;
- assurance that First Nations will be made aware of contract opportunities during construction; and,
- assurance that the General Contractor for the Project will be made aware of all First Nations' businesses and contractors interested in participating in the construction of the Project.

The Proponent has committed to continue to meet with and consult with the First Nations and the Treaty 8 Tribal Association throughout the permitting, construction, operation and decommissioning of the Project.

The Environmental Assessment Office has committed to meet with First Nations, the Proponent and permitting agencies if a Certificate is issued for the Project to ensure that all commitments made by the Proponent during the review are known to the permitting agencies.

Specific commitments related to employment, training and contracting opportunities during the construction and operating stages are described in the following sections.

Issues and Proponent's Responses

Issue:

First Nations indicated that First Nations specific socio-economic Valued Ecosystem Components had not been included in the Application. First Nations asked the Proponent to explain how First Nations were asked to provide input into the selection of these components.

Proponent's Response:

The environmental issues identified by First Nations in the development of the Terms of Reference were utilized to help identify the Valued Ecosystem Components. Input from First Nations during the development of the Terms of Reference also identified the issues considered in the First Nations-specific socio-economic impact assessment, namely traditional use, Treaty rights, employment, business opportunities and the impact of truck traffic on wildlife.

The consultation program included providing information to First Nations about the proposed project and asking for First Nations to identify concerns about the Project's potential effects.

First Nations conducted a Traditional Land Use Study with support from the Proponent. Issues and potential project effects identified in the study were considered in the selection of Valued Ecosystem Components and in the planning of methods to mitigate project effects.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments outlined in the Application and developed during the review, respond appropriately to the socio economic issues identified in the Application Terms of Reference and will prevent or reduce to an acceptable level any potential adverse effects of the Project on socio-economic conditions in First Nations communities.

9.2 Traditional Land Use and Traditional Way of Life

Baseline Conditions

A Traditional Land Use Sites Assessment was undertaken in October, 2006. Representatives of the Saulteau First Nations, West Moberly First Nations and McLeod Lake Indian Band participated in the study. The main objective of the study was to collect site-specific traditional land use information directly associated with the Project. As such, the entire site, as well as a 250-metre buffer around all Project components, was examined. The study confirmed that the Project area has already sustained considerable impact from industrial activities in the area.

Subsequent to the establishment of the Application Terms of Reference, First Nations expressed their desire for potential effects of the Project on hunting and gathering along the transportation corridors to be evaluated.

Potential Project Effects

Although 61 sites were identified in the Traditional Land Use study area, none of the sites will be directly impacted by the Project. However, the Traditional Land Use Sites Assessment identified two sites, within the broader Project area, where the use of pesticides should be avoided. First Nations expressed their concern about the potential impact of the use of pesticides on the plants in the area. While the location of these two sites – and the plants that were found there – is confidential, it can be assumed that these sites are important as sources of plants that might be gathered by First Nations for food, medicine or ceremonial purposes. The First Nations have informed the Environmental Assessment Office that these activities are an important component of the First Nations' traditional way of life.

During the review of the Application, First Nations expressed their concern that while the Project on its own will not greatly interfere with their ability to maintain their traditional way of life, this way of life had already been significantly affected by other Projects. For instance, although the Treaty protects their right to fish, and this Project may actually improve aquatic habitat for fish, the construction of the Williston Reservoir has meant that First Nations can no longer fish in the locations or the way that they had prior to the reservoir being created – long-established fishing spots were eliminated by flooding, the mercury content of fish increased due to flooding, and the reservoir is unsafe for boating in many areas.

Similarly, First Nations told the Environmental Assessment Office that the development of the town of Mackenzie, roads, pulp mills, sawmills, mines, oil and gas exploration and development and forest harvesting in the region have compromised the First Nations' ability to continue to practice their traditional mode of life; that wildlife resources that First Nations might have hunted freely in the past are now being shared with non-Aboriginal hunters; and that resource development roads that criss-cross the former wilderness have changed the hunting experience significantly from what it had been for many years prior to the Treaty

First Nations and Health Canada raised a concern about the potential for vehicle exhaust and dust to affect plants, including berries that might be gathered by First Nations along the truck routes or in the vicinity of the Project. Approximately 66% of the Project truck traffic will be on paved roads and therefore have a low impact on road dust and the deposition of road dust on berries if they exist along the roadside. Also, approximately 34% of the truck traffic will be on gravel roads and therefore have a potential to increase existing road dust emissions that may have some effects on vegetation within about 30 metres of the road during the warm, dry periods of the year.

The potential effects of truck traffic on wildlife (moose, elk, bear and deer) were evaluated along the roads that will be used for the transport of wood residue to the Project. The Proponent determined that collision mortalities due to trucks transporting wood residues to the Project would be minor (equivalent to less than 1% of all moose, bear and elk and about 2.5% of the deer killed by hunters in the region).

Enhancement, Mitigation and Monitoring

Mitigation was recommended for three Traditional Land Use Sites. To avoid adverse impacts on plant communities at two of the sites (#3 and #17), the Proponent has committed to not use herbicides or pesticides at these sites. In addition, the Proponent has committed to provide First Nations with a draft plan of the Project Landscape Design and Restoration Plan. The third site identified contained one trap. The Proponent made contact with the trapper and confirmed that he was not a First Nations individual and that the trap was located on private land.

The Proponent identified the dust control and road management measures that are currently employed on various sections of the gravel road between Fort St. James and Mackenzie and agreed to meet with members of the McLeod Lake Indian Band, upon their request, that harvest country foods along the Fort St. James to Mackenzie forest service road, and to explore options for additional dust control measures, if this is found to be necessary.

The potential effects of truck traffic on wildlife mortalities will be further reduced through the application of specific mitigation measures (using professional drivers, reporting all collisions, and requesting truck contractors implement specific measures in problem areas).

Given the mitigation measures identified above, it is not anticipated that the construction or operation of the Project will affect traditional land use or First Nation's traditional way of life in the Project area.

Issues Raised and Proponent's Responses

Issue:

First Nations asked the Proponent to clarify which pesticides or herbicides will be used and for what purpose.

Proponent's Response:

The Proponent has committed that pesticides and herbicides will not be applied to Traditional Land Use Sites 3 and 17. The Proponent further committed to provide First Nations with a draft plan of the Project Landscape Design and Restoration Plan.

Issue:

Health Canada and First Nations raised a concern about the potential for dust and vehicle exhaust to affect plants, including country foods such as berries that might be gathered by First Nations along the truck routes or in the vicinity of the Project. Health Canada asked the Proponent to provide information in regard to the potential effects of truck traffic on country foods as follows:

- explore with First Nations their concern about the effects of truck traffic on harvested berries beside the road;
- provide additional information on:
 - dust control measures implemented by the Ministry of Transportation on the 80 kilometre segment of the road it manages;
 - road users involved in management of remaining portion of the road; and,
 - dust control measures implemented by road users on this 100 kilometer portion of the road;
- potential for deposition of other toxic substances such as contaminants in diesel emissions that could be absorbed into berries; and,
- options for mitigation in order that areas of concern identified by First Nations be addressed.

First Nations asked the Proponent to clarify the effects of truck transportation on berries.

