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Stephanie Hodsoll
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Xeneca Power Development Inc.
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Dear Ms. Hodsoll:

Re: Serpent River, Four Slide Falls GS Environmental Report

The Ontario Rivers Alliance (ORA) is an organization with a focus on healthy river ecosystems throughout the Province, and represents some 30 organizations across Ontario. Therefore, we wish to comment on several points with regard to your Class Environmental Report and its supporting documentation, for the proposed Four Slide Falls, on the Serpent River.

It is the position of the ORA that hydro-electric generation, in the form Xeneca is suggesting at Four Slides, will have unacceptable environmental impacts, and does not contribute in any way to *"the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment."*[1] The ER is very lacking in several extremely important areas, such as inadequate public consultation, incomplete field studies, and proper considerations for the effects of climate change. After carefully reviewing the information as presented, the cumulative effects of this proposal would unnecessarily place the people of the Serpent River Community at risk, as well as the fish populations of Picors Lake and McCarthy Lake, and create a zone of influence that would have devastating effects on the entire riverine ecosystem, both upstream and downstream of Four Slide Falls.

The very short comment period that has been allowed the public and stakeholders has not made it possible to review the ER and all its supporting documentation in sufficient detail; however, below you will find ORA's comments on several areas of concern:

1. Cumulative Effects

When considering the cumulative effects, we must consider all past, present and future impacts:

I. Camp Lake Serpent River GS

[1] Environmental Assessment Act (EAA), R.S.O. 1990, c E.18

II. Serpent River First Nation GS, both located downstream,
III. Proposed McCarthy Chute GS; and
IV. 40 years of uranium mining and tailings deposits.

A modified run-of-river operation means water flow will be held back for up to 48 hours, and exposed to from 16 to 30 hours of solar absorption during the low flow winter and summer months, resulting in:

a. Elevated Methyl mercury Levels

i. The ER states, "surface water – inundation area at Four Slide Falls site may alter water quality (methylmercury) in reservoir and in turn, the water flowing downstream into McCarthy Lake".[2]
ii. In this area there are trout lakes upstream and downstream of the proposed Four Slide Falls GS. Serpent River First Nation depend upon the protein of fish in their diet, and increased mercury will be a future health hazard to this community, other local stakeholders, and anglers.
iii. The village of Serpent River's municipal water intake is located downstream of the two proposed dam sites.
iv. The proposed inundation area would increase from 18 hectares to 165 hectares. The ER states, "woody debris will be removed", but "roots of trees will remain". This report makes no mention of soils being removed from the inundation area.
v. Methylmercury production is a well-known by-product of hydroelectric impoundments, and is known to radically increase in fish populations – i.e.
   - According to Environment Canada, increased methylation of mercury methylation[3] is a well-known problem with water held in holding ponds for peaking purposes.
   - Newly formed reservoirs are at a greater risk of organic methylmercury production than natural lakes. Studies of new reservoirs show significant increases in organic methylmercury in fish inhabiting reservoirs as compared to fish in the surrounding area.[4]
   - In studies of the James Bay region of northern Québec, organic methylmercury in all species of fish increased six times after impoundment (damming of river or lake water in reservoirs).[5]
   - The disproportionate presence of mercury in reservoirs is attributed to two factors. First, the percentage of biological activity increases five to ten times in reservoir systems due to the biochemical and physical changes in the soil caused by the flooding, and this accelerated activity increases the number of organisms that can produce organic methylmercury.[6]
   - Second, carbon levels increase due to newly submerged and decaying vegetation. This in turn increases microbial activity. Though carbon

