

**APPENDIX A**  
**WATERWAY DESIGNATION**  
**AND**  
**MNR SITE INFORMATION PACKAGE**

## **APPENDIX A-1**

### **WATERWAY DESIGNATION**

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February 28, 2011

**Confidential**

Xeneca Power Development Inc.  
5160 Yonge Street  
Suite 520  
Toronto ON M2N 6L9

Attention: Mr. Mark Holmes, Vice President

Dear Mr. Holmes:

**Re: Designation of Managed Waterway for the Purpose of the Ontario  
Waterpower Class Environmental Assessment  
Project: The Chute and Third Falls  
River: Ivanhoe River**

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In carrying out the environmental review as part of the Ontario Waterpower Association's Waterpower Class Environmental Assessment (the "Class EA") the proponent is to indicate whether the proposed project is located on a managed or unmanaged waterway. The primary difference being the obligation for the proponent to publish a Notice of Inspection and circulate a draft copy of the screening report for review prior to the Notice of Completion.

You have requested that Aird & Berlis LLP review whether such consent is necessary for the MNR to be legally in a position to grant Xeneca the surface rights required to construct the proposed waterpower facilities, including connecting lines to the electricity grid. This letter may be shared with the Ministry of Natural Resources ("MNR") and the Ministry of the Environment ("MOE").

**Background and Facts:**

In preparing this opinion, Aird & Berlis LLP has relied upon the following information, which if untrue, could have a significant impact upon the views expressed herein:

1. Xeneca has provided a copy of the attached map showing the area around the Project and we would note the following:
  - a. The Mattagami River Water Management Plan includes part of the Ivanhoe River and the location of the Chute. There are existing waterpower facilities on the Mattagami.

- b. There is a dam, the Ivanhoe Lake Dam operated by the Ministry of Natural Resources on the Ivanhoe River. Ivanhoe Lake Dam, on the Ivanhoe River in northern Ontario, Canada, is a concrete dam built in 1962. The purpose of Ivanhoe Lake Dam is to regulate water levels on Ivanhoe Lake for recreational uses and to prevent flooding of the downstream community of Foleyet.
  - c. There are bridges across the Ivanhoe River (e.g. Highway 101).
  - d. There is a cottage association associated with the Ivanhoe Lake and it has been monitoring the condition of the dam and bridges.
2. The Ontario Waterpower Association has informed Xeneca that during the development of the Class EA the policy discussion regarding “unmanaged waterway” was intended to pertain to undisturbed rivers for which there tends to be very little information such as rivers in the Northern Rivers Area.

**Analysis:**

The classification of a project is completed in a manner that is consistent with the policy and definitions provided in the Class EA. The terms “managed waterway” and “unmanaged waterway” are defined in the Class EA. The Class EA also states that the plain meaning of terms is to be presumed unless a statutory definition provides a different meaning. The relevant definitions from the Class EA are:

**Managed Waterway** – A waterway on which other water management infrastructure (dams, diversions, weirs etc.) and/or waterpower facilities exist and for which a human-made water management regime (i.e., levels and flows) has been established.

**Unmanaged Waterway** – A waterway on which no other water management infrastructure (dams, diversions, weirs etc.) and/or waterpower facilities exist and for which no human-made water management regime (i.e. levels and flows) has been established.

**Waterway** – a river, stream, canal, lake or other water related feature.

(A) It should be noted that the Ontario Waterpower Association, the proponent of the Class, has suggested minor amendment to the MOE regarding the definition of Managed and Unmanaged Waterway. These requested clarification support the contention that the designation of the river looks at the "full reach" and not the zone of influence. Further it suggests that Unmanaged Rivers tend to be in the Northern Rivers area and are without human structures. The proposed definitions are:

- **Managed Waterway** – A waterway, including its full reach on which other water management infrastructure (dams, diversions, weirs etc.) and/or waterpower facilities exists.
- **Unmanaged Waterway** – A waterway, including its full reach, generally in Ontario's Far North, on which no other water management infrastructure (dams, diversions, weirs etc.) and/or waterpower facilities exist.

The OWA Class EA provides the following:

### **3.1.2 New Projects on Managed Waterways**

These are new projects on waterways that are already subject to water level and/or flow management. These projects may be expected to have potential broader effects and/or public, Aboriginal community and/or agency interest. However, given that projects in this category are restricted to those that take place on river systems already subject to water management, the evaluation and assessment will be primarily focused on the development site, the immediate zone of influence and the potential incorporation of the new operation into the existing water management regime. Some developments may involve changes to the existing regime and, hence, the involvement of a broader scope of interests and potentially a broader study area / zone of influence.

The Class EA provides the following rationale for categorizing projects as “unmanaged”.

### **Section 3.1.3**

These projects occur on unmanaged waterways and can have the most potential to cause broad effects and/or are expected to have considerable public, Aboriginal community and/or agency interest. These projects feature new developments on river systems not previously subject to water level and flow management. They will not only involve consideration of the direct effects of the new infrastructure, but are also most likely to require an assessment of the implications of an introduced water management regime.

The logic of the two classifications being that where a facility is proposed on a river system that does not contain structures or a water management plan that the introduction of such features should be carefully considered because there is the introduction of a “new” influence on the waterway for which the potential impacts should be carefully considered. The unmanaged waterway projects are therefore subjected to an additional public notice, the Notice of Inspection, to ensure the public is informed of the potential impacts and the proposed mitigation strategies are discussed. For a managed waterway, the project must be integrated into the existing water management regime and much of the dialogue will revolve around the current management of the waterway and the potential changes to the manner in which the levels/flows are regulated. With a managed waterway there is an understanding of the behaviour of the waterway through the water management regime and

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typically the new facility will be integrated into the existing scheme rather than making significant alterations to the water management plan.

**Conclusion: Is the Ivanhoe River a Managed Waterway?**

In short, there are a number of water level or flow control facilities located on the Ivanhoe River and downstream on the Mattagami River and therefore it should properly be characterized as a managed waterway.

If there are any questions, please contact me at your convenience.

Yours truly,

AIRD & BERLIS LLP



Scott Stoll

SS/hm  
Attachments

cc: Mr. A. Chan, Xeneca (letter only)

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## Conference Preview: Waterpower XVI

*The Waterpower XVI conference and exhibition convenes in Spokane, Wash., this July. This event features multiple opportunities to learn about new technologies, approaches, and services being used to improve hydro. Here is a sampling of the information that awaits attendees.*

The Waterpower XVI conference and exhibition is July 27-30, 2009, in Spokane, Wash. The theme is "New Roles for Hydro in a Changing World." The focus of the conference's program and exhibition is new technologies and innovations.

The biennial Waterpower conference is regarded as the hydro industry's premier technical forum. Technical paper presentations, the traditional backbone of the conference, are supplemented by "mini-conference" symposia, roundtable discussions, and special-interest briefings sessions. Delegates may earn 15 hours of professional development credits.

In addition to the conference program, several meetings, workshops, technical plant tours, and the Hydro Training Institute's "Hydro Basics" course coincide with Waterpower XVI.

The Waterpower exhibit hall opens the evening of July 28. More than 250 companies will share their technology and service innovations during the three-day conference.

This article features application of 11 of the many products, services, techniques, and methods that will be on display in the exhibit hall:

- Synthetic lubricant;
- Laser tracking to measure scroll case;
- Floating fish barrier;
- Overhead stoplog lifting device;
- Rotor pole temperature sensor;
- Fish bypass tower;
- Self-lubricating bearings;
- Oil spill containment system;
- Coating of hollow jet valves;
- Hydrologic forecasting technology; and
- Turbine shaft sealing system.

For more detailed information about all conference events and registration, visit [www.waterpowerconference.com](http://www.waterpowerconference.com).

### AEP uses synthetic lubricant at six hydro plants

American Electric Power (AEP) has replaced the oil-based lubricants in equipment at six of its 17 hydro plants with UCON Trident AW hydraulic fluid, says Terry A. Benson, maintenance supervisor for the northern hydro generation division of AEP. This lubricant, manufactured by the Dow Chemical Company and supplied by American Chemical Technologies Inc., is water-soluble, fire-resistant, and heavier than water.

American Chemical Technologies is exhibiting at the Waterpower conference.

