HESQUIAHT FIRST NATION
AHTAAPQ CREEK HYDROPOWER PROJECT

MAQUINNA PROTECTED AREA BOUNDARY ADJUSTMENT
STAGE ONE PROPOSAL

Submitted on
February 22nd 2016

Prepared for:

Prepared by:

Unit B, -6451 Portsmouth Road
Nanaimo, B.C. V9V 1A3
Phone: (250) 390-2627 Fax: (250) 390-3831
# Table of Contents

Table of Contents....................................................................................................................... 2  
List of Tables ............................................................................................................................ 2  
List of Figures ........................................................................................................................... 2  
1. Proponent ........................................................................................................................... 3  
2. Location, Type and Purpose of Project ............................................................................... 4  
3. Project Footprint .................................................................................................................. 5  
4. Preliminary Impacts and Benefits ........................................................................................ 5  
   4.1. Socio-Economic Impacts and Benefits ........................................................................... 5  
   4.2. Environmental Impacts and Benefits ............................................................................ 7  
5. Preliminary Assessment of Alternatives ............................................................................. 8  
6. First Nations and Local Governments Potentially Affected .................................................. 9  
7. Known Community Groups with Interest in Maquinna Protected Area ............................ 12  
8. Environmental Issues ......................................................................................................... 13  
9. Preliminary Project Schedule ............................................................................................. 14  
Appendix 1: Maps ..................................................................................................................... 16  
Appendix 2: Potential Environmental Effects Letter ................................................................... 20  
Appendix 3: Band Council Resolution and Letter of Agency .................................................... 23  

# List of Tables

Table 1: Communication log with First Nations.......................................................................... 10

# List of Figures

Figure 1: First Nations Consultation Areas Report ...................................................................... 9  
Figure 2: Ahtaapq Creek Hydropower Project Schedule ............................................................. 15
1. **PROONENT**

The Proponent of the Ahtaaq Creek Hydropower Project (the Project) is the **Hesquiaht First Nation (HFN)**.

Hesquiaht First Nation  
PO Box 2000 Tofino, BC, V0R 2Z0  
Administration Office Phone: (250) 670-1101  
Administration Fax: (250) 670-1102  
E-mail address: hfrank417@gmail.com

The community of Refuge Cove IR6 (also known as Hot Springs) near the head of Hot Springs Cove Inlet, West Coast of Vancouver Island is the home community for the Hesquiaht Nation.

The Hesquiaht First Nation is governed by a traditional governance system called Klukwana with a respective Ha’iih or Hereditary Chief. The Hesquiaht First Nation band council is made up of one Chief Councillor and six Council members. The Hesquiaht Nation is one of 7 sub-groups that fall within the Nuu-chah-nulth people. The Hesquiaht First Nation is currently not in a treaty process with the Provincial and Federal governments.

The Hesquiaht First Nation is in full support of the development of a hydropower project on Ahtaapq Creek and has appointed **Barkley Project Group** to act as agent in all matters concerning this development. Please see attached Band Council Resolution and Letter of Agency, Appendix 3.

Barkley Project Group Ltd. (BC681409)  
Unit B – 6451 Portsmouth Road  
Nanaimo, B.C., V9V 1A3  
P (250) 390-2627
2. Location, Type and Purpose of Project

A 250 kW run-of-the-river hydropower facility is proposed on Ahtaapq Creek, located approximately 2 km north of the Refuge Cove IR6 community, on the west coast of Vancouver Island (see Appendix 1: Map 1). The isolated village, home to approximately 60 people, is not connected to the Provincial power grid and the community relies on diesel generators for its electricity supply. The purpose of the proposed project is to displace much of the diesel-generated electricity with clean electricity generated by a micro hydroelectric facility. A 2.2 km distribution line is required to deliver electricity to the community from the project’s powerhouse; 1.33 km of this distribution line is proposed to pass through Maquinna Protected Area. The Maquinna Protected Area was established in 2004 to enable the Hesquiaht First Nation to construct 1.7 km of road to provide safer access to their community of Hot Springs¹ (also known as Refuge Cove IR6).

Preliminary layout and design engineering of the distribution line has been completed using high resolution aerial imagery and LiDAR topographic survey data by Detmold Consulting Ltd. The proposed preliminary distribution line design shares its footprint with the existing road footprint as much as possible whilst maintaining a feasible alignment. The only land based route to the Refuge Cove IR6 community is through the protected area. Appendix 1: Map 2 shows the alignment of the proposed distribution line. A utility corridor is proposed within the Maquinna Protected Area to accommodate the hydropower project’s distribution line and potential future upgrades.