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[2] Four Slide Falls ER, P-128 – Residual Effects
[3] Environment Canada. 2001. Threats to Sources of Drinking Water and Aquatic Ecosystem Health in Canada, National Water Research Institute, Burlington, Ontario. NWRI Scientific Assessment Report Series No. 1. 72p – P-69
[4] Hopkins, S. (June 14, 1999). "A White Paper on Mercury," in New Mexico Environmental Department. Retrieved April 7, 2000
[5] Noel, F., Rondecui, E., & Sbeghen, J. (1998). "Communication of Risks: Organization of a Methylmercury Campaign in the Cree Communities of James Bay, Northern Québec, Canada," in R. Fortune & G. Coaway, Eds. Circumpolar Health 96. Anchorage: American Society for Circumpolar Health.
[6] Tremblay, A. (1999). "Bioaccumulation of Methylmercury in Invertebrates from Boreal Hydroelectric Reservoirs," in M. Lucotte, Ed. Mercury on the Biogeochemical Cycle. Berlin: Springer.

levels decline over time, thereby lowering methylmercury production, any adjustment of the reservoir's water level can increase the percentage of carbon once again.[7]

- Hydro-Québec claims that the methylmercury concentrations in fish will return to natural levels in 30 years, but some scientists estimate that the decline in certain species could take up to 100 years.
- In Quebec, reservoirs constructed on La Grande river were studied over the period 1978-82.[8] These authors compared mercury in fish for pre-impoundment with post-impoundment conditions. At all sites, mercury was consistently higher in the piscivorous pike and walleye. For all fish species there was a correlation between age and mercury, or between length and mercury, but a great deal of variability existed in the data. After impoundment, mercury in fish increased: for example, walleye year 2 (2 X) and year 4 (3.5 X), and for whitefish in year 2 (3 X) and in year 4 (5.5 x).
- Environment Canada states, "Levels of mercury, unlike PCBS and DDT, have increased in the past 20 years in fish eating birds and mammals. A striking example is the twofold increase from 1975 to 1995 observed in mercury in the thick billed murre eggs in the Canadian high artic."[9]
- Increased mercury levels in fish tissue are a known health hazard, particularly to pregnant women and their unborn children.

Note:
1) How will Xeneca protect local stakeholders and aboriginal communities who rely on this water for drinking?
2) How will Xeneca protect local stakeholders and aboriginal communities who rely on fish from the Serpent River for their sustenance?
3) Has Xeneca undertaken a scientific study based on probable mercury loading at the site to extrapolate the future mercury methylation rates, and their potential effects on the local fish community?
4) Has Xeneca undertaken core sampling to identify mercury levels that exist today in the inundation zone? A baseline must be established.
5) What are the anticipated health threats to aboriginal and local stakeholders over the 40 year contract of this proposed facility?

b) Warming of water in the head pond

i. Xeneca says very little in its ER about warming of water in the head pond, however, it does report "the creation and storage of water within the headpond may also impact on Lake trout habitat found within McCarthy Lake downstream through changes to water quality (primarily dissolved oxygen) and temperature"; and

ii. Xeneca goes on to say "a current study indicates that any temperature change in the Serpent River is <u>small</u> and is unlikely to impact on Lake Trout habitat in McCarthy Lake. Lake Trout occupy the cooler bottom water of the lake for the

[7] Hopkins, S. (June 14, 1999) – see above.
[8] Boucher, R. & Schetagne, R. (1983) Repercussions de la Mise en Eau des Reservoirs de La Grande 2 et Opinaca sur la Concentration de Mercure dans les Poissons. Societe d'Energie de la Baie James, Montreal.
[9] Environment Canada, Braune et al. 2001

majority of their life cycle and incoming water from the Serpent River is circulated only into the upper, warmer layer of the lake."[10]

iii. During the summer season when water levels and flow rates are at their lowest, is when water will sit the longest in the headpond, and because flow rates are slower it will take longer to fill, which would mean a greater potential for warming from solar absorption for from 16 to 30 hours out of a possible 48 hours. Xeneca dismisses this residual effect stating that "water will only be held in the holding pond for a few hours".

iv. It is well known that impoundments, warmer waters, and stagnation, combined with flood events, all lead to a concentration of more waterborne pathogens and algal toxins.

v. MNR Lake Trout lakes policy[11] has strict guidelines to be adhered to, and Xeneca has consistently ignored both MNR staff and MNR policy in their ER.

vi. The ER states, "surface water inundation area of Four Slide Falls site may alter water quality (dissolved oxygen) in reservoir and in turn, the water flowing downstream into McCarthy Lake".[12] Warmer water temperatures would have a deleterious effect on both Pecors Lake and McCarthy Lake lake trout, as lake trout health and survival is very sensitive to water temperature.[13]

Note: 1) ORA would like to know which study Xeneca refers to when reporting that any temperature change in the Serpent River is small and unlikely to impact on Lake Trout habitat in McCarthy Lake?