AEP is committed to being an environmentally friendly company, Benson says. This commitment drove AEP to choose six plants at which to make the conversion from petroleum-based lubricants to the UCON Trident AW hydraulic fluid. The plants are 4-MW Elkhart in Indiana, 1-MW Motville in Michigan, 48-MW Racine in Ohio, 22.5-MW Reusens in Virginia, 5-MW Twin Branch in Indiana, and 19-MW Winfield in West Virginia.

The utility's use of this lubricant varies by plant: Elkhart, trashrake equipment and wicket gate actuator tanks for all three units; Motville, wicket gate actuator tank for one unit, with the other units scheduled to be converted in the summer of 2009; Racine, ejector container of the trashraking system, with plans to convert the trashrake in the spring of 2009, as well as the tail gate screwjack system gear boxes for one unit, with the other unit scheduled to be converted later this year; Reusens and Winfield, the knuckle-boom crane; and Twin Branch, the trashrake equipment.

UCON Trident AW is a fully synthetic polyalkylene glycol (PAG) lubricant, American Chemical Technologies says. The UCON Trident AW formulation does not contain any chemicals on the Comprehensive Environmental Response, Compensation, and Liability Act (or CERCLA, also known as Superfund) list of hazardous substances. As such, leaks require minimal reporting.

According to the U.S. Fish and Wildlife Service, UCON Trident AW meets requirements as "relatively harmless" or "practically non-toxic" to fish and other aquatic wildlife.

Since the equipment was converted at the six plants mentioned above, AEP has seen no significant change in how the equipment operates. The only exception is the more northern plants (Indiana and Michigan), where equipment operation upon initial start up is slightly sluggish and slow during cold months of the year, Benson says. However, once the fluid warms up, the equipment operates with no noticeable sluggishness, he says.

One drawback to the use of this hydraulic fluid is that it is more expensive than the biodegradable oil AEP uses and nearly twice as expensive as typical hydraulic oil, Benson says. Another added cost for AEP is the company's requirement to add dessicant breathers for the applications in wicket gate actuator tanks. This equipment is designed to remove condensation formed during temperature changes, Benson says. AEP must perform regular sampling of the lubricant and change the dessicant as needed, which is an added cost, he says.

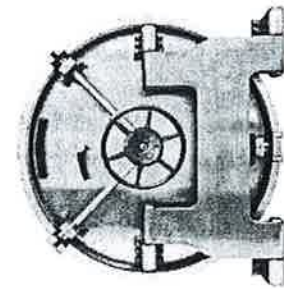
### Laser tracker used to map scroll cases at Bear Swamp

To prepare for replacement of the two pump-turbine runners at Brookfield Renewable Power's 600-MW Bear Swamp pumped-storage project, a contractor used the FARO Laser Tracker to map the turbine scroll cases. Use of this technology provided a computerized representation of the existing system, which was needed to ensure proper development of the new equipment.

FARO Technologies Inc. is exhibiting at the Waterpower conference.

In August 2008, Brookfield announced that the Federal Energy Regulatory Commission (FERC) approved its license

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amendment to increase the installed capacity at Bear Swamp, on the Deerfield River in Massachusetts, by 66 MW. The FERC order requires that refurbishment of the generator units begin within two years of the order date and be completed within five years of that date.

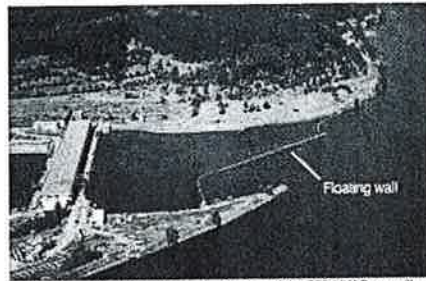
To achieve this capacity increase, Brookfield plans to replace the runners in the two modified Francis reversible pump-turbines, manufactured by Hitachi, and to overhaul the generators.

In order to begin work on this upgrade, Brookfield needed accurate measurements of the existing system. The upgraded units will be designed and manufactured using computational fluid dynamics (CFD) technology. For Bear Swamp, the only details available about the scroll case and vanes were contained in paper drawings dating to 1974. Accurate measurements of these structures are vital so that the company chosen to manufacture the new equipment can design both the computer and physical models using model domains that are broader than those traditionally used, says Patrick Scott Moriarty, manager of pumped-storage operations at Bear Swamp.

To gather these measurements, Brookfield contracted with East Coast Metrology in Topsfield, Mass., which used the FARO Laser Tracker.

The FARO Laser Tracker is a portable three-dimensional measurement system, which uses laser technology to measure large parts, tooling, and machinery. The system has a 230-foot-diameter range and accuracy of 0.001 inch, says Debbie L. Thompson, product marketing manager for FARO.

Workers with East Coast Metrology used the FARO Laser Tracker to establish an XYZ coordinate system inside the scroll case and to precisely locate each of the vanes relative to the center of the pump-turbines. Scans of the Bear Swamp equipment resulted in a three-dimensional point cloud measurement, Moriarty says. A point cloud is a collection of data points that do not conform to traditional geometric shapes such as circles or cylinders.



A floating wall installed across the forebay of the 558-MW Bonneville Second Powerhouse guides chinook salmon to the surface corner collector. This wall consists of a series of floating units (see arrow) that supports a solid plate steel screen that hangs 10 feet below the water line.

[Click here to enlarge image](#)

East Coast Metrology needed only one day on site per unit to perform the measurements, Thompson says. This work was conducted during a routine maintenance outage at the plant.

Perhaps more important than the short amount of time required is the accuracy of the measurements, Moriarty says. Although Brookfield considered physical measurements, "We opted against it because of possible inaccuracies due to the human element and the added work to convert the physical measurements into an electronic format," he says.

Once the measurements were complete, workers constructed surface computer-aided design (CAD) models, which give Brookfield a three-dimensional "as-built" record of the vanes and scroll case.

#### Floating barrier improves salmon passage rate

With only 35 percent of migrating chinook salmon using the surface corner collector at the 558-MW Bonneville Second Powerhouse on the Columbia River in Washington, the U.S. Army Corps of Engineers needed a way to guide more of these fish to the passage route. The solution: a 720-foot-long, 10-foot-deep floating "wall" across the forebay of the powerhouse. This barrier was designed and manufactured by Worthington Products.

Worthington, headquartered in Canton, Ohio, is exhibiting at the Waterpower conference.

At the 518.6-MW Bonneville First Powerhouse and the Bonneville Second Powerhouse, steelhead and chinook migrating downstream can pass the projects via a surface corner collector. The collector removes 5,000 cubic feet per second of water from the surface. Fish swimming with this flow enter this corner collector and then swim through the 1,800-foot-long concrete channel of the sluiceway to continue their journey downstream.

"We studied the fish and found that about 75 percent of juvenile steelhead used the corner collector, but only about 35 percent of the chinook did," says Dennis E. Schwartz, chief of operation at Bonneville. Fish that do not use the corner collector must pass via the spillway, juvenile bypass systems, or one of the two powerhouses.

The species of fish in the Columbia and Snake rivers has an effect on usage of the corner collector, Schwartz says. Steelhead and yearling chinook smolt swim in the top third of the water column and thus prefer this surface route. But fall chinook swim deeper, meaning they are not as easily attracted to the surface corner collector.

The Corps needed a way to improve the number of fall chinook using the corner collector. However, the Corps did not have funds available for a major construction project. Instead, personnel looked for an off-the-shelf fish guidance system. One potential option was a floating "wall" that could intercept fish and guide them to the corner collector, away from the powerhouse.

To test this theory, the Corps proposed a \$2 million to \$3 million prototype study. This study was funded by the Columbia River Fish Mitigation Program appropriated for the Portland and Walla Walla districts.

The Corps chose Worthington Products to design a prototype, which would consist of floatation devices supporting an underwater screen system. For this application, Worthington personnel created a 720-foot-long system that would be positioned in the forebay using cable and concrete anchors. The system is based on Worthington's BoatBuster-20 floating barrier.

The structure serves as a floating guide wall. A series of 22-foot-long floating units supports a screen made of 1/4-inch solid plate steel that hangs 10 feet below the water line, at an angle to the current.