3. PROJECT FOOTPRINT

The total footprint area of all of the proposed hydropower project’s components, including those outside of the protected area, is estimated to be 11.4 ha. The total length of the proposed distribution line is 2.2 km, 1.33 km of which is located within the Maquinna Protected Area. The footprint area of the distribution line within Maquinna Protected Area is calculated to be 2.0 ha based on a clearing width of 15m. Using GIS techniques along with high resolution orthophoto and lidar data captured in March 2015, the location of the existing road footprint was delineated and removed from the distribution line’s proposed footprint which equates to a new clearing footprint within the protected area of approximately 1.7 ha.

4. PRELIMINARY IMPACTS AND BENEFITS

4.1. SOCIO-ECONOMIC IMPACTS AND BENEFITS

The lack of reliable and the increasingly costly electricity has become a critical sustainability issue for the Nation. Based on the most recent estimate of the annual community electricity consumption of 843,000 kWh, the cost of diesel fuel alone was estimated at $450,000 (281,177 L). There are 4 diesel generators (250kW, 115 kW, 220 kW and 75 kW) located in Refuge Cove currently owned and operated by the HFN with funding from AANDC.\(^2\) The total cost of annual diesel generation including fuel, lube oil, capital replacement, operation and maintenance for the current year was estimated at $581,000 per year or $0.69 per kWh.\(^3\) BC Hydro’s CEP estimated that, if a new diesel generator plant was built, the capital cost would be $3.7 million with annual O&M cost at $680,000 (including fuel). The present value of the capital cost and O&M costs is $13.5 million over 25 years when depreciated at 7.5%. Based on the average annual electrical consumption of 728,000 kWh, or 18.2 GWh over 25 years, the unit cost of

\(^2\) Morrow Engineering, 2014, Life cycle cost analysis diesel generation only Hesquiaht First Nation.

\(^3\) Barkley Project Group, 2015, Hesquiaht First Nation preliminary levelized cost of energy analysis of Ahtaapq Creek Hydro, p.24.
electricity from the newly built diesel generator plant would be $0.74 / kWh (=$13.5 M / 18.2 GWh). 4

The village members of Refuge Cove (Hot Springs Cove) are keen to participate in the construction of the Ahtaapq Creek hydro project as an alternative and sustainable energy source. The project design has considered development approaches and materials that will facilitate maximum participation by village members and equipment. The twelve month construction period will see an average of eight workers employed during most periods. Of this core group up to five will be local’s residing in the community or living within neighboring communities. Local labor, boat transport, accommodation and catering services will be critical. The use of trades such as blasters, concrete formers, millwrights, linesmen, pipe fitters, carpenters, electricians will be intermittent as needed. Professional consultants such as engineers, project managers, site supervision, environmental monitors and project QC will consistently support development both on and off site. On average 8 participants per day are estimated to work over 50, six day weeks for a total of 2400 employee days or 8 person years.

With the Hesquiaht’s aging diesel generation infrastructure, uncertainty and volatility around diesel fuel cost fluctuations, the current energy system is not affordable or sustainable for the community. The development of the proposed hydropower project will play a major role in addressing both the financial and environmental issues that the Nation is faced with.

The Hesquiaht Nation’s long term relationship with energy is to become 100% renewable. The development of this project will take the nation closer to this goal, and it also reflects their commitment to the land and way of life. The clean and sustainable hydropower development proposed also more closely compliments the land use values of the Provincial parkland that encircles the village.

---

4 BC Hydro, 2013, Community Electrification Plan DRAFT, p49.
4.2. ENVIRONMENTAL IMPACTS AND BENEFITS

Approximately 300,000 liters of diesel is imported annually to supply community generation needs. The environmental costs of importing this diesel to Refuge Cove are a significant concern. Marine delivery is required through the sensitive coastal waterways of Clayoquot Sound. Barging routes depart from Tofino passing through the heart of this UNESCO Biosphere Reserve before arriving in Refuge Cove. An average barge fuel run carries an estimated 50,000 liters of diesel. These fuel trucks are then off loaded and driven up to the generator station at Refuge Cove Community where tank refueling begins. In every step of this process the environmental risk is significant.

The annual carbon dioxide emissions from the Refuge Cove community diesel generation are assessed to be around 800 tonnes per year (Retscreen calculator)\(^5\). Once in operation, the proposed hydropower project is estimated to offset approximately 560 tonnes of carbon dioxide per year.