2) What are the expected impacts to local stakeholders and aboriginal communities with this anticipated increase in pathogens and algal toxins?

3) ORA requests more detailed information on the effects this thermal regime will have on Pecors Lake and McCarthy Lake fish populations, or the impact of construction/operation of this facility on the ability of the up- and downstream reaches to support sensitive coldwater species.

4) Why does Xeneca continue to ignore the advice and position of MNR staff, and attempt to apply pressure tactics to achieve their goals?

c) Lowering of Dissolved Oxygen Levels

Another residual effect listed in Xeneca's ER, is "reduced dissolved oxygen levels from head pond filling"[14]. The balance of water temperature and dissolved oxygen is critical for the capacity of lake trout to perform critical daily life support activities, and for the protection of the hypolimnetic habit of juvenile lake trout, and the criterion of 7 mg.L -1 is recommended.[15]

d) Uranium Mining

According to your ER, uranium mining has occurred in the Elliot Lake area over the past 40 years, with 11 decommissioned mine operations and a number of tailing management areas which have negatively affected the Serpent River water quality. The ER also notes that "for the June event, **pH** exceeded its PWQO at SW1 while the blind field duplicate (DUP) at SW3 exceeded its PWQO for zinc. For the August event,

[10] Four Slide Falls ER – P-119 – Rainbow and Lake Trout
[11] MNR - Fisheries Management Zone 10: Lake Trout Operational Objectives and Management Strategies
[12] Four Slide Falls ER, P-128 – Residual Effects
[13] Effects of Hypoxia on Scope-for-activity and power capacity of lake trout (Salvelinus namaycush), Evans 2007
[14] Four Slide Falls, ER, P-128 – Residual Effects
[15] Effects of Hypoxia on Scope-for-activity and power capacity of lake trout (Salvelinus namaycush), Evans 2007

chromium, copper and zinc exceeded their PWQOs for SW1**, chromium and zinc** exceeded their PWQOs for SW3, and **chromium** exceeded its PWQO for SW4"[16].

It is well documented that suspended particles of sediment and silt is a common negative impact resulting from peaking operations.

Note: How will these suspended heavy metal sediments impact the Serpent River Public Water Intake, and the McCarthy Lake trout populations, as well as those people who rely on those fish for their diet?

d) Residual Adverse Effects

The ER states that "additional assessment of effects will be undertaken subsequent to the 2011 field investigations, and further discussion is planned between the EA team and interested parties."[17]

Xeneca has listed numerous potential effects in the ER, and of the 36 listed, only two were judged as "significant", six were "positive", and the other 28 were deemed "not significant", meaning that they are not likely to cause unacceptable harm to environmental quality, productive capacity of the effected environment, or the socio-economic and cultural attributes of the area.

Note:
1) Why does Xeneca place no significance on loss of habitat, decreased dissolved oxygen levels, methylmercury production, increased phosphorus levels, or on fish injury or impingement?
2) What about the fish that will be chopped up in the turbines – why wasn't their loss listed in the list of residual effects?
3) Independent and unbiased studies must be undertaken to ensure the significance, or non-significance, of all the potential negative effects in the ER.

e) Climate Change and other weather related affects you mention "among the many predictions offered, there includes a doubling in the frequency of extreme rain events and increasing costs to providing community services in Canada during the 21st Century"[18], but Xeneca conveniently forgot to mention an expectation of extreme drought conditions can also be expected.