Proponent's Response:

The Proponent spoke with the McLeod Lake Indian Band on several occasions to discuss McLeod Lake Indian Bands concerns about the potential impacts of truck emissions on berries or other country foods and to inquire if these concerns had been adequately addressed. McLeod Lake Indian Band indicated that the Proponent adequately addressed McLeod Lake Indian Band's concerns. McLeod Lake Indian Band suggested the Proponent meet after the Certificate is issued with the Band and other First Nations who harvest country foods along the Project trucking routes to discuss potential effects. The Proponent committed to consult with McLeod Lake Indian Band members who harvest country foods along the Mackenzie to Fort St. James forest service road, following the receipt of the Environmental Assessment Certificate.

The Proponent has indicated its willingness to consider a linear site tour with First Nations if they wanted one once the Project is operational. The purpose of the tour would be to identify areas of importance for berry picking purposes and for which dust control measures might be of value, and then explore the feasibility of implementing dust control measures with other road users, including First Nations who use the road for hunting, fishing, gathering purposes.

The Proponent responded to Health Canada and provided additional information on:

- road management;
- road use;
- road maintenance and dust control currently conducted;
- road safety; and,
- permitting of use of Forest Service Roads.

The Proponent concluded that based on the screening assessment that there is a negligible health risk from exposure to polycyclic aromatic hydrocarbon compounds that may deposit on berries, Swamp tea or other country foods, or on the soil located beside the forest service roads

due to emissions from truck traffic. The Proponent's conclusion is detailed in the Proponent's response to comments on the Application form Health Canada (meeting September 7, 2007, and letter September 10, 2007) in Appendix E7 of this report.

The Proponent responded that the only method sometimes used for control of road dust on forest service roads or Ministry of Transportation roads is application of water spray. This is the only practical means of dust control on remote roads. In addition, periodic grading of roads is done on forest service roads and the Germansen Road, as required to maintain the roads in acceptable condition for regular use. For the forest services roads, this is determined by the users of the road in accordance with the agreement between users and the primary user assigned by the Ministry of Forests.

Issue:

Health Canada requested an evaluation of the potential contribution of the Project to atmospheric deposition on plants gathered for food.

Proponent's Response:

The Proponent explained that burning wood residue, sludge and kraft soap at optimum temperatures, the use of Good Combustion Practices and the use of multi-clones and an electrostatic precipitator will minimize the release of hazardous pollutants. Emissions of oxides of sulphur and nitrogen (wet and dry) will be low; highest depositions will be within one kilometre of the Project. Ambient concentrations of particulate matter and the potential for deposition of particulate matter will decline in the region when the Project becomes operational.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on traditional land use.

In addition, the Environmental Assessment Office considers that since the Project will occupy a small area of previously disturbed land in an already heavily industrialized area, it will not have a significant effect on First Nations' ability to fish, hunt, trap, or carry on their traditional way of life in the Project area. (See section 9.3 for further background on this issue).

9.3 Treaty Rights

9.3.1 Introduction

Treaty No. 8 was negotiated by the federal Crown in 1899 with Cree, Beaver, Chipewyan and other Indians, in an area that encompassed north-eastern British Columbia, northern Alberta, the northwest corner of Saskatchewan and part of the Northwest Territories.

Seven of the original forty Treaty 8 First Nation communities are located in British Columbia (Fort Nelson First Nation; Prophet River First Nation; Doig River First Nation; Blueberry River First Nations; Halfway River First Nations; Saulteau First Nations; and West Moberly First Nations). The McLeod Lake Indian Band adhered to Treaty No. 8 in 2000, in accordance with the McLeod Lake Indian Band Treaty No. 8 Adhesion and Settlement Agreement.

Treaty No. 8 provides the signatories with the right to carry out their "usual vocations" of hunting, fishing and trapping within the Treaty area.

9.3.2 Hunting

Early in the review of this Project, the First Nations expressed their concern about the potential for increased truck traffic to result in increases in the numbers of wildlife killed through collisions with vehicles – thus affecting their Treaty right to hunt.

The Proponent determined that over 130 large mammals were killed each year in collisions with vehicles on the routes that it is proposing to use to transport wood residue to the Project. It was estimated by the Proponent that the Project could result in a maximum of three to four additional animals being killed every year.

The Proponent also determined that the number of potential deaths due to collisions with wildlife was about 2.5% of the number of deer shot by hunters annually in the study area and less than 1% of the bear, elk and moose shot in the area. Truck traffic impacts will be mitigated by:

- using professional drivers;
- monitoring of impacts; and,
- requesting contractors to implement improved driver training and policies if a high frequency of animal deaths is reported.

Although the potential impact of truck traffic on large mammals; therefore, on First Nations' right to hunt is negative, it is considered to be low and reversible. It is also considered small in relation to the number of large mammals killed each year by hunters.

The potential impact of truck traffic from the fuel supply areas on wildlife is concluded to be low and not significant. Further, the Proponent will continue to work with the Treaty 8 First Nations and the Treaty 8 Tribal Association through the construction and operation of the Project to ensure that any potential issues that are identified are dealt with in a timely manner.

9.3.3 Trapping

The assessment of potential Project impacts on First Nations' right to trap was not identified as a priority issue during the review of the draft Application Terms of Reference; however, impacts of truck traffic on large mammals was considered more important.

First Nations have undoubtedly trapped in the vicinity of the Project in times past. In recent discussions between the Environmental Assessment Office and First Nations, the latter have indicated that trapping was once an integral part of the First Nations' way of life in this region. As noted below in Section 9.3.6 however, the ongoing development of roads, communities, forestry, agriculture, mining and oil and gas resources in the region has in the view of the First Nations made it increasingly difficult for First Nations to pursue this activity.

The Proponent has identified areas of good habitat (forest and wetland) that remain on this previously disturbed site and have committed to protecting this habitat as much as possible. Impacts of the Project on First Nations' ability to trap will be very low.

9.3.4 Fishing

The aquatic surveys for the Project indicated that there were no fish or fish habitat within the Project site. There is a wetland about 200 metres to the south of the Project that is currently fed

by about 75,000 cubic metres/year of effluent from the Pope & Talbot ash pond and domestic effluent from the pulp mill. Once the Project is operational, the sluicing of fly ash from the pulp mill will cease and will be replaced by surface runoff from the Project's wood residue storage pile and ash landfill, reducing the overall volume of effluent to about 44,000 cubic metres per year.

This wetland discharges over a weir and through a culvert to an unnamed stream that flows into the Williston Reservoir approximately 950 metres downstream. The quality of effluent discharged from the ash pond and the wetland with the Project in operation is predicted to be very similar to that which is discharged currently. Measures have been identified to improve effluent quality if monitoring during operation confirms that it is necessary.

First Nations raised the concern that since the development of the Williston Reservoir in 1967, it is no longer possible for First Nations to fish as before. First Nations also raised a concern about the development of the Project and the discharges from the adjacent pulp mills may cause further deterioration of the water quality. First Nations requested that the Proponent:

1. describe the nature and volume of effluent that is currently discharged, directly or indirectly, to the Williston Reservoir and describe how this will change with the development and operation of the Project; and,
2. provide a qualitative assessment of any changes, positive or negative, to the Williston Reservoir water quality that may occur as a result of the construction and operation of the Project.

The Proponent's detailed response is in Appendix D3 of this report.

Since the quality of effluent that is discharged to the wetland is not expected to deteriorate, and since the volume of effluent is expected to decrease, it is anticipated that it is unlikely that the Project will affect aquatic resources of the unnamed creek or the Williston Reservoir and that any impacts will be low. It is, therefore, unlikely that the Project would affect Treaty rights to fish in the vicinity of the Project.

9.3.5 Summary

Treaty No. 8 was negotiated by the federal Crown in 1899 and provides the signatories with the right to carry out hunting, fishing and trapping within the Treaty area.