Consistent Pacific storm fronts provide rainfalls of renowned amounts within the Ahtaapq Creek Watershed. This characteristic provides an opportunity for sustainable run-of-river hydro development. The watershed has the appropriate features to support the design and development of a hydroelectric project. The Project has been designed to make use of existing roadway infrastructure and clearings left over from previous logging activities in the watershed. The existing road through the protected area will be used for site access from the existing barge landing and the proposed utility corridor will also closely follows this road resulting in relatively little new impact to the protected area. It is postulated that the environmental benefits of the proposed hydroelectric project far outweigh the small impact of adding a utility corridor to the protected area.

5. PRELIMINARY ASSESSMENT OF ALTERNATIVES

Two preliminary distribution line alignments have been designed by transmission line engineer Murray Detmold of Detmold Consulting Ltd. Aerial orthophoto imagery and LiDAR topographic survey data was used to base the design on. This detailed survey information was captured remotely via aircraft and as such there was no need to impact the protected area in any way. Design P1 utilizes the existing road footprint, minimizes deflections and associated disturbance from poles and anchors. An alternative route, P2, was designed to stay as close to the existing road as possible, however this design resulted in greater disturbance to the land, as well as cost, due to the need for extra poles and anchors to accommodate changes of direction in the alignment. Therefore distribution line design P1 is the preferred option as it is the most financially viable design and also has less new footprint impact outside of the existing road right of way. Appendix 1: Map 3 shows a comparison of the footprint of the two options. Appendix 1: Map 2 shows an overview of the preferred option P1.

A submarine cable route was explored which would be approximately 1 km in length. The submarine route would involve complex routing and extensive site impacts to avoid overlap with the north east boundary of the Maquinna Protected area. Extensive areas of sensitive stream channel and riparian ecosystems within the lower reaches of Ahtaapq Creek, as well as the estuary area of Hot Springs Cove inlet, would be impacted to accommodate a submarine route. In addition submarine transmission is assessed to triple the installation cost and quarter the expected life span. Submarine development is not considered to be a viable alternative.
6. FIRST NATIONS AND LOCAL GOVERNMENTS POTENTIALLY AFFECTED

According to the First Nations Consultation Areas Report (Figure 1), provided by DataBC, the First Nations who may have Aboriginal Interests identified within the project area are the Hesquiaht First Nation (HFN) and Ahousaht First Nation (AFN). Consultation and negotiation between the two nations are currently underway to define the scope and impact the project will have on this area of land. Table 1 highlights history of consultation to date with the potentially affected Nations regarding the proposed Ahtaapq Creek Hydropower Project.

![Figure 1: First Nations Consultation Areas Report](Image)
The proponent is the Hesquiaht First Nation (HFN). The HFN is in full support of the development of a hydropower project on the Ahtaapq Creek as per the attached Band Council Resolution (Appendix 3). Dating back to the 1980’s the HFN has understood the potential for hydroelectricity supplying the village of Refuge Cove with hydro generated electricity.