Note: Why has Xeneca not taken into account the fact that our river water levels over the past few years have seen record lows?

f) Variable Flow and Rapid Flow Changes presents obvious problems with turbulence, sedimentation, erosion, and drying of shoreline. "Modified run of river will also produce downstream variability in water depth, flow velocity and wetted perimeter until the river reaches a lake or a confluence with a major tributary."[19]

g) Erosion and Sedimentation are a major concern with any peaking operation.

[16] Annex IV, P-4, Surface Water Quality Report
[17] Four Slide Falls ER, P-98, 5.1 - Identified Potential Effects
[18] Four Slide Falls ER, P125, 5.4.7 – Climate Changes and Other Weather Related Effects
[19] Four Slide Falls ER, P-16, Negative Impacts

h) **Clearing for new Transmission Lines and Access Road/s** creates corridors for run-off of rain-water and snow melt, and brings more sedimentation and debris into the ecosystem.

The ER indicates there would be 14.7 km of new transmission line of which 56.1% is along existing road corridor, and the remaining would forge a new corridor on Crown land, with 4 existing river crossings and 4 new river crossings.

Note: How does Xeneca plan to protect the river ecosystem from run-off and sedimentation being introduced through these transmission line corridors?

2. Contempt of Process

a) **Site Release & Applicant of Record:**

MNR and MOE representatives both made clear recommendations in writing to Xeneca, on several occasions, to wait until the Site Release process was completed before formally commencing with the Waterpower Class EA process. MNR and MOE staff made a valiant attempt to follow their policy and procedure, and their legal obligation to the public, by protesting Xeneca commencing the EA process, and their attempts to protect the environment and natural resources; however, Xeneca pressed on in spite of their warnings.

i. Xeneca has not yet been awarded Site Release at Four Slide Falls because
   a. "Xeneca has not completed all required steps in the Site Release process. Namely, the required public notification has not been published";
   b. "MNR is concerned with the potential fluctuation of levels in Pecors Lake. As discussed above, Pecors Lake is a designated naturally reproducing lake trout lake, and the Site Release Policy prohibits the release of any site that will use a designated lake trout lake as a reservoir"; and
   c. "MNR will not issue permits/approvals for a site without Applicant of Record status. As previously communicated to Xeneca, any environmental assessment work undertaken before Site Release is completely at the proponent's risk".[20]

ii. It is mentioned time and again in Appendix C that Xeneca's timelines are tight and must meet the deadlines.

iii. Pressure tactics were applied by Xeneca in their letter dated 27 May 2011, from P. Gillette to Richard Linley, MNR, where two MNR staff were reported, "This is most obvious at the Serpent River sites, but Fishery Management Plans seem to be issued in a negative manner at all our FIT sites. The two key individuals raising these issues are Sandra Dosser and Greg Deyne".[21]

Note: Why should Xeneca's timelines take precedence over policy, procedure, provincial regulations, the public, and most of all the health and well-being of the community, the environment, and the riverine ecosystem?

b) **Field Studies Ongoing:**

The MOE and MNR expressed concerns with respect to the timing of the completion of the EA since studies and investigations were ongoing, and wouldn't be completed before the Environmental Report (ER) was submitted, and would not be addressed in

[20] Appendix C-P-76 to 81, 2011, May 18 – MNR memo to Xeneca
[21] Appendix C, P-91, 2011, May 27 – Patrick Gillette to Richard Linley, MNR

the document; and thus there would remain a requirement for public consultation to present the findings of these post EA investigations.

Note: Why has Xeneca issued their Environmental Report and Notice of Completion when field studies are still ongoing and incomplete?

c) Public Consultation:

A Public Information Centre was held in Elliot Lake on December 1, 2010 (Xeneca's Notice displays 2011, rather than 2010), and yet Xeneca states in its ER that

I. "The preliminary assessment of the distribution line and access roads study area includes the proposed route based on layouts dated January 26th, 2011 as well as an additional 250 m area on either side"; and

II. "The initial location of the proposed Four Slide Falls generating station was located approximately 1.5 km upstream of its current location. In early 2011, Xeneca identified the larger natural feature at the current location which has resulted in a shift in the project site and study area. Additionally, the downstream extent of the variable flow reach has been extended from what was initially determined and now encompasses the entire channel downstream of the Four Slide Falls to the river outlet at McCarthy Lake 4 km downstream due to the proposed modified run-of-river operating strategy."[22]

III. Prior to January Xeneca was planning a run-of-river operation, and yet no public meetings have been held since the dam site, operating strategy, and zone of influence were changed.

