

Hearing Submission Sept. 13, 2002

**Dunvegan Hydroelectric Project
Proposed by Glacier Power**

Concerns Expressed by

Friends of the Peace

Including:

- **Canadian Parks and Wilderness Society (Edmonton Chapter)**
- **Peace Parkland Naturalists**
- **Alberta Wilderness Association**

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Dunvegan Hydroelectric Project

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Comments:

The Friends of the Peace maintain this project should be denied on the basis of the significant potential negative impacts on the Peace River. To make a decision at present to approve the project, claiming that sufficient is known about the negative environmental impacts would be unwise in light of the huge information deficiencies with respect to such things as fish, other wildlife, slumping and cumulative effects. Possible effects on the Peace-Athabasca Delta and Wood Buffalo National Park are also of concern.

With respect to public participation since the pre-hearing last year—it has been completely inadequate. Had we been presented with some of the detailed information pertinent to this project as it became available we could earlier have expressed our concerns and potentially had them considered in the design as it was further developed. An invitation to view the working model would have possibly been particularly useful. Until the August 15 deadline we have had no substantial new information on this project since the pre-hearing last year.

Glacier has not met the EUB/NRCB requirements with respect to providing information to stakeholders. Contrary to the statement in the Information Update 2002, Friends of the Peace did not decline “*to meet with Glacier until new information had been submitted to the board and other interested parties.*” In fact what we simply requested of Glacier in June, when they wished to meet, was a written information update prior to the meeting so that we could give it consideration and prepare questions in advance. These were the exact words written June 3 2002: “*I am quite willing to consult with you, but only when I have significant new information and enough time to review it so that the meeting is useful. Please send me the information, and I will then let you know when I can be prepared for a meeting.*” Glacier declined to do this saying instead “*since we do not have final documents prepared at this time, I will send you information on the project at the same time we send our our information update to the Board and interested parties.*” and therefore we did not meet with them.

There must be a full public Panel Review of this project under the Canadian Environmental Assessment Act. We appreciate that the federal and provincial authorities are cooperating in their review of this project, but the extent of their involvement is inadequate. The nature and scale of the environmental review of this project could and should be more rigorous as per the requirements of CEAA. This would provide the public with more capacity to seriously examine this project and its implications. The lack of intervener funding makes for a very non-level playing field. Under CEAA, intervener funds can be used to engage the necessary experts and legal counsel needed to adequately review a project of this magnitude and its potential impact on a nationally significant waterway.

Glacier Power must be required to take the time, invest the resources, and conduct the studies necessary to provide more detailed data to ensure that fish and wildlife issues, slumping and cumulative effects are properly assessed and shown to not negatively affect wildlife populations.

Thank you for the opportunity to comment on this proposal. Our full submission is below.

GP = Glacier Power

SIR = Supplementary Information Request

We prepared a submission in August 2000 indicating our concerns based on GP's EIA and a tour of the site. We have read GP's "Reply" to the SIR document and their 2002 update information.

We have sent GP questions regarding deficiencies in the EIA; GP's answers do not address the deficiencies in the EIA. Significant issues and potential negative impacts remain unaddressed.

We also met with Glacier Power in the 'interrogatory process.' In the meeting GP did not provide additional information adequate to address the outstanding deficiencies in their EIA.

GP has provided no response to many questions and inadequate response to others. Therefore we still have many of the same concerns, as we had at the prehearing stage. The EUB/NRCB process has so far failed to meet adequate public consultation standards.

The EIA and subsequent information is inadequate to serve as a basis for a hearing. The information and EIA before the EUB/NRCB is inadequate to make decisions on GP's proposal.

The EIA is incomplete and does not meet the requirements of the Environmental Protection and Enhancement Act (EPEA), Sections 47 or 51, nor does it meet the Terms of Reference.

Glacier Power has not yet complied fully with the conditions as required by the NRCB/EUB and relevant regulatory framework, in the response to their EIA, primarily because Glacier Power has very little scientific data on key issues. Their "Reply" in SIR adds almost no pertinent scientific data. GP has simply not done the necessary research. GP responses either evade the questions we and other intervenors pose about environmental impacts or GP makes assertions, that in the absence of data, are arbitrary, speculative, and unsubstantiated statements of opinion.