Table 1: Communication log with First Nations

<table>
<thead>
<tr>
<th>First Nation Consulted</th>
<th>Source</th>
<th>Medium</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFN</td>
<td>Crippen Consultants</td>
<td>Study of Energy Conservation Options at Refuge Cove (IR6)</td>
<td>February 1985</td>
<td>Study included energy conservation options for community of Refuge Cove</td>
</tr>
<tr>
<td>HFN</td>
<td>Pulse Energy</td>
<td>Refuge Cove Energy Consumption Study</td>
<td>2010-2011</td>
<td>Community engagement regarding public and private electrical consumption</td>
</tr>
<tr>
<td>HFN</td>
<td>Barkley Project Group</td>
<td>Proposal letter to investigate hydropower potential in support of Refuge Cove Community (IR6)</td>
<td>January 2013</td>
<td>A follow up on Crippen Consultants 1985 report, a viable hydropower option exists on Ahtaapq Creek. Request to further investigate.</td>
</tr>
<tr>
<td>HFN</td>
<td>Hesquiaht First Nation Band Council Resolution</td>
<td>February 2013</td>
<td>Support for investigation, design and permitting of Ahtaapq Creek Hydro</td>
<td></td>
</tr>
<tr>
<td>HFN</td>
<td>Environmental Dynamics INC.</td>
<td>Initiated Ahtaapq Creek Hydrometric Program</td>
<td>March 2013</td>
<td>Working with HFN members, hydrometric stations were identified within Ahtaapq Creek watershed</td>
</tr>
<tr>
<td>HFN</td>
<td>BC Hydro</td>
<td>Community Electrification Plan for Refuge Cove Village</td>
<td>May 2013</td>
<td>BC Hydro investigates the option of supporting grid electrification</td>
</tr>
<tr>
<td>HFN</td>
<td>Barkley Project Group</td>
<td>Band Council Resolution Ahtaapq Creek Hydro</td>
<td>December 2013</td>
<td>Hesquiaht Nation support application for development funding, land tenure and water licence</td>
</tr>
<tr>
<td>HFN</td>
<td>Barkley Project Group</td>
<td>Agency Letter</td>
<td>December 2014</td>
<td>HFN appoint Barkley Project Group to act as agent in all matter concerning investigation and development of hydro project</td>
</tr>
<tr>
<td>HFN</td>
<td>Hesquiaht First Nation</td>
<td>Funding support letter</td>
<td>June 2015</td>
<td>HFN supports Phase 3 feasibility work to be performed by Barkley Project Group</td>
</tr>
<tr>
<td>AFN</td>
<td>Hesquiaht First Nation</td>
<td>Phone Call</td>
<td>July 22, 2015</td>
<td>Phone call to set up request for Project presentation opportunity</td>
</tr>
<tr>
<td>AFN</td>
<td>Hesquiaht First Nation</td>
<td>Emails</td>
<td>July 24, 2015</td>
<td>Email request for Project presentation</td>
</tr>
<tr>
<td>AFN</td>
<td>Hesquiaht First Nation</td>
<td>Board Room Meeting</td>
<td>July 30, 2015</td>
<td>Meeting in Ahousht to present the project and request letter of Support</td>
</tr>
<tr>
<td>AFN</td>
<td>Hesquiaht First Nation</td>
<td>Support letter</td>
<td>August 2015</td>
<td>Hesquiaht Nation requested support letter from Ahousat FN regarding Ahtaapq Creek hydro project</td>
</tr>
<tr>
<td>AFN</td>
<td>Hesquiaht First Nation</td>
<td>Board Room Meeting</td>
<td>August 6, 2015</td>
<td>Meeting in Port Alberni Presentation of propose hydro project</td>
</tr>
<tr>
<td>First Nation Consulted</td>
<td>Source</td>
<td>Medium</td>
<td>Date</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------</td>
<td>--------</td>
<td>------</td>
<td>----------</td>
</tr>
<tr>
<td>AFN</td>
<td>HFN to AFN</td>
<td>August 6, 2015</td>
<td>Formal HFN letter to AFN MHSS requesting a letter of support</td>
<td></td>
</tr>
<tr>
<td>AFN</td>
<td>HFN to AFN, MHSS</td>
<td>September 1, 2015</td>
<td>Email follow up requesting the letter</td>
<td></td>
</tr>
<tr>
<td>AFN</td>
<td>HFN to AFN, MHSS</td>
<td>September 24, 2015</td>
<td>Email follow up requesting the letter</td>
<td></td>
</tr>
<tr>
<td>HFN</td>
<td>Ahtaapq Creek Hydro Project Cultural Assessment</td>
<td>October 2015</td>
<td>Village and project site visit, community meeting with Hesquiaht elders regarding project Traditional use study</td>
<td></td>
</tr>
<tr>
<td>HFN</td>
<td>Archaeological Overview Assessment</td>
<td>October 2015</td>
<td>Project site investigation, community meeting regarding archaeologically important areas</td>
<td></td>
</tr>
<tr>
<td>HFN</td>
<td>AFN MHSS to HFN</td>
<td>October 20, 2015</td>
<td>Received letter response with demands</td>
<td></td>
</tr>
<tr>
<td>AFN</td>
<td>HFN to AFN, Chief</td>
<td>October 28, 2015</td>
<td>Email request for a meeting with AFN C&amp;C</td>
<td></td>
</tr>
<tr>
<td>AFN</td>
<td>HFN to AFN, MHSS</td>
<td>November 13, 2015</td>
<td>Email request for a meeting with MHSS</td>
<td></td>
</tr>
<tr>
<td>AFN</td>
<td>HFN – AFN Tyee Hawaiih</td>
<td>December 7, 2015</td>
<td>Meeting in Port Alberni, Project update and Discussion of support request from AFN</td>
<td></td>
</tr>
<tr>
<td>HFN</td>
<td>Barkley Project Group</td>
<td>January 2015</td>
<td>HFN supports submission of Ahtaapq Creek Development Plan prepared by its Agent, Barkley Project Group of Nanaimo.</td>
<td></td>
</tr>
<tr>
<td>AFN</td>
<td>HFN to AFN, MHSS</td>
<td>January 8, 2016</td>
<td>Email request for a meeting with MHSS</td>
<td></td>
</tr>
<tr>
<td>AFN</td>
<td>HFN to AFN, MHSS</td>
<td>January 12, 2016</td>
<td>Email request for a meeting with MHSS</td>
<td></td>
</tr>
<tr>
<td>HFN</td>
<td>AFN MHSS to AFN</td>
<td>January 13, 2016</td>
<td>Response email informing of a Hawaiih discussion about boundaries</td>
<td></td>
</tr>
</tbody>
</table>