Personnel from Advanced American Diving Service Inc. in Portland, Ore., helped Worthington develop and implement the anchoring plan for the floating guide wall. Divers used a global positioning system (GPS) to guide installation of 80 anchor pads and the corresponding 30,000-pound anchors. The structure also includes a boat boom with a cable float and cable to keep watercraft away from the dam.

Installation took place between December 2007 and March 2008, when flows are lower than other times of year.

After a full year of experience, Schwartz says, "We've seen a 6 to 10 percent increase in chinook. That's a significant difference. It translates into millions more fish."

#### Electric overhead device lifts stoplogs at Ivanhoe Lake Dam

The Ontario Ministry of Natural Resources (OMNR) uses an electric overhead stoplog lifting device (called a log lifter) developed by Hatch Energy to manipulate stoplogs at Ivanhoe Lake Dam.

Hatch Energy will be in the Waterpower exhibit hall to share details about its electric log lifter.

Ivanhoe Lake Dam, on the Ivanhoe River in northern Ontario, Canada, is a concrete dam built in 1962. The purpose of Ivanhoe Lake Dam is to regulate water levels on Ivanhoe Lake for recreational uses and to prevent flooding of the downstream community of Foleyet.



Ivanhoe Lake Dam is a 10-meter-high reinforced concrete gravity structure with a raised sill and seven 4.27-meter-wide spillway bays that are controlled by stoplogs. Each of the seven spillway bays contains a maximum of six 0.3-meter-deep wood stoplogs and two 0.6-meter-deep steel stoplogs. Installation and removal of these stoplogs occurs frequently during the operating season (from March through November) to provide seasonal control of the water level in Ivanhoe Lake, says Pat Cantin, engineering technologist with the Northeast Regional Engineering Unit of OMNR.

In 1999, OMNR installed a single monorail overhead gantry system equipped with two manual 2-ton hoists. This system was used to maneuver the stoplogs during regular operations as well as during a flood event. However, configuration of the dam presented an obstacle to the use of this system. The dam deck is 2 meters above the first of the eight stoplogs in each spillway bay. During high flow events, this large distance between the dam deck and stoplogs made it difficult and dangerous for personnel to remove and install the stoplogs.

Hatch and OMNR developed the new log lifter in 2006. This machine consists of an electric overhead crane with a lifting beam (called a follower) that is lowered through the stoplog guides and into the flowing water to both remove and install the stoplogs. This follower is equipped with hooks. With most log lifters, these hooks must be manually actuated to remove or install the stoplogs. Then, once a stoplog has been removed from the guides, it must be moved to the storage location on the deck of the dam.

Because of the fast-moving water flowing over the top of the stoplogs at Ivanhoe Lake Dam, one of the greatest risks involved in removing the stoplogs is detecting proper engagement of the follower hooks, Cantin says. The stoplog lifting device features proximity sensors that allow the operator to detect engagement of the follower hooks with the stoplogs. In addition, the device contains independently actuated hooks, to give the operator separate information on each end of the follower.

John Gaffney Construction Company Ltd. fabricated, constructed, and installed the system in 2007. Since that time, the stoplog lifting machine has operated as intended.

### Temperature sensors used to measure rotor pole heating

At the 846-MW Rocky Mountain pumped-storage project in Georgia, owners Oglethorpe Power Corporation and Georgia Power have three TWR-100 ThermoWatch Rotor sensors from VibroSystM installed on Unit 3. These sensors are used to detect overheating of the rotor poles.

VibroSystM is exhibiting at the Waterpower conference and can provide details about the technology.

The Rocky Mountain plant began operating in 1995 with three turbine-generating units. In 2006, plant personnel were upgrading Unit 3. This work included a turbine upgrade, and one goal was to increase power from the generator. However, plant personnel were concerned about possible overheating of the rotor poles under the new operating conditions, says Tim Watson, predictive maintenance specialist with Oglethorpe Power.

To monitor this heating and to ensure the existing windings could provide the increased power, a VibroSystM technician installed three TWR-100 sensors in the unit. The sensors were installed at the top, middle, and bottom of the 10-foot-high rotor. It took about one day to install the non-contact temperature probes in the cooling holes in Unit 3, Watson says. The sensors were then connected to the existing air-gap monitoring system at the plant.

The ThermoWatch sensor and the associated signal conditioner provide an on-line temperature reading from both salient and non-salient field poles of large rotating machines. The infrared line-of-sight sensor can measure temperatures from 0 to 200 degrees Celsius. The output from this sensor can be fed into VibroSystM's ZOOM (Zero Outage On-Line Monitoring) system or any other instrumentation, such as the generator control system, Watson says.

Plant personnel restarted the upgraded unit in early 2007 and began monitoring rotor pole temperature using the three ThermoWatch sensors. Personnel programmed the system to take one measurement per minute during the start-up testing. These measurements indicated acceptable temperatures in the rotor poles, with an average of about 45 degrees Celsius, Watson says.

Once start up of the unit was complete, personnel reprogrammed the system. Now, the ThermoWatch system in Unit 3 constantly monitors rotor pole temperature to ensure it does not reach the alarm setpoint of 100 degrees Celsius. These values also are recorded every hour during normal operation, to provide trends of temperature readings for the upgraded unit.

Oglethorpe Power Corporation and Georgia Power are upgrading the ZOOM system at Rocky Mountain. As part of this upgrade, the utilities plan to install ThermoWatch sensors on the other two turbine-generating units at the plant.

### Fish bypass tower to operate at Pelton Round Butte project

In late 2009, Portland General Electric (PGE) will begin operating a new fish bypass/intake structure at its 465-MW Pelton Round Butte Project. This \$108 million structure will decrease temperatures in the Lower Deschutes River in Oregon in the summer and restore downstream passage of chinook, steelhead, and sockeye smolts, says Steven Corson, PGE spokesperson.

Barnard Construction of Bozeman, Mt., was the general contractor for construction of the structure, called the selective water withdrawal (SWW) system. Barnard is exhibiting at the Waterpower conference.

The Pelton Round Butte project is jointly owned and operated by PGE and the Confederated Tribes of the Warm Springs Reservation. The project includes three developments, from upstream to downstream: 338-MW Round Butte, 108-MW Pelton, and 19-MW Reregulating Dam. PGE is majority owner and operator of the Round Butte and Pelton dams. The Tribes wholly own the Reregulating Dam.

Round Butte Dam was completed in 1964 and impounds Lake Billy Chinook. Fish passage facilities at the dam consisted of a downstream surface collector, fish ladder, and transport hopper system. These facilities were intended to provide passage (both upstream and downstream) for chinook, steelhead, and sockeye. However, Corson says there were confounding surface currents in the forebay to Round Butte Dam that made it impossible for fish to find the juvenile bypass system.

As a result, in 1966 PGE abandoned use of the juvenile and adult fish passage facilities. To mitigate the effects of a lack of fish passage at the project, in 1968 PGE began funding a hatchery program administered by the Oregon Department of Fish and Wildlife. Under this program, the Round Butte Fish Hatchery was constructed at the base of Round Butte Dam.

Then, in the mid-1990s, PGE commissioned development of computer models of the lake, as well as river temperature and hydraulics. These models were needed to aid in the design of a system that would both meet downstream temperature requirements and provide for fish passage. PGE studied several design concepts for the SWW system.

In June 2005, as part of the process of renewing the Federal Energy Regulatory Commission license for the Pelton Round Butte Project, PGE agreed to spend US\$130 million (in 2003 dollars) for fish-related projects over the course of the new 50-year operating period.

There are two goals with regard to operation of the SWW system, Corson says. The first is to provide surface currents within the forebay of Round Butte Dam that will help attract migrating summer steelhead, spring chinook, and kokanee/sockeye smolts. The second is to return the temperature of water in the Deschutes River downstream to pre-dam conditions by allowing withdrawal of water from various levels in the reservoir.

The SWW system is a 273-foot-tall tower with three sections.

The first section is a selective water bottom structure that is submerged to 270 feet deep and anchored directly in front of the existing powerhouse intake, 700 feet upstream from the dam. This section weighs 612 tons and is anchored to the lake bottom. The second section is a 40-foot-diameter vertical steel conduit that connects the bottom section with the top section. The third section is a 1,316-ton selective water top structure that separately sends water to the powerhouse and collects fish.