Section 6 of the Application examined the potential effects of the Project on First Nations treaty rights and other interests (socio-economic conditions, traditional land use and knowledge, employment and income, business opportunities, transportation and traffic and other effects).

Sections 5.1 and 5.2 of this report outline consultation measures undertaken by the Environmental Assessment Office and the Proponent during the pre-Application and Application stages of the review process to assist in determining the potential impacts of the Project on Treaty rights of First Nations.

The Proponent has committed to continuing to work with Treaty 8 First Nations and the Treaty 8 Tribal Association through the construction and operation of the Project to ensure that any potential issues that are identified are dealt with in a timely manner. In particular, the Proponent has committed to requesting that truck contractors implement remedial measures if it is found that more collisions between trucks and wildlife are occurring than were predicted.

This commitment to ongoing monitoring and consultation will ensure that any adverse environmental effects on Treaty rights are noticed very early so that mitigation measures can be implemented in time to protect fish, wildlife, water quality (surface and ground) and air quality – and the Treaty rights associated with each of these components of the environment.

Some First Nations were unable to complete their review of the final draft Assessment Report due to capacity issues related to the large number of projects currently under review. However, based on the information presented during the review, the Environmental Assessment Office is satisfied that there will be no significant adverse impacts on First Nations' Treaty rights as a result of the Project.

9.4 Employment and Income

Baseline Conditions

Individuals from Treaty 8 First Nations have experience in a number of different industries and occupations which could provide experience relevant to Project opportunities.

Potential Project Effects

The Project will create various direct and indirect employment opportunities during construction and operation. Treaty 8 First Nations are very interested in identifying construction opportunities as well as ongoing opportunities (such as the provision of wood residue supplies) during operations for their members.

Enhancement, Mitigation and Monitoring

The Proponent will continue to work with the First Nations to ensure that they are aware of the employment opportunities available and the means through which they can increase their chances of being successful in taking advantage of the opportunities. As part of the process for selecting the Engineering/Procurement/Construction Contractor, potential bidders will be provided with information on the capabilities of local businesses, including First Nations businesses. Once the contractor has been selected, First Nations will be provided with the name of the contractor so that they can discuss potential opportunities directly with the contractor.

The Proponent will also prepare an Information Sheet identifying the jobs available during construction and operations and provide it to the First Nations.

In addition to the potential opportunities discussed above, two First Nations-specific opportunities are being proposed:

- Two “job shadowing” positions will be available during construction, subject to the agreement of the construction contractor, for interested individuals from Treaty 8 First Nations.
- Two apprenticeship positions (e.g., trade, non-trade) will be available during operations for McLeod Lake Indian Band, and the West Moberly, Saulteau, Halfway River and Fort Nelson First Nations.

Issues Raised and Proponent's Responses

No additional issues related to employment were raised during the environmental assessment review.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will provide potential opportunities for increased employment and income in First Nations communities and will not adversely affect Treaty rights or other interests.

9.5 Business Opportunities

Baseline Conditions

In recent years, Treaty 8 First Nations have been working to develop businesses that employ their members as well as other local residents, while at the same time respecting the values that are important to the First Nations. Treaty 8 First Nations want their businesses and community members to be able to compete for construction, operating contracts and employment.

Potential Project Effects

Construction and operation of the Project will generate business opportunities through direct and indirect purchases of materials, equipment, and services and through direct and indirect workers spending their wages, or a portion of their wages, in the region.

During operations, the Project will require ongoing supplies of goods and services as well as specialized services during major maintenance events. The First Nations have indicated a particular interest in exploring opportunities to supply fuel to the facility as this business opportunity would allow their members to continue living in their home communities while benefiting from the opportunities created by the project.

Enhancement, Mitigation and Monitoring

Discussions with Treaty 8 First Nations are ongoing regarding their interest in and capability of providing services that could be required by the project. The Proponent has committed to work with the First Nations to ensure that they can take advantage of opportunities offered by the project and is exploring a number of different opportunities for First Nations including contract services and labour.

The Proponent will provide the First Nations with an Information Sheet describing the goods and services that will be required for the Project. Prior to the start of construction and operations, a contractors' open house will be widely advertised in Mackenzie and the First Nations communities with an interest in the project. The Proponent will also provide the information directly to interested First Nations for distribution to their business interests.

Issues Raised and Proponent's Responses

Issue:

First Nations noted that the socio-cultural information for each Treaty 8 First Nation community in relation to business opportunities arising from the proposal is of insufficient detail for the different phases of the project: planning, construction, operations and decommissioning, in order to plan community business strategies for taking advantage of potential business opportunities.

Proponent's Response:

The information provided in the Application is the extent of the information that is currently available regarding potential business opportunities. The commitments by the Proponent in the Application will help First Nations plan to take advantage of upcoming business opportunities.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will provide significant business opportunities for First Nations communities and will not adversely affect their Treaty rights or other interests.

9.6 Transportation and Truck Traffic Impacts on Wildlife

Baseline Conditions

A major concern that was raised by First Nations with respect to the Project was the potential for an increase in the deaths of large animals as a result of collisions with trucks delivering fuel to the Project from Chetwynd, Bear Lake and Fort St. James.

Two delivery scenarios were considered for estimating large animal deaths from traffic accidents. The baseline scenario is as per the Approved Terms of Reference, while the alternate scenario includes a low rate of flow from Bear Lake, which relates to conditions in the early years of operation.

Potential Project Effects

The baseline scenario is estimated to result in potentially 16 additional large animal deaths every five years, mostly deer and moose, while the alternate scenario results in an average of 18 large animal deaths potentially every five years. This is equivalent to less than 1% of all moose, elk and bear and about 2.5% of all deer shot by hunters annually in the region.

Enhancement, Mitigation and Monitoring

The Proponent will take all reasonable precautions and implement measures to mitigate the potential for impacting large animals, including:

- use of drivers that are very familiar with the sections of roads where there is a higher risk of wildlife crossings;
- use of qualified and experienced professional drivers, who will become accustomed to areas of high wildlife use and who will try to avoid collisions with large animals due to economic losses and risk of personal injury;

- communication between drivers operating on the same route and sharing information on sightings of wildlife and areas where extra caution is required;
- that some of the delivery trucks will be back haul (i.e., trucks that would have been traveling these same road segments empty);
- additional training material may be distributed to remind drivers of ways to minimize the risks of collisions with wild animals;
- the Proponent will require that trucking contractors report any incidents of collisions with bear, elk, deer, or moose and will keep an on-going annual record of the species of animal killed, accident location, date, time of day, and accident particulars; and,
- if a high frequency of animal deaths is noted on a particular road segment or by a specific trucking firm, the Proponent will attempt to reduce future animal fatalities by requesting contractors implement relevant driver training or policies.

Issues Raised and Proponent's Responses

Issue:

Health Canada expressed concern about the impact of the Project on the availability of wildlife due to the increase in wildlife being killed by an increase in the number of large transportation vehicles using the roads in the area.

Proponent's Response:

Mitigation measures that will be employed to avoid or reduce collisions as previously described.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments, will prevent or reduce to an acceptable level any potential adverse effects of the Project on truck traffic impacts with wildlife from diesel trucks transporting wood residue to the Project site.

9.7 Other First Nations' Interests

Issue:

The McLeod Lake Indian Band noted that the proposed Project will require wood to be transported to the facility from mills in Chetwynd, Fort St. James, Bear Lake, etc. and asked how emissions related to trucking affect the overall level of emissions from the facility.