We present an outline of our concerns below, together with requested actions from the review team. We are asking the review team:

- ✓ To expand the scope of and agency involvement in the review; specifically, upgrading the review to a Joint **Panel Review** with the federal Department of Fisheries and Oceans, under the Canadian Environmental Assessment Act.
- ✓ To require additional data from Glacier Power, especially with regard to fish, other wildlife and slumping, as well as cumulative effects of GP's project on the Peace River, Peace-Athabasca Delta, and Wood Buffalo National Park in conjunction with existing developments such as BC Hydro Peace Canyon dam and future proposed developments including additional weirs on the Peace River.
- ✓ Alternative means of power generation should be evaluated in light of the information that BC Hydro would suffer a reduction in power generation capacity due to providing adequate flow for GP's weir. While Glacier indicates their project is benign with respect to BC Hydro, we have not to date heard BC Hydro's updated point of view on this.

DETAILED COMMENTS:

A. Effects on Fish:

Information deficiencies and gaps: GP now has more information on fish based on modelling of the fishway, and theoretically it would seem fish larger than 15cm. could be capable of moving upstream through the fishway, however, more evidence is needed to ascertain the likelihood of success. A year ago we were assured by GP that this project was ready for acceptance. Now we are told the design of the project underwent a “*relatively major redesign*”. (P. 3. Model Study Technical Report.) Likely we will be again assured that the project is satisfactory, but their earlier assertions raise much doubt for such claims now. Furthermore, it is evident that more study is needed since at the time of writing their reports data collection is apparently still going on. (p. iv Model Study Tech report.) Therefore interveners do not yet have complete information in the timeline (August 15, 2002) required by the review team.

Significant potential problems are apparent:

1. Upstream Movement:

- The **assumption** is that fish use the channel margins as the primary habitat zone and that therefore they will locate the fishway in their upstream movements (page. 5 appendix B2—Information update). **The assumption that fish preferentially use the channel margins must be tested and verified before this project is given further consideration.**
- What is the effect on fish populations of each species **of fish less than 15 cm not being able to move upstream in the fishway?** (p. 21, Information update) **This would seem to present a completely unacceptable aspect to this project.**
- GP makes much of the flexibility of their fishway design and their “adaptive management” approach saying that “*all major aspects of the fishways can all be adjusted except for the width and gradient.*” (P. ii. Information update.) Width and gradient would seem to be very critical factors for fish both in finding the fishway and progressing up it. **More information on the variables of fishway width and gradient and likely successful passage of fish is needed.** It also seems unlikely that the headworks could be easily adjusted.
- The design of the fishway- particularly the fishway headworks and its relatively narrow entryway appear completely unnatural- a series of boxes with holes. **Is there any evidence that fish will not exhibit a behavioural avoidance response when subjected to such an unfamiliar structure as the headworks, and therefore not enter the fishway at all, or turn back once in?**
- Attraction flows are considered critical in attracting the fish into the fishway- **evidence that the design incorporates sufficient attraction flows is not convincing.**

Significantly more data needs to be collected on the above points of concern before this project can be allowed to proceed.

- Apparently the concept of using rockfill ramp fishways to provide upstream passage was “*based on a design that was developed for the Churchill River and is currently in operation*”. The questions posed by us in our 2001 submission with respect to this remain unanswered:
 1. The species monitored at the Churchill Weir are different than the main species of concern in the Peace River. What reasons are there to believe that the Churchill data are relevant?
 2. The fishways on the Churchill are only 50 m in length, the ones proposed at the Dunvegan site are almost 200 m in length. This would mean that fish would be required to move about four times as far to ascend the fishway. The Churchill study reported that fish that managed to ascend the fishway spent considerable time resting and recovering from their efforts before moving on upstream. Is there not a great probability that fish required to expend four times the energy ascending proposed fishway on the Peace River may not be able to do so due to fatigue or perhaps a behavioural response to such a different situation that may cause them to turn back? Is there any evidence to suggest that they might be successful?
 3. The Churchill fishways are of lower slope, and thus of presumably lower water velocity than the fishways proposed at Dunvegan. The Churchill report stated that the design velocity of the fishway was exceeded during migration periods this year. Will this not be more likely to happen frequently at Dunvegan with a steeper slope?
 4. The Churchill report reveals that significant numbers of fish (about half of some species) were either unable or unwilling to ascend the fishway. The Churchill report further states that no reason can be established at present for the failure of “significant numbers” of fish to pass up the fishway. Would it not be prudent to await further study at Churchill to help determine what effects this may have on the fish population, or to determine what reasons may be preventing fish movement up the fishway?
 5. The Churchill report states that the first year of monitoring using mark – recapture methods was highly unsuccessful. It states that mark – recapture is an inferior method when compared to radio telemetry and/or acoustic monitoring. What plans does Glacier Power have to monitor fish movements if this project is approved and built?
 6. The Churchill data are at best preliminary, and really represent a single season which experienced difficulties which made the data somewhat questionable. Some fish may have ascended the river by a route provided by ice scour rather than by the fishway. This Dunvegan project should be delayed until more data can be collected regarding the success and/or understanding the problems of this similar fishway design on the Churchill River.