The water selection feature allows operators to draw cooler water from the bottom of the lake to mix with warmer water as needed to modify temperatures downstream and mimic natural pre-dam conditions. In addition, dam operators can draw warm surface water to keep the reservoir cooler in summer and fall.

Fish captured at the intake structure are sorted by size, pumped from the facility, and piped to a floating fish handling facility. This fish handling facility is located about 150 feet from the top structure, near the west shore of the lake. Trucks then take the fish past all three dams to continue their journey to the ocean.

CH2M Hill of Bellevue, Wash.; EES Consulting of Kirkland, Wash.; and ENSR/AECOM Technology Corp. of Redmond, Wash., designed the tower in collaboration with PGE Engineering. Thompson Metal Fabricators of Vancouver, Wash., fabricated the structure.

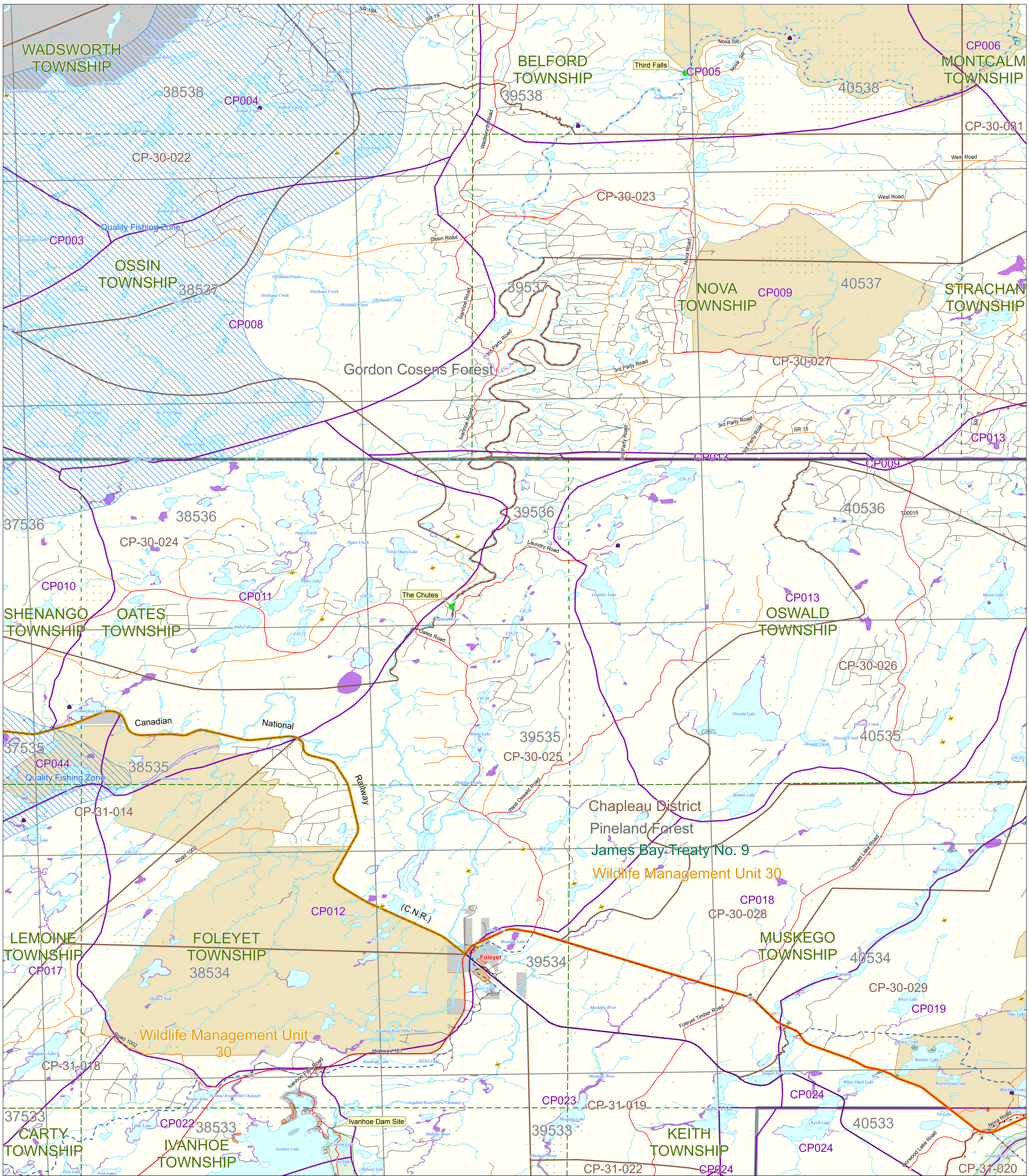
## Ontario Provincial Bridges - North Eastern Region

Structure Name	Region	Highway	BCI	Comments	Inspection Status	Safe
SALVE (PAINKILLER) CREEK BRIDGE	NE	101	Good	Improvements scheduled within 5 years	Up to date	Yes
GHOST RIVER BRIDGE	NE	101	Good	No work required in the next 5 years	Up to date	Yes
MATTAWASAGA RIVER BRIDGE	NE	101	Good	Improvements scheduled within 5 years	Up to date	Yes
IVANHOE RIVER BRIDGE	NE	101	Good	No work required in the next 5 years	Up to date	Yes
NAT RIVER BRIDGE	NE	101	Good	Improvements scheduled within 5 years	Up to date	Yes
GRAZING RIVER BRIDGE (LITTLE PINE LAKE)	NE	101	Good	Improvements scheduled within 5 years	Up to date	Yes
NEMEGOSEDA RIVER BRIDGE	NE	101	Good	No work required in the next 5 years	Up to date	Yes
SHAWMERE RIVER BRIDGE	NE	101	Good	No work required in the next 5 years	Up to date	Yes
PRAIRIE BEE RIVER BRIDGE (GILES CK.)	NE	101	Good	Improvements scheduled within 5 years	Up to date	Yes
GROUNDHOG RIVER BRIDGE	NE	101	Good	No work required in the next 5 years	Up to date	Yes
OPISHING (KAMISKOTIA) RIVER BRIDGE	NE	101	Good	No work required in the next 5 years	Up to date	Yes
CRIPPLE CREEK BRIDGE	NE	101	Good	No work required in the next 5 years	Up to date	Yes
KINNIWABI RIVER BRIDGE (CENTRE CROSSING)	NE	101	Fair	Improvements scheduled within 5 years	Up to date	Yes
SIDEBURNED LAKE BRIDGE	NE	101	Fair	No work required in the next 5 years	Up to date	Yes
O.N.R. O'HEAD BRIDGE	NE	112	Good	No work required in the next 5 years	Up to date	Yes
BLANCHE RIVER BRIDGE	NE	112	Good	No work required in the next 5 years	Up to date	Yes
BOSHKUNG (DAMIONS) BRIDGE	NE	118	Good	No work required in the next 5 years	Up to date	Yes
ANSON CREEK BRIDGE	NE	118	Good	No work required in the next 5 years	Up to date	Yes
BLACK RIVER BRIDGE	NE	118	Good	No work required in the next 5 years	Up to date	Yes
WHITESTONE LAKE BRIDGE	NE	124	Good	No work required in the next 5 years	Up to date	Yes
MAGNETAWAN R. BR.	NE	124	Good	Improvements scheduled within 5 years	Up to date	Yes
DISTRESS RIVER BRIDGE	NE	124	Good	No work required in the next 5 years	Up to date	Yes
SNOWSHOE CREEK BRIDGE	NE	129	Good	No work required in the next 5 years	Up to date	Yes