Proponent's Response:

A preliminary estimate has been developed of emissions from heavy duty diesel trucks that will be used to transport wood residue to the Project. The estimate showed that the particulate emissions from fuel delivery trucks will be less than 1% of the emissions from the Project. The nitrogen dioxide emissions from fuel delivery trucks will be approximately 5% of the emissions from the Project.

Issue:

First Nations asked how the potential closure of the Canfor Mill would affect the Project.

Proponent's Response:

The Proponent expects the sawmill in Mackenzie to continue to operate within the lifetime of the Project. The Proponent also expects to obtain adequate quantities of fuel from the fuel supply

areas identified in the Application. The Proponent also believes that the fibre supply in the Mackenzie Forest District will continue to be a strong contributor to the British Columbia forest industry.

9.8 Summary of Potential Effects and Mitigation Measures

As noted above, some First Nations indicated that they did not have sufficient time or capacity to complete their review of the final draft Assessment Report. However, based on the information available, the Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments with respect to First Nations-specific issues will prevent or reduce to an acceptable level any potential adverse effects of the Project on First Nations' interests and will provide potential employment or contract opportunities for First Nations individuals or businesses.

10 SOCIO-ECONOMICS

10.1 Employment, Income, and Government Revenues

Background

The economy in the area is focused on resource industries, in particular forestry. Forestry continues to provide employment in logging, sawmilling, and manufacturing.

Potential Project Effects

Employment and Income

The Project is expected to create about 580,000 person hours or 322 "person years" of construction employment with a peak work force of 260, of which about 50 workers will come from the District of Mackenzie and surrounding area. Two "job shadowing" positions will be available during construction for interested individuals from Treaty 8 First Nations.

For the 322 person years of onsite construction employment, the value of wages, including overtime, are anticipated to amount to between \$29 and \$33 million.

An additional 204 indirect and 58 induced jobs could be created by construction of the Project.

The Proponent will require a permanent operating staff of about 26 full time employees. The Proponent has also committed to create two apprenticeship positions for Treaty 8 First Nations.

Annual employment income (wages and benefits) associated with the direct operations workforce is estimated to be approximately \$2.5 to \$3 million per year.

Government Revenues

The Proponent estimates that approximately \$2 million in provincial sales tax and \$0.2 million in other fees will be paid to the government during construction and that approximately \$0.4 million in provincial sales tax and \$0.02 million in other fees will be paid annually during operations. Annual property taxes to be paid to the District of Mackenzie are estimated to be about \$0.5 million.

Enhancement, Mitigation and Monitoring

The Proponent is working to maximize the participation of local residents in the construction and operation of the Project.

Issues Raised and Proponent's Responses

Issue:

A member of the public questioned whether the Proponent would maximize the hiring of local employees and contractors for the construction and operation of the Project.

Proponent's Response:

The Proponent has committed to use local employees and contractors as much as possible. The Proponent will provide names of local contractors to the general contractor and hold a contractors open house prior to the start-up of construction to help ensure local contractors are aware of the potential opportunities with the Project during construction and operation. The open house will be advertised in the Mackenzie Times and the Chetwynd paper.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on employment, income or government revenues in the community or the province and will provide significant opportunities for positive economic growth and employment to the region.

10.2 Population

Background

The estimated population of Mackenzie in 2006 was 5,452.

Potential Project Effects

About 210 workers will require temporary accommodation during the peak construction period. The operation of the Project will create 28 new positions (26 employees and two First Nations apprentices), which could lead to a permanent population increase of up to 84 persons.

Enhancement, Mitigation and Monitoring

The effects of the population increase during construction or operation are not expected to be significant. Even if all workers come from outside the community, the resulting population will still be considerably lower than that accommodated by the community a decade ago.

Issues Raised and Proponents Responses

No other issues related to population were raised during the environmental assessment review.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on population in the community, the region or the province.

10.3 Business Opportunities

Baseline Conditions

The District of Mackenzie is home to a wide variety of businesses including many that may be capable of providing goods or services to the Project.

Potential Project Effects

Construction of the Project will generate business opportunities through direct and indirect purchases of materials, equipment, and services. It is anticipated that the positive economic effect will be greatest in the District of Mackenzie, nearby First Nations communities and other larger regional communities (e.g., Prince George).

During operations local businesses will benefit from supplying goods and services directly to the Project and its employees on an ongoing basis. The provision of low cost energy to the pulp mill will contribute to its overall competitiveness, which will bring longer term economic stability to the region. It is not expected that there will be notable negative effects on business or industry in the study area.

Enhancement, Mitigation and Monitoring

To ensure that local businesses are aware of the available opportunities, the Proponent will prepare an Information Sheet identifying the goods and services that will be required during construction and operations. A contractors' open house will be held prior to construction to provide additional information on business opportunities.

The Proponent is committed to maintaining a list of contractors that are interested in construction contracts and has committed to require companies bidding to become Engineering/Procurement/Construction contractors to consider the list in their bids.

Issues Raised and Proponent's Responses

Issue:

A member of the public raised the concern that the Proponent should hire local employees and contractors for the construction and operation of the Project.

Proponent's Response:

The Proponent has committed to use local employees and contractors to the extent possible.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on business opportunities in the community or the province.

10.4 Housing

Baseline Conditions

There is one hotel, two motels and a number of bed and breakfast rooms in Mackenzie. There is also a permanent camp – Camp Watters – in the industrial area that can house 400 workers. There are also single family dwellings, apartments and townhouses available in the area.

Potential Effects

It is estimated that approximately 210 individuals from outside the area will require accommodation in Mackenzie at peak construction. It is likely that most of these workers will stay at Camp Watters.

There could be a need for up to 28 permanent accommodation units during operations. There may also be the occasional need for temporary accommodation for project-related personnel that come to the area for short periods of time.

Given the current housing situation in the area and the small number of units that will be required during operations, the housing demand created by Project operations staff will be easily accommodated.

Enhancement, Mitigation and Monitoring

By encouraging construction employees to stay at Camp Watters, the Project will provide considerable benefit to the local economy while not straining local resources. Enhancement or mitigation measures are not required during operations.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on housing conditions in the community.

10.5 Transportation

10.5.1 Roads

Baseline Conditions

Mackenzie is accessed by Highway 39, approximately 29 km from its intersection with Highway 97. A network of municipal roads serves the Mackenzie industrial area. Roads in the industrial area were built to accommodate industrial traffic. They are maintained and upgraded as required.

Potential Project Effects

Construction traffic will access the project site by traveling along Highway 97 to the intersection with Highway 39, along Highway 39 to the industrial area and then along Coquawaldie Road to the project site. It is anticipated that approximately 30 to 50 vehicles would be traveling to and from the site daily at peak construction. Workers staying at Camp Watters would be bussed to the site. Construction of the Project will create some minor traffic delays during peak delivery periods but these should be short-term in nature.

Only 28 workers will be employed during the operations phase. Therefore, operations employee traffic will be minimal and have no effect on traffic volumes in the area.

There will be an increase in long haul traffic, to transport hog fuel, between Mackenzie and each of the hog fuel supply areas, including Bear Lake (15 trucks/day, weekdays only), Chetwynd (14 trucks/day, weekdays only), and Fort St. James (30 trucks/day, 6 days/week).

Overall, the Project will result in a minor increase in traffic on Highway 97 and Highway 39 and within the District of Mackenzie.