A meeting was held January 26th, 2016 at the FrontCounter office in Nanaimo to discuss the permitting of the Ahtaapq Creek Hydropower Project. The passage of the proposed distribution line through the Maquinna Protected Area was discussed during this meeting. In attendance were Sharon Erikson (Planning Section Head, BC Parks), Gary Morley (Major Projects Specialist, MFLNRO), Diane Elliott (Natural Resource Specialist, MFLNRO), David Skarbo (Water Authorizations Specialist, MFLNRO), Timothy Matthews (Barkley Project Group), John...
Ebell (Project Manager, Barkley Project Group), and Helena Frank (Councilor, Hesquiaht First Nation)

It is understood that a protected area boundary adjustment is required in order to allow for a utility corridor to be added as an approved use of the Maquinna Protected Area.

The Crown land and water licensing of the Ahtaapq Creek Hydropower Project is currently underway and a Crown land General Area Licence of Occupation (GALOO) will be applied for outside of and up to the Maquinna Protected Area boundary. Following the approval of a protected area boundary adjustment, it is expected that a utility corridor will be allowed to pass through the protected area. It is also the intention that if the utility corridor is to be removed from the protected area, the entire utility corridor/distribution line route would then be included as part of the Project’s Land Act tenure.

7. KNOWN COMMUNITY GROUPS WITH INTEREST IN MAQUINNA PROTECTED AREA

The Maquinna Protected Area was established in 2004 to enable the Hesquiaht First Nation to construct 1.7 km of road to provide safer access to their community of Hot Springs\(^6\) (also known as Refuge Cove IR6). There is no known interest in the protected area beyond the use of the existing road by Hesquiaht band members as access to their community and the surrounding area outside of the protected area for activities such as wood harvesting and hunting. There are no known recreational uses within the protected area.

8. ENVIRONMENTAL ISSUES

A letter from the project’s environmental consultants, Environmental Dynamics Inc (EDI) is provided in Appendix 2 outlining potential environmental effects from the proposed 1,327 m section of distribution line through the Maquinna Protected Area. A summary of potential environmental effects are outlined below:

- The distribution line will be installed adjacent to the existing Kanim Main resource service road for the majority of its length through Maquinna Protected Area, as such environmental impacts to natural, non-disturbed ecosystems will be reduced.
- The Project footprint overlaps with approximately 2.2 ha of the Maquinna Protected Area, of which 0.4 ha is within the existing road right-of-way. The new footprint impact constitutes 3% of the current protected area.
- Forested communities, including young and old forest, comprise 1.8 ha of the Project footprint within Maquinna Protected Area with a wetland bog occupying approximately 0.06 ha.
- Impacts to the bog will be minimized as the distribution line will span the wetland with no poles located within the wetland.
- No effective nesting habitat based on the habitat modeling for northern goshawk, laingi subspecies (Accipiter gentilis laingi) or marbled murrelet (Brachyramphus marmoratus) occurs within the Project overlap with Maquinna Protected Area.
- No listed ecological communities or plants were identified in this area.
- There was an invasive species including Scotch broom (Cytisus scoparius) and Himalayan blackberry (Rubus armeniacus) observed in the Project area, as such measures must be taken to reduce the potential for the introduction or spread of invasive species within the Maquinna Protected Area.

These potential effects will be assessed in detail in the forthcoming environmental review being completed for the land and water licensing of the waterpower project.
9. **PRELIMINARY PROJECT SCHEDULE**

The Hesquiaht Nation along with capital managers of Indigenous and Northern Development Canada are anxious for this project to progress quickly. Land tenure and water licence approval is expected in late summer 2016. Final project design will proceed through 2016 in preparation for project tendering. In late fall of 2016 procurement and tendering of major project components (e.g. turbine and generator and penstock) will be completed.