## **APPENDIX A-2**

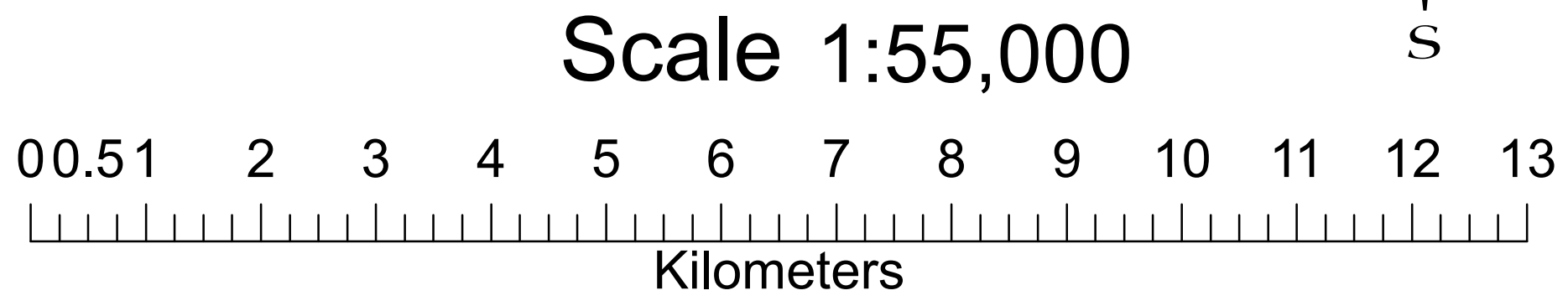
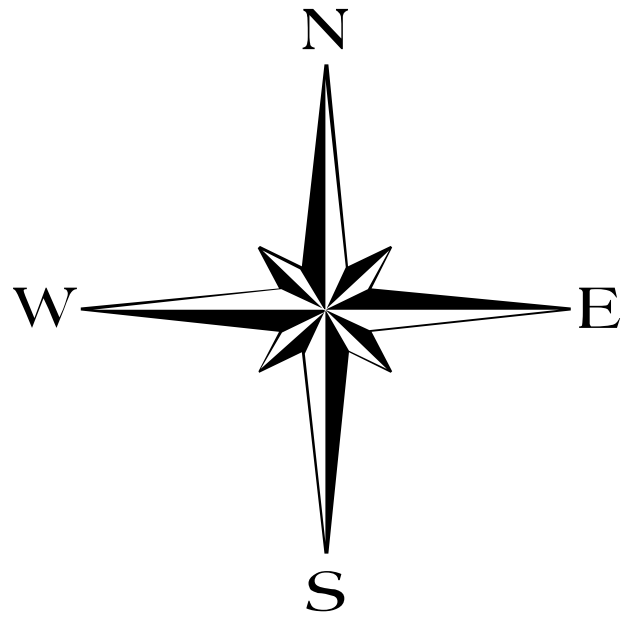
### **MNR SITE INFORMATION PACKAGE**





## Map 2.3 PROPOSED WATER POWER DEVELOPMENT IVANHOE RIVER

- Legend**
- |                             |                              |                           |                                   |                              |
|-----------------------------|------------------------------|---------------------------|-----------------------------------|------------------------------|
| ● Proposed Water Power Site | ◇ Cottage Residential Site   | ➤ Access Point            | 🌊 Lakes and Rivers                | 🏠 Beach Management Agreement |
| — Highway                   | 🏠 Cottage Residential Area   | 🚤 Boat Cache, Commercial  | 🌳 Conservation Reserve            | 📄 Easement                   |
| — Primary Road              | 🏠 Recreation Camp            | 🚤 Boat Cache, Private     | 🌳 Provincial Park                 | 📄 Land Use permit            |
| — Secondary Road            | 📍 Designated Camping Site    | 📍 Mainbase Lodge - Remote | 🌳 Township Boundary               | 📄 Lease                      |
| — Tertiary Road             | 📍 Mainbase Lodge - Drive In  | 📍 Outpost Camp - Remote   | 📍 OBM Index                       | 📄 Licence of Occupation      |
| — Railway                   | 📍 Outpost Camp - Not Remote  | 📍 Gravel Pit or Quarry    | 🌳 Wildlife Management Unit        |                              |
| — Utility Line              | 📍 Fish Spawning Site         | 📍 Trapper Cabin           | 🌳 District Boundary               |                              |
| — Snowmobile Trail          | 📍 Fish Spawning Area         | 📍 Wild Rice Stand         | 🌳 Forest Management Unit Boundary |                              |
| — Canoe Route               | 📍 Quality Fishing Zone       | 📍 Wild Rice Stand Layer   | 🌳 Federal Land, Indian Reserve    |                              |
| 📍 Tower                     | 📍 Moose Aquatic Feeding Area | 📍 Streams and Creeks      | 🌳 Federal Land, Other             |                              |
| 📍 Nest Site                 |                              |                           | 🌳 Private Land                    |                              |



**Ontario**

Notes

The source of the FRI data for this site is the Gordon Cosens Planning Inventory MUISB-2010INV.PI and/or from the Pineland Forest Composite MU421.11PCMO.

The source for the mining data is MINDM.

This map is illustrative only. Do not rely on it as a precise indicator of routes, locations of features nor as a guide to navigation.

Source of Information - Ontario Ministry of Natural Resources District files - compiled from field survey data, historical records, stakeholder information, reports from the public and data from other Ministries.

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# Waterpower Site Information Package

THIS IS A TEMPLATE THAT WILL BE COMPLETED BY THE APPLICABLE DISTRICT OFFICE  
PRIOR TO THE SITE INFORMATION MEETING

Site Information Package (SIP) for: **Ivanhoe River- The Chutes #4LC18**

District/ Region: **Chapleau District, Northeast Region**

Application Number: **WSR-2007-60**

*[Note to District Staff – add additional rows of information to template as required for each specific application]*

## 1. Listing of “Identified Aboriginal Communities” and local Aboriginal Communities and Preliminary Interest and/or Concerns

Identified Aboriginal Communities for Business to Business Relationship	Preliminary Interest and/or Concerns
Chapleau Cree First Nation	<p><u>Preliminary Interests</u> – business opportunity.</p> <p><u>Preliminary concerns</u></p> <ul style="list-style-type: none"><li>- maintaining the ecosystem function of the river,</li><li>- generally does not like the concept of concrete, permanent dam/footprint,</li><li>- concerned with terminology differences in the term ‘run of river’,</li><li>- concerned that historic data may not be a good predictor of the future water flow due to global warming,</li><li>- desire water power projects to be “as green as green can be”,</li><li>- rivers and water are a big concern culturally</li><li>- recommended to take advantage of public knowledge (especially in the Foleyet area) to fill some info gaps on the environment around the Ivanhoe River and area – open house, informal gatherings</li><li>- concerned with the approach of the proponent paying consultants to gather information which can lead to misrepresentation of the river system/ecosystem and the impacts/benefits of a</li></ul>

	<p>water power facility</p> <ul style="list-style-type: none"> <li>- Moose Cree First Nation also needs to be informed of this proposal as they are downstream of the proposal</li> </ul>
<b>Brunswick House First Nation</b>	<p><u>Preliminary Interests</u></p> <ul style="list-style-type: none"> <li>– business opportunity. BHFN will likely be represented by and take advice from the economic development section of Wabun Tribal Council (led by Jason Batise of Wabun)</li> <li>- Wabun will discuss with Xeneca which Wabun communities Xeneca needs to be in contact with regarding business arrangements, regardless of the direction from MNR's policy. Wabun has an internal agreement within their Tribal Council communities regarding this approach.</li> <li>- desired to know more about Xeneca's track record with respect to water power development</li> <li>- opportunity to fly over these two proposed sites</li> </ul> <p><u>Preliminary Concerns</u></p> <ul style="list-style-type: none"> <li>– included potential effects on <ul style="list-style-type: none"> <li>o Fish habitat,</li> <li>o Wildlife habitat</li> <li>o Plant habitat</li> <li>o Archaeological heritage sites</li> </ul> </li> <li>- desired to know more about Xeneca's track record with respect to water power development</li> <li>- would the area of flooding be harvested of trees prior to flooding and who would do this work?</li> </ul>

<b>Chapleau Ojibwe First Nation</b>	<p><u>Preliminary Interests</u></p> <ul style="list-style-type: none"> <li>– Business opportunity. COFN will likely be represented by and take advice from their economic development section of Wabun Tribal Council (led by Jason Batise of Wabun)</li> <li>- Wabun will discuss with Xeneca which Wabun communities Xeneca needs to be in contact with regarding business arrangements, regardless of the direction from MNR's policy. Wabun has an internal agreement within their Tribal Council communities regarding this approach.</li> </ul> <p><u>Preliminary Concerns</u></p> <ul style="list-style-type: none"> <li>– Nothing specifically identified at this stage.</li> </ul>
<b>Mattagami First Nation</b>	<p><u>Preliminary Interests</u></p> <ul style="list-style-type: none"> <li>– Business opportunity. MFN will likely be represented by and take advice from their economic development section of Wabun Tribal Council (led by Jason Batise of Wabun)</li> <li>- Wabun will discuss with Xeneca which Wabun communities Xeneca needs to be in contact with regarding business arrangements, regardless of the direction from MNR's policy. Wabun has an internal agreement within their Tribal Council communities regarding this approach.</li> </ul> <p><u>Preliminary Concerns</u></p> <ul style="list-style-type: none"> <li>– Nothing specifically identified at this stage.</li> </ul>