Enhancement, Mitigation and Monitoring

The Proponent has identified a number of mitigation measures to help minimize the effects of project-related construction traffic. Mitigation measures are not required to deal with a workforce of 28, only a portion of whom will be on site at any given time.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

10.5.2 Air and Rail

Baseline Conditions

Mackenzie operates a class "C" airport located about 5.6 kilometres west of the community centre. The nearest commercial airport is located in Prince George.

Potential Project Effects

During construction and operations it is possible that some cargo may be flown to Mackenzie or that project personnel may utilize the airport. However, it is anticipated that the volume will be small and the airport will be able to handle the increase in demand. It is also anticipated that some materials will be delivered to Mackenzie by rail during construction.

Enhancement, Mitigation and Monitoring

As the Project will have a minimal effect on air or rail service in the area, mitigation measures are not required.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on transportation services (road, rail, air) in the community or the region.

10.6 Emergency Services

Emergency services in the District of Mackenzie include fire, police, ambulance and emergency response programs.

Baseline Conditions

The District of Mackenzie Fire Department provides fire service within the District boundary. The Fire Department responds to approximately 20 calls within the industrial area per year. Back up emergency response is provided by local industry, retired fire fighters and others in the community.

Police service in Mackenzie is provided by the RCMP. The Detachment has adequate manpower for its current needs.

Ambulance service in the District is provided by the British Columbia Ambulance Service on a 24-hour per day, year-round basis. The Mackenzie Ambulance Service covers an area from 10 kilometres north, and about 70 km to the south. It also provides service to the entire Williston Lake area, including two First Nations communities and eight to ten logging camps.

The District of Mackenzie has developed an emergency plan that forms the basis for organizing local, regional and provincial resources in the event of an emergency.

Potential Project Effects

The Project should not place a heavy demand on local fire, police, ambulance or emergency response services.

The small population increase associated with the project during construction and the fact that the workers will be housed at existing facilities is not expected to result in an increase in the demand for services.

Enhancement, Mitigation and Monitoring

The Proponent has committed to undertake the following steps to help ensure that any effect on fire services is minimized:

- meeting with the District of Mackenzie, the RCMP and the Ambulance Service on a regular basis to develop appropriate plans and working relationships;
- providing copies of the Emergency Response Plans, Fire Containment Plan, Environmental Protection Plan, relevant portions of the operations and maintenance manual, emergency phone numbers and other relevant materials to the District of Mackenzie, the RCMP and the Ambulance Service;
- designing the Project to comply with all government requirements and industrial insurance underwriters' guidelines concerning fire and explosion hazards;

- providing adequate water pressure to the site for fire fighting;
- inviting fire department representatives to participate in training and safety procedures;
- working with other companies in the industrial area to discuss and coordinate fire protection and emergency response;
- fencing the construction site and main operations area; and,
- requiring all visitors report to the project office.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on the provision of emergency services (fire, police, ambulance and emergency response) in the community or the region.

10.7 Public Health Services

Baseline Conditions

The Project is located within the Northern Interior Health Service Delivery Area and has access to a range of health services including Mackenzie and District Hospital, Mackenzie Health Centre, intermediate and extended care, as well as medical and alternative practitioners and services.

Potential Project Effects

Any effect on health facilities during construction will be short-term in nature. Due to the small size of the incoming workforce relative to the resident population during construction, and particularly during operations, the Project will not result in the need for new health facilities

The Project is not anticipated to have a negative impact on the health of residents in the study area. During construction and operations, there may be some positive health effects resulting from increased employment and income. Further, the effect of this project overall is expected to result in an improvement in air quality in the region which would be beneficial to the health of local residents, as well as to health service providers who may see a decrease in demand.

Enhancement, Mitigation and Monitoring

The Proponent will take a number of steps to ensure that any effect on local health services is minimized. The mitigation and enhancement measures identified in the air quality, water and effluent sections of the Application will help to ensure that potential effects on community health are mitigated to the extent possible.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on public health conditions in the community or the region.

10.8 Utility Services

10.8.1 Water

Baseline Conditions

The Project will not use the District of Mackenzie's water system and will not use groundwater. Processed water and firefighting water will be obtained from Pope & Talbot. Bottled water will be provided for all potable water requirements.

Potential Project Effects

The population increase associated with the construction and operation of the Project will have no effect on water service in Mackenzie. The District's existing water system is considered sufficient to meet the projected population increase that will result from this Project. The Proponent will provide bottled water for potable purposes at the Project and will ensure that the provision of process water meets the requirements of Northern Health.

Enhancement, Mitigation and Monitoring

The use of the Pope & Talbot system will mitigate any effect on the District's water system. The Proponent will ensure that connection to the Pope & Talbot system will require the approval of the Public Health Inspector. No further mitigation is required.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

10.8.2 Sanitary Sewer

Background

The Proponent will not use the District of Mackenzie's sanitary sewer system as sanitary sewer services will be obtained from Pope & Talbot.

Potential Project Effects

The Project will have no effect on the District's sewer system during construction or operations.

Enhancement, Mitigation and Monitoring

Since the District system will not be used, no further mitigation is required.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

10.8.3 Solid Waste

Background

The Project will generate wastes during plant construction and from processes and maintenance work during normal operations. The Proponent intends to reduce, reuse and recycle wastes where practical and to ensure all regulatory requirements are met.

Potential Project Effects

During construction and operations waste material that cannot be recycled will be deposited at the landfill. Special waste materials will be dealt with in an appropriate manner and deposited at designated facilities.

Enhancement, Mitigation and Monitoring

Waste generation will be minimized at the source. Recyclable materials will be recycled through local independent contractors and businesses.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

10.8.4 Electricity

Baseline Conditions

Sufficient electricity is already available to meet demand in the area.

Potential Project Effects

The construction of the Project will have no effect on electricity supply or service in the area. Development of the Project will help increase security of electricity supply for the Mackenzie area and the province as a whole.

Enhancement, Mitigation and Monitoring

Mitigation is not required.

Issues Raised and Proponent's Responses

Issue:

First Nations expressed concern that most of the power generated in the northeast is exported to meet the demand for power in the Lower Mainland. As land is taken up by reservoirs and wind farms, there is less land available to First Nations to practice their traditional way of life.

Proponent's Response:

This Project, which is being proposed in response to a province-wide call for power from BC Hydro, will have a very small footprint on previously disturbed private land; no new land will be taken up for the project.

10.8.5 Natural Gas

Baseline Conditions

Terasen supplies natural gas to the three mills in the area and the local community.

Potential Project Effects

There will be no effect on natural gas supply or service in the Mackenzie area during construction of the Project. Once the Project becomes operational, steam sales to Pope & Talbot will decrease its demand for gas. There is sufficient supply to meet the increase in demand that would be generated by a maximum of 28 new customers during operation.

Enhancement, Mitigation and Monitoring

Mitigation is not required.

Issues Raised and Proponent's Responses

There were no issues raised by the public, First Nations or government agencies.

Conclusion

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on the provision of utility services in the community or the region.

10.9 Summary

The socio-economic assessment concluded that there would be no significant adverse effects on socio-economic features in the District of Mackenzie as a result of the development and operation of the Project, and there would be long-term ongoing benefit in terms of employment and business opportunities over the lifetime of the project.

The permanent population increase associated with the project will result in a total population that is considerably lower than that of a decade ago and this population increase will help support existing services and businesses.

The Proponent has already demonstrated its willingness to work with the community to ensure the community benefits to the extent possible from the project and to ensure that any potential issues are addressed in a timely manner.

Employment and business opportunities will provide an ongoing benefit to local residents and businesses. The Proponent will work with the community and the First Nations to facilitate local participation in the Project's employment and business opportunities.