Construction should begin in spring 2017 to enable the project’s intake to be built in the 2017 work instream window. The late summer period will see the intake and powerhouse foundation and superstructure in place. The distribution line construction will also be completed in late summer 2017. The penstock will be developed through spring and summer 2016. Turbine equipment will be in place by fall 2017 with water control at that time as well. Plant commissioning is scheduled to take place in early winter with full operation planned for mid-December 2017. See Figure 2 for the proposed project schedule.
### Figure 2: Ahtaapq Creek Hydropower Project Schedule

<table>
<thead>
<tr>
<th>ID</th>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DEVELOPMENT PLAN SUBMISSION</td>
<td>2 days</td>
<td>Mon 10/2/19</td>
<td>Mon 12/16</td>
</tr>
<tr>
<td>2</td>
<td>HYDROLOGY</td>
<td>357 days</td>
<td>Wed 13/6/19</td>
<td>Fri 1/12/20</td>
</tr>
<tr>
<td>3</td>
<td>Phase 4 - DESIGN</td>
<td>253 days</td>
<td>Wed 13/6/19</td>
<td>Fri 13/11/20</td>
</tr>
<tr>
<td>4</td>
<td>SURVEY AND LAYOUT</td>
<td>150 days</td>
<td>Fri 26/5/19</td>
<td>Fri 10/12/20</td>
</tr>
<tr>
<td>5</td>
<td>ENGINEERING - DESIGN</td>
<td>155 days</td>
<td>Mon 13/12/20</td>
<td>Mon 14/11/20</td>
</tr>
<tr>
<td>6</td>
<td>ENGINEERING - TENDER PACKAGES</td>
<td>60 days</td>
<td>Mon 15/12/20</td>
<td>Mon 12/12/20</td>
</tr>
<tr>
<td>7</td>
<td>PERMITTING</td>
<td>110 days</td>
<td>Wed 15/12/20</td>
<td>Tue 17/10/16</td>
</tr>
<tr>
<td>8</td>
<td>INAC REVIEW AND FINANCING</td>
<td>210 days</td>
<td>Fri 13/12/20</td>
<td>Fri 13/12/20</td>
</tr>
<tr>
<td>9</td>
<td>Phase 5 - CONSTRUCTION</td>
<td>425 days</td>
<td>Thu 15/09/19</td>
<td>Thu 12/12/17</td>
</tr>
<tr>
<td>10</td>
<td>PROCUREMENT</td>
<td>383 days</td>
<td>Thu 15/09/19</td>
<td>Fri 3/10/17</td>
</tr>
<tr>
<td>11</td>
<td>PERMITTING AND LEAVES TO COMMENCE</td>
<td>372 days</td>
<td>Thu 01/12/19</td>
<td>Fri 8/12/17</td>
</tr>
<tr>
<td>12</td>
<td>CONSTRUCTION - ENGINEERING</td>
<td>171 days</td>
<td>Mon 04/09/17</td>
<td>Thu 24/08/17</td>
</tr>
<tr>
<td>13</td>
<td>CONSTRUCTION - Survey and Layout</td>
<td>204 days</td>
<td>Mon 04/09/17</td>
<td>Mon 25/06/17</td>
</tr>
<tr>
<td>14</td>
<td>CONSTRUCTION</td>
<td>281 days</td>
<td>Mon 04/09/17</td>
<td>Thu 21/12/17</td>
</tr>
<tr>
<td>15</td>
<td>ACCESS &amp; ROAD DEVELOPMENT</td>
<td>63 days</td>
<td>Mon 04/09/17</td>
<td>Sun 07/01/17</td>
</tr>
<tr>
<td>16</td>
<td>Mobilization</td>
<td>10 days</td>
<td>Mon 04/09/17</td>
<td>Wed 19/03/17</td>
</tr>
<tr>
<td>17</td>
<td>CONSTRUCTION - Road Access</td>
<td>53 days</td>
<td>Thu 13/03/17</td>
<td>Thu 07/01/17</td>
</tr>
<tr>
<td>18</td>
<td>INTAKE</td>
<td>150 days</td>
<td>Fri 28/05/17</td>
<td>Sun 24/02/17</td>
</tr>
<tr>
<td>19</td>
<td>Intake Structure - Cleaning</td>
<td>14 days</td>
<td>Fri 26/04/17</td>
<td>Thu 11/05/17</td>
</tr>
<tr>
<td>20</td>
<td>CONSTRUCTION - Intake Structure</td>
<td>75 days</td>
<td>Wed 12/07/17</td>
<td>Sun 24/08/17</td>
</tr>
<tr>
<td>21</td>
<td>CONSTRUCTION - Headpond</td>
<td>49 days</td>
<td>Fri 04/09/17</td>
<td>Thu 21/08/17</td>
</tr>
<tr>
<td>22</td>
<td>PENSEK</td>
<td>150 days</td>
<td>Sun 26/03/17</td>
<td>Tue 19/10/17</td>
</tr>
<tr>
<td>23</td>
<td>CONSTRUCTION - Pensek</td>
<td>127 days</td>
<td>Sun 26/03/17</td>
<td>Wed 09/05/17</td>
</tr>
<tr>
<td>24</td>
<td>Tributary Taps</td>
<td>41 days</td>
<td>Thu 16/09/17</td>
<td>Tue 19/10/17</td>
</tr>
<tr>
<td>25</td>
<td>Pensek Completion</td>
<td>16 days</td>
<td>Mon 05/09/17</td>
<td>Tue 19/10/17</td>
</tr>
<tr>
<td>26</td>
<td>POWERHOUSE</td>
<td>220 days</td>
<td>Wed 05/06/17</td>
<td>Thu 11/11/17</td>
</tr>
<tr>
<td>27</td>
<td>Powerhouse Clearing</td>
<td>3 days</td>
<td>Wed 05/06/17</td>
<td>Fri 07/06/17</td>
</tr>
<tr>
<td>28</td>
<td>CONSTRUCTION - Powerhouse</td>
<td>110 days</td>
<td>Tue 30/05/17</td>
<td>Sat 10/05/17</td>
</tr>
<tr>
<td>29</td>
<td>Powerhouse - Mechanical and Electrical Installation</td>
<td>61 days</td>
<td>Sat 16/09/17</td>
<td>Thu 16/10/17</td>
</tr>
<tr>
<td>30</td>
<td>CONSTRUCTION - TRANSMISSION LINE</td>
<td>74 days</td>
<td>Fri 04/09/17</td>
<td>Mon 20/11/17</td>
</tr>
<tr>
<td>31</td>
<td>COMMISSIONING</td>
<td>31 days</td>
<td>Tue 21/11/17</td>
<td>Thu 21/12/17</td>
</tr>
<tr>
<td>32</td>
<td>COMMERCIAL OPERATION DATE</td>
<td>0 days</td>
<td>Thu 21/12/17</td>
<td>Thu 21/12/17</td>
</tr>
</tbody>
</table>
APPENDIX 1: MAPS
Distribution line P1 footprint
New impact area within protected area: 1.694 ha