<b>Local Aboriginal Communities</b>	<b>Preliminary Interest and/or Concerns</b>
<b>Flying Post First Nation</b>	<p><u>Preliminary Interest</u></p> <ul style="list-style-type: none"> <li>– Business opportunity. FPFN will likely be represented by and take advice from their economic development section of Wabun Tribal Council (led by Jason Batise of Wabun)</li> <li>- Wabun will discuss with Xeneca which</li> </ul>



	<p>Wabun communities Xeneca needs to be in contact with regarding business arrangements, regardless of the direction from MNR's policy. Wabun has an internal agreement within their Tribal Council communities regarding this approach.</p> <p><u>Preliminary Concerns</u></p> <ul style="list-style-type: none"> <li>– Nothing specifically identified at this stage.</li> </ul>
<b>Taykwa Tagamou First Nation</b>	<p><u>Preliminary Interest</u> - TTN is developing a community engagement protocol for use with proponents and governments.</p> <ul style="list-style-type: none"> <li>- TTN's territorial mapping includes the Third Falls site but does not include the Chutes site.</li> </ul> <p><u>Preliminary Concerns</u></p> <ul style="list-style-type: none"> <li>– Concern was expressed regarding Xeneca commencing with the Class EA prior to site release being completed. Felt that discussions with First Nations need to occur prior to Class EA starting.</li> <li>- There is a need to develop a good working relationship with the First Nations. Keep communities informed ahead of time.</li> <li>- concerns were expressed over environmental impacts from flooding, clearing of flooded lands, water flow and fish habitat</li> </ul>
<b>Metis Nation of Ontario - Timmins</b>	<p><u>Preliminary Interest</u> – nothing specifically identified at this stage.</p> <p><u>Preliminary Concerns</u></p> <ul style="list-style-type: none"> <li>– What is the area of inundation in the current proposal?</li> <li>- there is a possibility of sturgeon in the river</li> <li>- What is Xeneca's track record with respect to water power development?</li> <li>- Very concerned with MNR's policy approach to designation of 'identified' and 'local' communities.</li> </ul>

## 2. Maps

The map product(s) included as an attachment to this Site Information Package will include the tertiary watershed, drainage and other site features.

Applicable Maps / Tables	Included as Attachment
Map 2.1 Hydropower Development Third Falls	Map 2.1
Map 2.2 Hydropower Development the Chutes	Map 2.2
Map 2.3 Proposed Hydropower Development Ivanhoe River	Map 2.3

## 3. Information

Land-Use		
Site Feature	Additional Information	Applicable Map
Aboriginal Values and Traditional Activities	<p><u>Traditional Activities:</u> There is no current information to support that the Chutes site is used extensively in the present day by Aboriginal peoples for the undertaking of traditional activities. Historically, it is quite possible that the site was used for some level of traditional activities including fishing, hunting, trapping and gathering.</p> <p><u>Traditional Use Areas:</u> There are no Aboriginal traditional use areas which have been identified to the local MNR office.</p> <p>The Ivanhoe River would possibly have been part of a pre-contact/early contact travel corridor between the height of land and the James Bay coast.</p> <p><u>Cultural/Spiritual Sites</u> There are no Aboriginal cultural/spiritual sites which have been identified to the local MNR office.</p> <p><u>Features of Aboriginal Significance</u> All waterways are viewed in traditional, Aboriginal culture as the 'veins or lifeblood</p>	

	<p>of Mother Earth'. Water quality and water ecosystem health and function are typically mentioned as concerns by Aboriginal people in relation to natural resource management and development projects.</p> <p>Eastern white cedar grows commonly in the river floodplain, up stream of the Chutes. Cedar is a species of special cultural significance to Aboriginal people and is often used in ceremony.</p> <p><u>Archaeological Sites</u> There are no known archaeological sites of aboriginal origin in the vicinity of the Chutes site.</p> <p>There is potential for the presence of culturally modified cedar trees, given the amount of cedar in the river floodplain and given that this cultural activity has been confirmed in Chapleau District.</p> <p><u>Indian Reserves</u> There are no Indian Reserves in the immediate vicinity of the Chutes. The closet Indian Reserve would be Flying Post Reserve located approximately 20 km (away as the crow flies) to the northeast.</p> <p><u>Treaty Land Entitlement</u> While both Chapleau Cree First Nation and Chapleau Ojibwe First Nation are currently in treaty land negotiations, it does not appear that land in the vicinity of the Chutes is likely settlement land as part of these negotiations.</p>	
Cultural Heritage Values	<p>There are no known registered or local cultural heritage sites located within proximity to the site. However, the potential for discovery of unidentified CH resources is unknown and should be addressed through the EA. If "high</p>	

	potential” is determined, further archaeological assessment may be required. Proponent is advised to consult with Ministry of Culture.	
Access Points	<p>Downstream of the proposed facility is a heavily used access point for the Ivanhoe River. The area adjacent (east) to the falls is used extensively for recreational camping, primarily by residents of Foleyet and Timmins. This spot is very popular for camping and the cleared sites are often occupied for extensive periods throughout the spring, summer, and fall. The camp sites have been used for this purpose for many years. Please see Map 2.2 for location.</p> <p>At the end of the Chutes access road there is a boat launch that has been used for many years to support the recreational activities discussed above (boating, angling, etc) If the current boat launch is affected by this development (flooded or dried up), it may be prudent to consider the re-development of another launch post development.</p> <p>The area has been used for many years by residents of the region for camping, fishing, hunting, swimming, hiking, exploring, and nature appreciation. It is highly likely that the falls have an aesthetic value with local residents and that the area is used for day trips, picnicking, and viewing the water fall.</p>	Map 2.2
Access Road Location	<p>The Chutes site can be accessed from Highway 101 by taking the Oates Road to the Laundry Road. A gravel road which stems off the Laundry Road is used to access the site. The access road is in relatively poor condition. See Map 2.2 for road locations.</p> <p>There is an existing forest access road water crossing (bridge) across the Ivanhoe River, which is located</p>	Map 2.2

	<p>approximately 2km upstream of the proposed development site. It is unclear how the proposed inundation may affect this bridge, however, if there is any potential for structural impacts, further discussions with MNR/Domtar-EACOM may be warranted. Please see bridge site on Map 2.2.</p>	
Forest Access Roads	<p>A gravel road off the Laundry Road is used to access the site. The access road is in relatively poor condition. See Map 2.2 for road locations.</p>	Map 2.2
Existing Mining Tenure or Claims	<p>There is no mining tenure in the immediate vicinity of the proposed development as of Dec. 19, 2009. A large area around the site has also been formally withdrawn from staking under the Mining Act. (Dec. 19, 2009)</p> <p>See Map 2.2 for mining tenure and withdrawal area. For specific information relating to mining tenure, please consult MNDMF.</p>	Map 2.2
Canoe Routes/Portages	<p>The Ivanhoe River is a recognized canoe route. The Ivanhoe River provides a waterway link to James Bay and has likely been used in the past as an Aboriginal travel corridor. 200m forested reserve has been traditionally maintained as an Area of Concern (AOC) under the Forest Management Planning process. The canoe route is depicted on Map 2.2. The route may require the development of portages to mitigate impacts depending on extent of flooding and footprint of dam site.</p>	Map 2.2
Land Tenure	<p>According to MNR database, no Crown land tenure exist within the immediate vicinity of the project.</p> <p>There are no known parcels of private land within close proximity to the site.</p>	Map 2.2
Petroleum	N/A	
Aggregates	<p>Two Category 9 aggregate permits (13 Ha and 16 Ha) are currently issued to Domtar</p>	Map 2.2