The development of the Project will contribute to improving the economic competitiveness of the industries utilizing cost-effective steam produced by the facility. The Project will not adversely affect the provision of services in the District or the region.

The Environmental Assessment Office is satisfied that the proposed Project plans, mitigation measures and related commitments will prevent or reduce to an acceptable level any potential adverse effects of the Project on socio-economic conditions in the community or the region.

11 FEDERAL REQUIREMENTS

In addition to the assessment of the environmental effects of the Project, as discussed in Section 10 of this report, the federal screening of the Project will also consider the following factors:

- natural hazards and effects of the environment on the Project;
- potential accidents and malfunctions with Environmental Consequences; and,
- cumulative effects of the Project.

Each of the factors is discussed in the sections below:

11.1 Natural Hazards and Effects of the Environment on the Project

11.1.1 Natural Hazards

The Project site is not located near a shoreline and is at a distance above the controlled level of the Williston Reservoir; and that ensures there is not likely potential for flooding. In addition the site is relatively flat, so there is no risk of slope failure or storm water runoff hazards.

The site will be developed under the 2005 National Building Code as a “Post-Disaster Facility” and a “Post Disaster Structure”. The Post Disaster Facility is to provide a structure that has less damage and a higher probability of being operational after an earthquake. However, the seismic level at this site is relatively low. Although the site is not prone to severe weather storms and winds, to be cautious, the risk of significant structural impact from extreme weather conditions will be minimized.

11.1.2 Effects of the Environment on the Project

The *Canadian Environmental Assessment Act* requires that the environmental assessment include consideration of the effects of the environment on the Project. In Section 5.17.2 of the Application, the Proponent assessed the potential effects of the environment on the Project over its 30 year operating lifetime. The potential changes in the environment that were considered included; water supply, receiving water quality, air quality, climate change and the pine beetle infestation.

Water Supply

The Proponent concluded that there would be no significant risk of the Project being adversely impacted over its lifetime by an unanticipated restriction in the supply of water required for the cogeneration facility, as the water requirement for the Project is relatively small.

Receiving Water Quality

The Proponent anticipates that there will be a minor risk of environmental changes that would adversely affect the Project’s ability to discharge treated process effluent to Williston Reservoir or to discharge runoff and sewage effluent to the nearby wetland.

Air Quality

The Project would not be affected by changes in air quality. The Proponent has taken steps, in the design of the Project, to ensure the emissions have no significant impact on the local air shed.

Climate Change

The Project is being designed to operate continuously over a range of ambient temperatures. Small changes in temperature in local climate change will have insignificant effects.

Pine Beetle Infestation

Timber impacted by the pine beetle in areas surrounding Mackenzie continues to grow. It is likely that the province and industry will respond by increasing logging of the pine beetle infested timber, and in turn, increasing the quantity of wood residue being generated at sawmills. The Project will provide an environmentally sustainable means of utilizing wood wastes generated from sawmills in the region and avoid air pollution which is associated with wood residue incineration and water pollution associated with land filling.

11.2 Accidents and Malfunctions

11.2.1 Potential Accidents and Malfunction with Environmental Consequences

The Proponent conducted a review of the environmental consequences of accidents and malfunctions likely to occur during the construction and operation of the Project. The results of the review and the Proponent's action plan to minimize potential impacts of accidents and malfunctions are summarized in Table 5.16.1 of the Application. The Proponent concluded that the risk and probability of environmental impacts of the identified accidents and malfunctions are likely to be low.

Construction

The Proponent believes that the following types of accidents or malfunctions have the potential to occur at the Project site during construction: fire and the spill of petroleum products or chemicals.

Operation

The Proponent believes that the following types of accidents or malfunctions that have the potential to occur during the operation of the Project include:

- electrostatic precipitator failure;
- fire in the plant facility and wood residue storage pile;
- shutdown of the secondary treatment system at Pope & Talbot due to equipment malfunction;
- loss of power;
- loss of water supply;
- spill of petroleum products or chemicals; and,
- temporary loss of wood supply to boiler due to equipment malfunction.

The Proponent commits to implement an Environmental Management Program during the construction and operation of the Project. The Environmental Management Program will include measures to mitigate the potential environmental, safety and health impacts of accidents and malfunctions. The Environmental Management Program will be comprised of the following plans:

- Storm Water and Sediment Control Management Plan;
- Hazardous Waste Management Plan;
- Spill Prevention Plan; and,
- Construction Waste Management Plan.

The potential risk to the environment from failure of these contingency measures is very low.

11.2.2 Emergency Response Plan

The Proponent will prepare an Emergency Response Plan to address the potential emergency situations for the Project. A preliminary Plan is outlined in section 3.4.15.6 of the Application.

11.3 Cumulative Effects Assessment

Selected regional Valued Ecosystem Components and hypothetical cumulative effects issues (Table 11-1) were identified by the Proponent and analyzed to assess their significance and to determine if additional mitigation and monitoring is warranted. The results of this analysis are described in the following sections, with reference as appropriate to the environmental assessment presented elsewhere in the Application.

Table 11-1 Potential Cumulative Effects Identified for Assessment

| Valued Ecosystem Component/Issue | Potential Project Effect | Hypothetical Cumulative Effect Mechanism |
|----------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Air quality | Increased/decreased ground-level pollutant concentrations from PROJECT emissions. | Emissions of common criteria pollutants (particulate matter (coarse), particulate matter (fine), nitrogen dioxide, carbon monoxide, and sulphur dioxide) may combine with existing and known future emissions to affect air quality in the air shed. |
| 2. Air quality | Reduction in ground-level pollutant concentrations in the wood fuel supply areas. | Use of wood residue by the Project will reduce the quantity of wood residue incinerated in beehive burners in fuel supply areas. |
| 3. Greenhouse gas emissions | Reduction in provincial contribution to climate change. | The reduction in greenhouse gas emissions will reduce provincial contribution to climate change. |
| 4. Noise | Increased noise. | Noise from the Project may combine with noise from existing or known future sources to create unacceptable noise levels in the vicinity of the site. |
| 5. Wildlife | Loss of habitat from land clearing. | Sensory disturbance and/or loss of habitat may affect certain wildlife species in the region. |

11.3.1 Air Quality

The Project will enable the shut down of the power boiler at the Pope & Talbot Pulp Mill, eliminating a substantial source of emissions, particularly, particulate matter, in Mackenzie.

The cumulative effects of emissions from the Project on air quality in Mackenzie are predicted to be as follows:

- The maximum concentrations of particulate matter (coarse) and particulate matter (fine) will decline slightly because of the reduction in emissions with the Project in operation. The maximum particulate matter (coarse) and particulate matter (fine) concentrations are predicted to be 54% and 44%, respectively, of the strictest objectives/standards.
- Maximum sulphur dioxide concentrations are predicted not to change with the Project in operation and to remain at less than 3.5% of the strictest objective levels for all averaging periods.
- Maximum nitrogen dioxide concentrations are predicted to be less than 29% of the strictest objective levels once the Project is operational.
- Maximum carbon monoxide concentrations are predicted to be less than 2% of the one hour objective and less than 4.8% of the eight-hour objective once the Project is operational.

The Project is concluded to have slightly beneficial cumulative effects as it will reduce particulate matter emissions and ambient concentrations. Other emitted pollutants will remain at low concentrations compared to regulatory guidelines and are concluded to have no significant adverse effects.