Distribution line P2 footprint
New impact area within protected area: 1.81 ha

AHTAAPQ CREEK HYDROPOWER PROJECT
DISTRIBUTION LINE FOOTPRINT COMPARISONS

Map 3
Rev. 1.0
Feb 22, 2016

Legend
- Distribution Line P1
- Distribution Line P2
- P1_footprint_erase_road
- P2_footprint_erase_road
- Parks
- Indian Reserve

Data sources:
- Distribution Line - Detmold Consulting Ltd.
- Orthophoto & lidar - Terra Remote Sensing
- Contour interval: 5 m

Coordinate System: NAD 1983 UTM Zone 9N

Prepared by Barkley project group
February 17, 2016

EDI Project No: 14N0418

Hesquiaht First Nation
C/O Barkley Project Group Ltd.
Unit B, 6451 Portsmouth Rd.
Nanaimo, BC. V9V 1A3

Attention: John Ebell, Project Manager - Barkley Project Group

RE: Ah’ta;apq Distribution Line through Maquinna Protected Area

Environmental Dynamics Inc. (EDI) was retained by Barkley Project Group on behalf of the Hesquiaht First Nation to undertake an environmental overview of a proposed 250 kW run-of-the-river hydropower project on Ah’ta;apq Creek (the Project) near Hot Springs Cove, BC. The proposed Project is small relative to the majority of run-of-the-river hydropower projects currently in development in BC and is being developed to supply the local community of Refuge Cove with electricity. A 1,327 m section of the distribution line proposed for the Project follows Kanim Main resource service road as it passes through the Maquinna Protected Area. This letter briefly identifies known potential environmental effects that could occur in the protected area with the development of the Project. These potential effects will be assessed in detail in the forthcoming environmental overview.

It has been determined through discussions with BC Parks and Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) that a Category 3 protected area boundary adjustment would be required. Category 3 includes adjustments where a proponent (private or public) is interested in a boundary adjustment to allow for a development or activity not allowed by authorization under the protected area legislation. Category 3 boundary modifications are normally approved only where there are significant environmental, social or economic benefits to the Province that exceed the importance of preserving the integrity of the existing park or protected area boundary and values (Province of BC 2015).