	Inc.-EACOM in Oates township. Refer to Map 2.2 for the location of the pits.	
Forestry	<p>The forest resources on Crown land adjacent to the falls are currently allocated under a Sustainable Forest License to Domtar Inc-EACOM. (Pineland Forest Management Unit) See Map 2.2 for boundaries of the Pineland FMU).</p> <p>Discussions with MNR and Domtar-EACOM may be required if there is an interest from Domtar-EACOM or the Crown in having the marketable forest resources harvested within the proposed inundation area, prior to any flooding.</p>	Map 2.2
Commercial Fishing Zones	NA	
Other Industrial/ Commercial Activities	<p><b>i) Economic Development: Foleyet, Timmins Chapleau</b></p> <p>Economic development may be viewed as desirable, especially during construction phase in terms of the potential for construction related jobs and support services.</p> <p><b>ii) First Nations</b></p> <p>Economic development may be viewed as a positive.</p>	
Protected Areas	There are no protected areas in the immediate vicinity of the proposed project. However, the Northern Claybelt Conservation Reserve (C1702) and Groundhog River Provincial Park (P1569) are located downstream of the proposed site and may be impacted by this development depending on the nature of the flow and level manipulations. See Map 2.1 for Conservation Reserve/Park location.	Map 2.1
Trails (snowmobiling, skiing, hiking)	A hiking trail presumably used by anglers runs along the eastern shoreline of the Ivanhoe River from the boat launch upstream beyond the falls.	

Transmission Line Route Location	Location of transmission lines from the proposed facility have yet to be provided.	
Trapping, Baitfish Harvesting and Bear Management Agreement Activities	<p>Commercial trapping/ Bear Management/ and Baitfish harvest is licensed and occurs in and around this area. It does not appear that any trap/ baitfish cabins are present within the expected zone of influence.</p> <p>The site is located on the border of trap lines CP 11 and 12 with the site being situated within CP 12. See Map 2.2 for location or refer to the individual trap line maps provided in the Supplemental Information Folder.</p> <p>The site is located within Bear Management Area CP-30-25. See Map 2.2 for location or refer to the BMA map provided in the Supplemental Information folder.</p> <p>Two Baitfish Harvesting Areas are located in Oates township. See Map 2.2</p> <p><b>ii) Recreational fishing</b> Walleye/ pike are primary species sought after by recreational anglers. The Chutes is a very popular spot for recreational angling, particularly in the spring and fall season below the falls. The river stretch below the Chutes is also used extensively for boating/ angling/ other water-based recreation.</p> <p><b>iii) Recreational hunting</b> In this area, the river is likely used extensively by hunters to access back country areas for moose and bear.</p>	Map 2.2
Resource Management Plans	FMPs – see “forestry”	
Existing Water Management Plan(s)	As Xeneca is the same proponent for the Third Falls location, they will be aware that development at the Chutes may affect	



	<p>levels and flows at Third Falls.</p> <p><b>Existing Water Management Plans</b> The Mattagami Water Management Plan governs water control structures on the Ivanhoe River. This plan will need to be updated/ amended to include this proposed water control structure. Refer to a copy of the Mattagami WMP in the Supplemental Information folder (DVD).</p>	
Wild Rice Harvesting	N/A	
Generic Waterpower Lease Agreement (WPLA)	N/A	
Existing MNR infrastructure i.e. dams, bridges which may be impacted – decommissioning requirements	<p><b>Ivanhoe Dam</b> The Ivanhoe Dam (shown on Map 2.3) is located approximately 40km upstream from the Chutes site. This dam is owned and operated by Chapleau MNR to provide flood control and recreational water levels on Ivanhoe Lake. The dam operating regime is currently specified in the Mattagami Water Management Plan. Water level/flow manipulations at this existing dam will potentially impact the levels and flows at the Chutes. This should be taken into consideration throughout the planning stages for the proposed development at the Chutes.</p> <p>For information regarding the structural components of the Ivanhoe Dam, contact the MNR Northeast Region Engineering Department.</p>	Map 2.3

Natural Environment		
Site Feature	Additional Information	Applicable Map
Invertebrate and Invertebrate Habitat	Some information is available regarding the species of aquatic invertebrate present in the Ivanhoe River based on	

	the results from the Ivanhoe River – Big River Inventory conducted in 1985.	
Fish species present and Fish Habitat	<p>The proposed development and operations will alter the existing river system and have potential impact on the biological characteristics of the Ivanhoe River both upstream and downstream of The Chutes.</p> <p>Walleye, northern pike, white sucker, yellow perch, fathead minnow, Iowa darter, river chub and log perch have been confirmed throughout the Ivanhoe River. In addition, burbot, lake whitefish, cisco, and spottail shiner have been confirmed upstream in the Ivanhoe River at 92.8 to 93.5 km of the Ivanhoe River.</p> <p>Good quality spawning habitat exists for walleye at the base of the Chutes as well as for pike along the vegetated shorelines of the river. Likelihood for additional walleye and pike spawning habitat also exists both above and below the Chutes. Confirmation of spawning sites and specific locations has not been carried out to date for these two species.</p> <p>Additional species including brook trout and various minnow species may also be present in the river but are not yet confirmed although brook trout inhabit some of the Ivanhoe River tributaries.</p> <p>In order to ensure the perpetuation of fish and fish habitat as per the Lakes and Rivers Improvement Act, flows should be mitigated appropriately particularly during the spawning and incubation life phases of the above species</p>	Map 2.2

	Known spawning locations are depicted on Map 2.2.	
Special Concern / Threatened / Endangered or Extirpated Species (Aquatic/Terrestrial)	There are no known species-at-risk populations located within the vicinity of the Chutes.	
Wildlife species present and Wildlife Habitat	<p>Beaver slides and activity are numerous through out the shorelines of the Chutes. Other wildlife species in the area that rely on the river system and riparian habitat also include otter, muskrat, mink, snowshoe hare, marten, fox, wolves, black bear, moose and various small mammals. Habitat of these species will be potentially impacted by the inundation of areas upstream of the proposed development and operation. There are also documented moose aquatic feeding areas along the tributaries of the Ivanhoe River both upstream and downstream of the site. Moose Aquatic Feeding Areas are illustrated on Map 2.2.</p> <p>Furthermore, there are likely additional values including den sites and other wildlife habitat features that should be monitored prior alteration of this habitat. Known den sites are illustrated on Map 2.2.</p> <p><b>ii) Avian Species</b> Current information regarding avian species including waterfowl, raptors and song birds as well as their habitat is lacking in the area surrounding the Chutes. Inventories should be conducted to determine the presence of these values.</p> <p>Known nesting sites are depicted on Map 2.2.</p> <p><b>iii) Reptiles and Amphibians</b></p>	Map 2.2

	Other than spring peepers, there is currently a knowledge gap regarding any amphibians or reptiles present in the area surrounding the Chutes.	
Other Habitat Considerations	<b>All potential impacts of the proposed facility development and operation on the biological regime at The Chutes need to be appropriately identified, mitigated, and monitored.</b>	
Provincial Significant Wetlands	There are no known Provincially Significant Wetlands within proximity to the Chutes.	Map 2.2
ANSI (Area of Natural & Scientific Interest)	There are no known ANSIs within proximity to the Chutes.	
Significant Woodlands	There are no known Significant Woodlands within proximity to the Chutes.	
Water Quality	<p>The proposed development and operations will alter the existing river system and have potential impact on the water quality characteristics of the Ivanhoe River both upstream and down stream of the Chutes.</p> <p>Currently, there is limited information available about the existing sediment regime. Some information is available from the Ivanhoe River – Big River Inventory conducted in 1985.</p> <p>All potential impacts of the proposed facility development and operation on the water quality regime at the Chutes need to be appropriately identified, mitigated, and monitored.</p>	
Flow Regime Characteristics	The proposed development and operations will alter the existing river system and have potential impact on the hydrological characteristics of the Ivanhoe River both upstream and down stream of the Chutes.	