The Project will utilize wood residue from sawmills in Mackenzie, Bear Lake, Chetwynd and Fort St. James, that has historically been incinerated in beehive burners near these communities. The Project will also consume wood residue that is now being used to fuel the power boiler at the Pope & Talbot Pulp Mill or being incinerated in the region. A significant reduction in ambient concentrations of particulate matter (coarse), particulate matter (fine), and other pollutants is expected to occur in Mackenzie and other communities in the region from which wood residue will be obtained for the Project, as the amount of wood residue incinerated in local beehive burners will be significantly reduced (approximately 786,200 wet tonnes/yr), or eliminated (Table 11-2). The reduction in particulate matter emissions from avoided wood residue incineration will be about 10 times the particulate matter emissions from the Project. Large reductions in emissions will also be achieved for other criteria pollutants.

Table 11-2 Estimate of Avoided Wood Residue Incineration and Emissions for Regional Beehive Burners

| Estimate of Avoided Wood Residue Incineration: | | | |
|------------------------------------------------------------|-----------------------------------------------------|----------|----------------|
| Project Power Boiler | Annual wood residue use @ 93% availability | 943,371 | tonnes/yr, wet |
| Pope & Talbot Power boiler | Current annual average wood residue use (2004-2006) | -157,206 | tonnes/yr, wet |
| Net reduction in wood incinerated | | 786,166 | tonnes/yr, wet |
| Estimate of Avoided Emissions from Beehive Burners: | | | |
| | Particulate Matter | 2,559 | tonnes/yr |
| | nitrogen dioxide | 366 | tonnes/yr |
| | carbon monoxide | 47,524 | tonnes/yr |
| | sulphur dioxide | 37 | tonnes/yr |
| | volatile organic carbon | 4,021 | tonnes/yr |

11.3.2 Greenhouse Gas Emissions

The Project will achieve a cumulative reduction in greenhouse gas emissions by enabling the shut down of the power boiler at the Pope & Talbot Pulp Mill. Potentially, the Canfor Sawmill may also purchase steam from the Project, rather than use natural gas to heat its lumber dry kilns.

The boilers at the Project will emit some Greenhouse Gases, even though the plant is primarily fuelled by wood residue. This will include methane and nitrous oxide from combustion of wood residue in the main boiler and carbon dioxide, methane and nitrous oxide from combustion of natural gas in the auxiliary boilers.

The total Greenhouse Gas emissions from the wood-fired boiler and the natural gas-fired backup boilers at the Project are estimated to be 25,834 tonnes carbon dioxide equivalent per year. The annual baseline Greenhouse Gas emissions from the Pope & Talbot power boiler are estimated to be 53,295 tonnes carbon dioxide equivalent. The Project will therefore yield a cumulative net annual reduction from the baseline of 27,461 tonnes carbon dioxide equivalent, or 52%.

If Canfor also converts from natural gas to steam from the Project as a means of heating its lumber dry kilns, there could be a further reduction in Greenhouse Gas emissions of 29,820 tonnes carbon dioxide equivalent per year.

If the proposed Project provided steam to both mills, a net annual reduction in Greenhouse Gas emissions of 57,281 tonnes carbon dioxide - equivalent would result – a 69% reduction from the baseline emissions for the two mills. Environment Canada reported that 747 million tonnes carbon dioxide -equivalent of Greenhouse Gas were emitted in Canada in 2004, with 65.5 million tonnes carbon dioxide -equivalent, or 8.8%, emitted in British Columbia. The Project will result in a reduction of 27,461 tonnes carbon dioxide -equivalent per year, which represents 0.04% of the provincial Greenhouse Gas emissions. If steam sales from the Project were expanded to include the Canfor Sawmill, the total reduction would represent 0.09% of provincial Greenhouse Gas emissions.

11.3.3 Noise

The cumulative effects of noise emissions from the Project and existing noise sources (Pope & Talbot Pulp Mill and the Canfor Sawmill) were addressed as an integral part of the environmental impact assessment.

The equipment required for the Project will meet the noise specifications presented in the Application. Further noise attenuation will be achieved by placing the power boiler, auxiliary boiler, steam turbine generator and ancillary equipment inside a building.

Intermittent noise sources at the Project; such as a hog to pulverize over-size wood residue, conveyer belts, mechanical ash handling systems, and mobile equipment used to manage the wood residue pile, are similar to current operations at the Pope & Talbot Pulp Mill and the Canfor Sawmill. Significant noise impacts are not expected from these operations. The predicted cumulative noise levels with the Project in operation were found to be less than 58 decibels at all monitoring sites and well below 65 decibels, the acceptable limit for noise impacts in industrial/commercial areas.

Based on the noise assessment, which included the effects of existing noise sources, the Project is expected to have no significant cumulative noise impacts.

11.3.4 Wildlife

Cumulative effects to wildlife can potentially occur when there is significant cumulative loss of habitat and/or when clearing for Project construction increases human access to an area and creates barriers to, or enhances, wildlife movement.

Impacts to vegetation and ecosystem communities from construction and operation include the loss of 8.62 hectares of habitat for various animals (deer, hare, squirrels, birds and raptors) associated with the proposed site clearing. The site is considered to not be of crucial value as wildlife habitat because of past development and existing disturbances. As well, habitat of similar or higher value exists nearby that would remain available for wildlife.

The Proponent proposes to implement the following mitigation measures to minimize the effects on wildlife:

- a minimum 15 metre buffer will be left around the northern part of the site where the ash landfill will be located. This will leave most of the higher value habitat in the pine ecosystem along the eastern fringe of the site intact for use by wildlife;
- wildlife/vegetation environmental mitigation measures will be incorporated in the following plans to provide project personnel with instructions on how to deal with various wildlife/vegetation related issues during construction:
 - Storm Water Management Plan;
 - Spill Prevention and Contingency Plan; and,
 - Landscape Design and Restoration Plan;
- a field assessment will be prepared by a registered professional biologist prior to the initiation of clearing to confirm presence/absence of species that may have migrated onto the site, and to recommend means of removal/relocation to safer sites on adjacent property;
- up to five nesting platforms will be constructed in areas of the site left undisturbed from clearing and site preparation to accommodate birds displaced as a result of the construction and operation of the proposed Project;
- the environmental monitor will conduct site inspections (frequency depending on construction activities underway) during the construction phase to assess and resolve unforeseen environmental issues that may arise with regard to biophysical effects of construction work; and,
- vegetation used for landscaping of the site upon completion of construction activities will be indigenous to the Sub Boreal Spruce Subzone.

With the mitigation measures identified above, the construction and operation phases of the proposed plant are expected to result in minimal impacts to wildlife on the site.

Impacts to aquatic vegetation on the site from construction and operation are expected to be nil as no watercourses exist onsite.

The Project is not expected to have any noticeable effects on wildlife in the wetland because of separation distance and proposed mitigation measures.

The potential cumulative effects of the Project on wildlife are concluded to be minimal.

11.3.5 Summary

Table 11-3 in Appendix H summarizes the conclusions from the cumulative effects assessment.

The Proponent concluded that construction and operation of the Project would have no significant adverse cumulative effects. Because of the reduction in emissions from beehive burners and the existing power boiler at the pulp mill, a significant cumulative benefit to air quality is expected to occur.

12 ENVIRONMENTAL MANAGEMENT PROGRAM

Section 9 of the Application addresses the main components and the plans of the Environmental Management Program that will be implemented by the Proponent for construction and operation of the Project.

12.1 Storm Water Management Plan

A preliminary Storm Water Management Plan, presented in Appendix H of the Application, has been developed to mitigate the potential impacts of storm water runoff from the site during construction and operation of the facility. This Storm Water Management Plan is based on preliminary engineering information. The final Storm Water Management Plan will be developed in coordination with completion of the engineering design of the Project and implemented prior to the start of construction at the site.