Note: This is a totally different proposal than the one presented to the public in December 2010, so why have no PICs been scheduled to consult and inform the public and stakeholders of these significant changes to Xeneca's plans for the Four Slide Falls GS?

3. Mitigation

The 29 meter head and 130 foot dried up bypassed stretch of river presents an impassable barrier for fish. Mitigation measures for fish passage have not even been addressed in this ER.

Note: If this proposal were to go forward the ORA strongly requests:

1) Fish ladders and/or resting areas for safe upstream and downstream passage;
2) Fish friendly turbines; and
3) That a portage for canoers be provided.

4. Public Safety

Xeneca has identified hikers, snowmobilers, angler, and ice fishing activities. Public safety issues could arise due to variability in flows and the rate of change in flow levels in the Variable Flow Reach. Local anglers wanted to know how ice fishing would be impacted by this project, and Xeneca responded that "the effects of the project on ice fishing would be determined through field investigations and the provision of mitigation measures."[23]

Note:

1) Why has Xeneca fast tracked the ER and Notice of Completion when public safety has not yet been properly addressed and researched?
2) Combined with global warming and poorer ice conditions above and below the dam, what mitigation steps does Xeneca propose to protect local stakeholders?

[22] Four Slide Falls Environmental Report, P-43
[23] Four Slide Falls ER, P-14 – Stakeholder Consultation

3) With an extreme 29 meter head, what safety provisions has Xeneca made in case of dam failure or collapse?

5. Decommissioning of Dam

Both MNR and MOE have requested that the ER address what will be planned for this facility at the time of decommissioning, or in the case of abandonment, but no plans have been set out in this ER.

ORA is requesting that Xeneca lodge funds in escrow for dam decommissioning, so that if for some reason the generating station is no longer viable and must be removed, the funds will be there to take care of it. There is a very good likelihood this could happen due to climate change, the possibility of a withdrawal of the FIT program, or perhaps major damage to the dam caused from ice and/or flooding.

6. Modified Run-of-River

Initially this proposal was for a run-of-river dam to be located 1.5 km upstream of its current location, however, "In early 2011, Xeneca identified the larger natural feature at the current location which has resulted in a shift in the project site and study area. Additionally the downstream extent of the variable flow reach has been extended from what was initially determined and now encompasses the entire channel downstream of the Four Slide Falls to the river outlet at McCarthy Lake, 4 km downstream due to the proposed modified run-of-river operating strategy."[24] Now there would be a 29 metre head, a 165 hectare holding pond, and operated as a modified peaking operation.

It was pointed out by MNR that, "based upon the limited data currently provided in the project description report, it appears that the Four Slide Falls site has been designed to rely upon un-natural head and what could be conceived as un-natural flow conditions. MNR is concerned that the extensive area of inundation proposed for this site may significantly alter the water chemistry and quality within the reservoir, and in turn, the water flowing downstream into McCarthy Lake."[25]

Note: 1) How can Xeneca have made such a major change in plans and still maintain integrity of design, zone of influence, and fully know the significance of impacts of residual effects, especially when field studies are still ongoing?

2) Pecors Lake and McCarthy Lake are designated Lake Trout lakes and Xeneca must clearly demonstrate that there will be "no impact" from the Four Slide Falls GS operation strategy.

3) ORA submits that Xeneca has gone to extreme and un-natural lengths to squeeze out every last ounce of flow at the expense of the health and well-being of stakeholders, the riverine ecosystem, and the downstream environment.