	<p>Flow values for Ivanhoe River at the Chutes were prorated by MNR using drainage basin area, from Water Survey of Canada gauge 04LC003 (Ivanhoe River at Foleyet). Based on this information, the mean annual flow at this site is 29.2 m<sup>3</sup>/sec.</p> <p>Current MNR expectation regarding flows needed to ensure aquatic ecosystem integrity is to maintain seasonal Q80 values. This translates to the following seasonal flows at the Chutes: Winter – 10.73 m<sup>3</sup>/sec; Spring 23.6 m<sup>3</sup>/sec; Summer - 5.5 m<sup>3</sup>/sec; and Fall – 20.6 m<sup>3</sup>/sec.</p> <p>The current application specifies a residual flow of 0.05 m<sup>3</sup>/sec which is less than a Q99.99 value and not an acceptable value to ensure integrity of the system is maintained.</p> <p>In situ data logger and field work are being employed at the Chutes during the 2010 season by MNR and Trent University to fill existing knowledge gaps in site specific hydrology. The results of this work will be available upon completion of this work in Fall/Winter 2010.</p> <p>Additional information including the gradient profile for the Ivanhoe River, flow metric data sheet and aerial flight footage of the Ivanhoe River can be found in the Supplemental Information folder (DVD).</p> <p>All potential impacts of the proposed facility development and operation on the hydrological regime at the Chutes need to be appropriately identified, mitigated, and monitored.</p> <p><b>ii) Thermal Regime</b></p>	
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	<p>The proposed development and operations will alter the existing river system and have potential impact on the thermal characteristics of the Ivanhoe River both upstream and down stream of the Chutes.</p> <p>Currently, there is limited information available about the existing thermal regime. Some information is available from the Ivanhoe River – Big River Inventory conducted in 1985.</p> <p>All potential impacts of the proposed facility development and operation on the thermal regime at the Chutes need to be appropriately identified, mitigated, and monitored.</p> <p><b>iii) Sediment Regime</b></p> <p>The proposed development and operations will alter the existing river system and have potential impact on the sediment characteristics of the Ivanhoe River both upstream and down stream of the Chutes.</p> <p>Currently, there is limited information available about the existing sediment regime. Some information regarding river substrate is available from the Ivanhoe River – Big River Inventory conducted in 1985.</p> <p>All potential impacts of the proposed facility development and operation on the sediment regime at the Chutes need to be appropriately identified, mitigated, and monitored.</p>	
Areas of Known Erosion	There are no known areas of erosion within proximity to the Chutes site.	
Lake Trout Lakes	There are no known Lake Trout lakes within proximity to the Chutes site.	

MNR Water Control Structure (if applicable)		
Site Feature	Additional Information	Applicable Map
Existing Operation	<p><b>Ivanhoe Dam</b></p> <p>The Ivanhoe Dam (shown on Map 2.3) is located approximately 40km upstream from the Chutes site. This dam is owned and operated by Chapleau MNR to provide flood control and recreational water levels on Ivanhoe Lake. The dam operating regime is currently specified in the Mattagami Water Management Plan. Water level/flow manipulations at this existing dam may potentially impact the levels and flows at the Chutes. This should be taken into consideration throughout the planning stages for the proposed development at the Chutes.</p>	Map 2.3
Dam Safety	For information regarding safety (guidelines under the LRIA) and the Ivanhoe Dam, contact the MNR Northeast Region Engineering Department.	
Structural Integrity	For information regarding the structural integrity of Ivanhoe Dam, contact the MNR Northeast Region Engineering Department.	



#### 4. Information Gaps

Land-Use	
Site Feature	Information Gap
Access Road Locations	Proponent has yet to provide information regarding how they will access the site.
Transmission Line Route Location	Proponent has yet to provide information regarding the location of required transmission lines.

Natural Environment	
Site Feature	Information Gap
<b>i. Biological Regime</b>	
Fish and Fish Habitat	Likelihood for additional walleye and pike spawning habitat also exists both above and below the Chutes. Confirmation of spawning sites and specific locations has not been carried out to date for these two species. Additional species including brook trout and various minnow species may also be present in the river but are not yet confirmed although brook trout inhabit some of the Ivanhoe River tributaries.
Avian Species	Current information regarding avian species including waterfowl, raptors and song birds as well as their habitat is lacking in the area surrounding the Chutes. Inventories should be conducted to determine the presence of these values.
Reptiles and Amphibians	Other than spring peepers, there is currently a knowledge gap regarding any amphibians or reptiles present in the area surrounding the Chutes.
Wetlands, Plants and Vegetation	Wetland and aquatic and terrestrial vegetation complexes existing in the vicinity of the Chutes. Inventories should be carried out to determine the presence and

	significance of these values.
<b>iii. Thermal Regime</b>	Currently, there is limited information available about the existing thermal regime. Some information is available from the Ivanhoe River – Big River Inventory conducted in 1985.
<b>iv. Sediment Regime</b>	
<b>v. Water Quality Regime</b>	

MNR Water Control Structure (if applicable)	
Site Feature	Information Gap
See Information on Ivanhoe Dam	

## 5. Potential Stakeholders

Site Feature	Potential Stakeholders
Potential stakeholders will be identified through the EA process.	

## 6. Flow Metrics Data

Please refer to “4LC18 The Chutes - flow metric data sheet.pdf” in the Supplemental Information Folder (DVD).

## 7. Potential Permits and Approvals

Permits and Approvals
Class Environmental Assessment for Waterpower Projects – Ministry of Environment (MOE)
Environmental Assessment Requirements – Canadian Environmental Assessment Agency
Class Environmental Assessment for MNR Resource Stewardship and Facility Development Projects (Class EA – RSFD) – Ministry of Natural Resources (MNR)
Permit to Take Water – (MOE) (OWRA)
Ministry of Environment C of A (Sewage Works)
Work Permit under the <i>Public Lands Act</i> – (MNR)
Land Use Permit under the <i>Public Lands Act</i> – (MNR)
Lakes and Rivers Improvement Act Approval – (MNR) – Location Approval and Plans & Specification Approval
Lakes and Rivers Improvement Act – (MNR) – Dam Operations Plan, Water Management Plan Approval
Crown Easement under the <i>Public Lands Act</i> – (MNR)
Water Management Planning Requirements – (MNR)
Burn Permit under the <i>Forest Fire Protection Act</i> – (MNR)
Authorizations under the Fish and Wildlife Conservation Act to destroy beaver dams, dens of furbearing mammals or bears and the nests of eggs of birds. - MNR
Licence of Occupation of Crown Land under the <i>Public Lands Act</i> - MNR
MNR Waterpower Lease Agreement
Archaeological Approvals – Ministry of Tourism and Culture
Fisheries Act Approval – Fisheries and Oceans Canada (DFO)
Blasting Approval in aquatic environment – (DFO)
Fish Habitat Authorizations under the <i>Fisheries Act</i> – (DFO)
Navigable Waters Protection Act Approval – Approval for Works (Coast Guard)
Approvals for water crossings – Fisheries and Oceans Canada
Temporary Magazine Licence, required for purchase and storage of explosives for blasting – Natural Resources Canada
Approval for Construction within Navigable Waters – Canadian Coast Guard
Navigable Waters Protection Act Approval – Transport Canada
Ministry of Labour Notice of Project
Ontario Energy Board Generator's Licence
Hydro-One Customer Impact Assessment
IESO System Impact Assessment
Approvals to connect to IESO transmission grid
Interconnection Agreement with Hydro One
Landowner agreements for access
Leases or Agreements for lands for the transmission lines or for flooded areas
Building Permits issued by the local Municipality
Other Federal, Provincial and/or Municipal permits or approvals as required
<b>Note: Additional information requirements may be identified through the Waterpower Class EA and other approval processes.</b>

## 8. Additional Considerations

-Mineral claims/tenure (including oil and gas): review of ClaimsMap ( <a href="http://www.mndm.gov.on.ca/mines/lands/claimap3/default_e.asp">http://www.mndm.gov.on.ca/mines/lands/claimap3/default_e.asp</a> ) to determine activities on the site; search at registry office(s) to determine content of leases
-Access, flooding and transmission needs: additional Crown and/or private lands may be required; proponent must obtain all landowner permissions and should apply for any additional Crown land as early as possible
-Milestones: will be defined in A of R letter
-Class Environmental Assessment for Waterpower Projects: further information available through the Ontario Waterpower Association ( <a href="http://www.owa.ca/">http://www.owa.ca/</a> )