12.2 Construction Waste Management Plan

The Construction Waste Management Plan will be implemented in conjunction with complementary plans for Hazardous Waste Management and Spill Prevention and Contingency. The Construction Waste Management Plan will be finalized prior to initiation of construction and reviewed with the Regional District of Fraser-Fort George and the Ministry of Environment to ensure it meets regulatory requirements and the commitments made in this Application for an Environmental Assessment Certificate. There are two main themes for the Construction Waste Management Plan: (i) Waste Segregation, and (ii) Controlled Waste Management.

12.3 Air Quality and Dust Control Plan

The Air Quality and Dust Control Plan will address mitigation and monitoring of emissions that will occur during the construction and operating phases of the Project. This Plan will be finalized prior to initiation of construction and operation of the Project, in consultation with the Ministry of Environment.

12.4 Water Quality/Quantity Monitoring Plan

Monitoring of effluent discharges during operation of the Project for quality and flow rate will be the responsibility of Pope & Talbot as a condition of its effluent permit. The Proponent will conduct water quality monitoring during construction, as indicated in the Storm Water Management Plan.

12.5 Hazardous Waste Management Plan

Hazardous Waste Management Plans will be developed and implemented for construction and operation of the Project. In coordination with the proposed Construction Waste Management Plan, these plans will help in the Regional District of Fraser-Fort George's initiative to reduce the amount of solid waste being land-filled and to improve on reducing, reusing and recycling of solid wastes.

12.6 Spill Prevention and Contingency Plan

A Spill Prevention and Contingency Plan will be implemented during construction and operation of the Project in order to prevent and reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills of hazardous wastes during construction and operation of the facility. The plan will provide provisions for:

- reducing spills;
- stopping the source of spills;
- containing and cleaning up spills immediately;
- properly disposing of spill material; and,
- training employees.

12.7 Storm Water Collection

During construction and ongoing operations there is the potential for a spill to contaminate storm water runoff and downstream watercourses. Storm water runoff during construction of the Project, and during the operational phase, will be managed so there will be no discharge of deleterious substances offsite.

Storm water runoff from the construction site will flow to sediment control ponds, which will also provide initial protection from offsite discharge of runoff that has become contaminated from contact with spills of petrochemical, chemical or other deleterious substances. Permanent storm water control ponds will be constructed based on the final Storm Water Management Plan. The preliminary Storm Water Management Plan assumes ponds will be constructed in the main plant area and the wood residue storage area.

12.8 Education

The Proponent will train designated staff in areas of waste management, pollution control and emergency response and planning. Education will play a part in the prevention of spills at the Project and involve appropriate training of staff with regard to required handling practices for hazardous materials, spill response procedures, spill cleanup procedures, and related issues.

12.9 Landscape Design and Restoration Plan

The Project site will be landscaped in a manner appropriate for an industrial cogeneration facility and consistent with its setting in a heavy industrial area. A preliminary Landscape Design and Restoration Plan are presented in the Application.

12.10 Archaeological Resources Monitoring Plan

The studies conducted for this Application have determined that the proposed Project site will have no significant effects or residual effects on archaeological resources.

The probability of identifying additional archaeological sites during construction activity at the proposed Project site is considered low. Therefore, no further archaeological assessment is planned in association with the proposed development and no specific mitigation measures (including the monitoring of construction activities) are required or prescribed by the Project archaeologist.

In the unlikely event that unexpected archaeological features or remains are encountered during any land altering activities for this development, the Proponent will contact the British Columbia Ministry of Tourism, Sport and the Arts, Archaeology Branch immediately and implement follow-up actions in accordance with permit requirements.

13 PERMITS, LICENCES, AND AUTHORIZATIONS

The table below outlines the required permits and licenses for the Project.

| Permit/License | Agency |
|--------------------------------------------------------------|--------------------------------------------|
| Environmental Assessment Certificate | BC Environmental Assessment Office |
| Certificate of Public Convenience and Necessity | BC Utilities Commission |
| Air Emission Permit | BC Ministry of Environment |
| Ambient Air Monitoring Program | BC Ministry of Environment |
| Archaeological Monitoring and Management Plan | BC Ministry of Tourism, Sport and the Arts |
| Process Effluent Discharge Permit | BC Ministry of Environment |
| Sanitary Effluent Discharge Permit | BC Ministry of Environment |
| Water Supply License | Integrated Land Management Bureau |
| Waste Disposal Permit (for ash disposal) | BC Ministry of Environment |
| Emergency Response Plan | BC Ministry of Environment |
| Building Permits | District of Mackenzie |
| Mobile Caterer Permit | Ministry of Health |
| Potable Water Permit (construction phase) | Ministry of Health |
| Potable Water Permit (operations phase) | Ministry of Health |
| Process Water Interconnection Permit | Ministry of Health |
| Electrical Contractor License | Ministry of Community Services |
| Gas Installer License | Ministry of Community Services |
| Plumbing Contractor License | Ministry of Community Services |
| Contractor Licenses for Boilers, Pressure Vessels and Piping | Ministry of Community Services |
| Electrical Permit | Ministry of Community Services |
| Gas Installation Permit | Ministry of Community Services |
| Storage and Dispensing of Fuels Permit | Ministry of Community Services |
| Power Plant Operator Certificate | Ministry of Community Services |
| Electrical Maintenance Permit | Ministry of Community Services |
| BC Forest Practices Code Approvals | Ministry of Forests and Range |
| Road Use Permit or forestry roads | Ministry of Forests and Range |

Part D Conclusions

14 PROVINCIAL CONCLUSIONS

Based on:

- information contained in the Proponent's Application and supplementary documentation;
- proponent's public and First Nations consultation program;
- government agency, First Nation and public comments on the Project, and the Proponent's responses to these comments; and,
- commitments and mitigation measures identified in Appendix C, *Compendium of Commitments*, to be undertaken by the Proponent during the construction and operation of the Project,

the Environmental Assessment Office is satisfied that:

- the Proponent's Application adequately identified and assessed the potential significant adverse environmental, economic, social, heritage and health effects of the Project, and potential impacts on Treaty 8 First Nations' Treaty rights ;
- public and First Nations consultation, and the distribution of information about the Project have been adequately carried out by the Proponent;
- issues identified by the public, First Nations and provincial and federal government agencies, which were within the scope of the environmental assessment, were adequately addressed by the Proponent during the review of the Application;
- there will be no significant adverse impacts on the Treaty rights of First Nations as a result of the Project; and,
- practical means have been identified to prevent or reduce to an acceptable level any potential adverse effects of the Project.

15 FEDERAL CONCLUSIONS

The conclusions from the review of this joint environmental assessment, which has been conducted pursuant to both federal and provincial environmental assessment legislation, are based on the following documents and review process:

- The Proponent's Application for an Environmental Assessment Certificate under British Columbia *Environmental Assessment Act*;
- The British Columbia *Environmental Assessment Act* review procedures, as defined in the section 11 Order; and,
- The assessment collectively carried out by the Working Group comprised of federal and provincial government agencies, local government, and the First Nations groups in the area, with input from the public.

As a result of this environmental assessment, Natural Resources Canada and the Canadian Environmental Assessment Agency have determined that there are no likely significant adverse environmental effects as a result of the Mackenzie Green Energy Project, providing that all proposed mitigation, commitments, including compliance, effects monitoring and follow-up measures are implemented.