7. Intermittent Operations and Flow

[24] Four Slide Falls ER, P-43 – 2.9.1 – Study Area and Scoping of Natural Heritage Investigations
[25] Appendix C – P77, 2011, May 18 - MNR to Xeneca

The Lakes and Rivers Improvement Act (LRIA) specifies "generally two-thirds of the stream-flow at any time should be maintained downstream, unless conditions warrant otherwise."[26], and MNR has stated they are abiding by the LRIA guidelines of a minimum of Q80.

a. An environmental flow of 1.0 m3/s and 0.5 m3/s during the fall and winter is not acceptable.

b. Compensatory flow (between tailrace and dam) of 0.2 is of no use to any aquatic life in that stretch of river.

Note: ORA is requesting that Xeneca adhere to the LRIA guidelines of leaving a minimum of two-thirds of the stream-flow in the river at all times.

8. Four Slide Falls and McCarthy Chute

a. The Class Environmental Assessment Act, states, "two or more generation facilities that function together as an integrated system for generating electricity shall be deemed to be a single generation facility for the purpose of this regulation."[27]

b. Xeneca noted, "the downstream extent of the variable flow reach has been extended from what was initially determined and now encompasses the entire channel downstream of the Four Slide Falls to the river outlet at McCarthy Lake 4 km downstream due to the proposed modified run-of-river operating strategy."[28]

Note: ORA requests that Four Slide Falls and McCarthy Chute proposals be addressed under one Environmental Assessment, as these two dams would be operated as one unit, and would have a very significant negative cumulative impact on the downstream riverine ecosystems.

Summary:

The CEAA, 4.(2) states, "In the administration of this Act, the Government of Canada, the Minister, the Agency and all bodies to the provisions of this Act, including federal authorities and responsible authorities, shall exercise their powers in a manner that protects the environment and human health and applies the precautionary principle."

Four Slide GS Environmental Assessment Report is incomplete as there are still field studies to be completed, and public consultations that must take place, before approval should be granted. For the many reasons listed above, this type of "modified peaking run-of-river" hydro-electric dam is very harmful to a riverine ecosystem, both upstream and downstream; and when you have two or more dams on one river, the negative cumulative effects are only amplified, and must always be considered together as one.

In order to meet the intent and spirit of the Canadian Environmental Assessment Act and the Ontario Environmental Assessment Act, the ORA requests that Xeneca meet their legal obligations under this legislation, and address the proposed Four Slide Falls GS, and McCarthy Chute GS, under one Environmental Assessment Report, and also take into account the existing Camp Lake Serpent River GS and Serpent River First Nation GS.

[26] Lakes and Rivers Improvement Act, s 4.3.3(1)
[27] Class Environmental Assessment Act, O. Reg. 116/01, s1(3)
[28] Four Slide Falls ER, P-43, 2.9.1 - Study Area and Scoping of Natural Heritage Investigations

The cumulative effects of all facilities, water management practices, roads, transmission lines, diversions, as well as all resulting "Identified Residual Effects", must be considered with a precautionary approach in order to protect the well-being of the Serpent River community, the environment, and the riverine ecosystem; and to comply with the EAA and the CEAA. These types of proposals must not be fast tracked, or policy and procedure skipped - there is too much at stake!

The experience of the ORA and the public in our dealings with Xeneca, has been challenging to say the least, and yet we have asked Xeneca to show their willingness to be cooperative by providing the ER reports in an unsecured format to aid in our commenting. However, not only have unsecured documents not been provided, but shortly after ORA informed Xeneca of our intent to comment on the Four Slide Falls GS ER, Xeneca demonstrated its unwillingness to cooperate by withdrawing information from the Serpent River ER. Appendix D and E were removed from Xeneca's website and replaced with reduced versions, where

- Appendix D, Public Consultation – Xeneca removed 78 pdf pages; and
- Appendix E, Aboriginal Consultation – Xeneca removed 38 pdf pages.

Profits should never be maximized at the expense of the health and well-being of the community, or the riverine ecosystem.

ORA looks forward to your response!

Respectfully,

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