As the distribution line will be installed adjacent to the existing Kanim Main resource service road for the majority of its length through Maquinna Protected Area environmental impacts to natural, non-disturbed ecosystems will be reduced. The Project footprint overlaps with 2.2 ha of the Maquinna Protected Area, of which 0.4 ha is within the existing road right-of-way. The new footprint impact constitutes 3% of the current protected area. Forested communities, including young and old forest, comprise 1.8 ha of the Project footprint within Maquinna Protected Area with a wetland bog occupying approximately 0.06 ha. Areas of impacts are based on the Terrestrial Ecosystem Mapping (TEM) completed for the Projects Environmental Overview Assessment (EOA), to be completed in the coming month. The main environmental impacts would be the removal of 1.2 ha of old forest as well as the crossing of a wetland bog.
It is our understanding impacts to the bog would be minimized as the distribution line will span the wetland with no poles located within the wetland. The forested and wetland communities could provide habitat for a number of focal species identified in the EOA although these habitat types are not limited within and adjacent to the Maquinna Protected Area. No effective nesting habitat based on the habitat modeling for northern goshawk, laingi subspecies (Accipiter gentilis laingi) or marbled murrelet (Brachyramphus marmoratus) occurs within the Project overlap with Maquinna Protected Area. Furthermore, no listed ecological communities or plants were identified in this area. As there was an invasive species including Scotch broom (Cytisus scoparius) and Himalayan blackberry (Rubus armeniacus) observed in the Project area, measures must be taken to reduce the potential for the introduction or spread of invasive species within the Maquinna Protected Area.

There is one mapped stream crossing where there will be some removal of riparian vegetation through the 15 m right-of-way. This stream is considered to be potentially fish bearing. While not within the Project footprint, the protected area also extends over the mouth of Ah’ta;apq Creek. Among the potential impacts of the project is the risk of ramping related effects on fish in the event of an accident or malfunction. Focal fish species for the assessment include cutthroat trout (Oncorhynchus clarkii), coho salmon (Oncorhynchus kisutch) and chum salmon (Oncorhynchus keta), all of which could be present downstream of the project powerhouse.

All the potential effects identified above will be assessed in detail in the Environmental Overview Assessment.

Please contact me if you have any questions or comments.

Yours truly,

EDI Environmental Dynamics Inc.

David Bean, M.Sc., EP
Project Manager

Ecologist

References

HESQUIAHT FIRST NATION

Band Council Resolution

First Nation: Hesquiaht First Nation
Location: Hot Springs Cove
Province: British Columbia
Date: January 15, 2016

WHEREAS: The Hesquiaht is undertaking the permitting, design, procurement, tendering and construction for the development of the Ahtaapq Creek hydropower project to provide clean energy for the community of Refuge Cove;

THEREFORE BE IT RESOLVED that the Hesquiaht First Nation supports the submission of the Ahtaapq Creek Hydropower Project Development Plan prepared by its Agent, Barkley Project Group of Nanaimo. The objective of submitting the Project Development Plan for agency review is to acquire land tenure, water licensing as well as project funding support. The Project Development plan will guide the development and operation of the proposed hydropower development.

In addition the Nation supports the submission of project funding applications to help accomplish the detailed project design and construction planning phase planned in 2016 and 2017.

The Hesquiaht Nation, who has reviewed the terms of this Resolution at a Band Council Meeting duly convened and with a quorum present Council, approves its terms and resolves that it shall be executed and issued on those terms.

A quorum for Council is: 4

[Signatures]

Chief Councillor

Councillor

Councillor

Councillor

Councillor

[Contact Information]
Front Counter BC  
Suite 142-2080 Labieux Rd.  
Nanaimo, BC V9T 6J9  

August 5th 2015  

**Re: Hesquiaht First Nation - Letter of Agency**  

To Whom It May Concern:  

The Hesquiaht First Nation hereby appoints Barkley Project Group Ltd. to act as Agent on its behalf in the pursuit and processing of Crown land, water licence and all other related applications in support of the Nation’s objectives related to renewable energy development, including the Ahthaapq Creek Hydropower Project.  

Agent Information:  

Barkley Project Group  
Unit B – 6451 Portsmouth Road  
Nanaimo, BC, V9V1A3  
Phone: 250-390-2627  
Fax: 250-390-3831  
Contact: John Ebell, Project Manager  
Email: John.Ebell@barkley.ca  

Please contact me if you have any questions.  

Sincerely,  

[Signature]  
Hesquiaht First Nation