The current documentation of the Churchill River Fishway provided by Glacier Power magnifies the concerns that GP's project will have significant negative impacts on fish, rather than alleviating any concerns.

2. Downstream Movement:

- The Update Report 2002 states that *“the ability of fish to find the entrances to the downstream passage systems proposed at Dunvegan is largely dependent on two factors: habitat preference and the movement behaviour of downstream migrating fish. As previously discussed it is assumed that both migratory and resident fish species at Dunvegan will concentrate along the channel bottom and margin, and will move along these areas during the periods of downstream migration.”* (Pg. 6, Appendix B2.)

The **assumption** that fish use the channel bottom and margins in their downstream movements is puzzling since they would be in slower water and likely more prone to predation. **This assumption must be field tested and verified before this project is given further consideration.** (In fact it seems extremely odd that this has not been verified by scientific study by now, since it is admitted as crucial by the proponents for both up and downstream movement success.)

- The ability of fish to locate the mechanisms for downstream movement may also be problematic. Appropriate attraction flows are again a requirement.
- Behavioural barrier studies of each fish species to entering the completely unnatural and unfamiliar downstream mechanisms do not seem to have been researched.
- The addition of conduits (narrow tunnels) to the structure seemed to be deemed necessary to ensure the successful downstream movement of fish. In discussions with Mr. Johnson a year ago we were assured that similar conduits already exist in other dams, and are successful. We still see no reference to those successful passageways in the documents provided.

There is still much reason to doubt that adequate downstream fish passage will be accommodated by the current design. Considerably more research is needed to ensure a design that will ensure successful downstream movement of fish.

3. Total Gas Pressure:

An issue of potential concern recently brought to our attention is that of Total Gas Pressure, which is considered significant by officials involved in the review of a run of the river project in BC, involving a 4.5 meter weir. It seems odd that it is not considered significant for the Dunvegan weir in Alberta. From the BC report:

http://www.eao.gov.bc.ca/project/energy/cascade/stage1com/prov/prov276.htm#_toc466268533

Total gas pressure (TGP) is a factor that can induce lethal and sublethal effects in fish and is associated with hydro dams. Although the application specifies that the project is not expected to increase TGP, it is a serious environmental problem at nearly all dams, with many dams in the Columbia River Basin having been or in the process of being retrofitted in order to reduce TGP. Consequently a more detailed prediction of TGP is required.

The Alberta regulators and proponents must satisfy the public that Total Gas Pressure is not a concern at Dunvegan before this project is allowed to proceed.

4. Other points:

- Stream flows: GP makes apparently contradictory statements that 1) strong attraction flows are necessary for upstream movement of migratory fish; and then 2) the assumption is given that the fish use the slower current on the edges for their upstream movement. This requires explanation.
- Scientifically supported information on the ability of the weir to by-pass each species of fish should be presented. It seems quite likely that different fish species will behave differently to the available attraction flows and the fish passage structures. If this information is not available, more study is needed. (Walleye and their reluctance to turn corners in a fishway are a case in point.)

The EUB/NRCB review team should require Glacier Power to provide additional credible scientific data to answer the questions and concerns above. The EUB/NRCB does not have adequate information on which to base a decision. The very limited evidence provided to date indicates significant negative impacts on the Peace River fisheries that cannot be mitigated.

B. Slumping:

This issue remains an outstanding deficiency in the EIA. The EUB/NRCB has erred in not finding this to be a major issue for the hearing. The EUB/NRCB is failing its responsibility by ignoring this issue. Significant slumping adjacent to the headpond will be highly visible and a testament to the failure of the Alberta government to adequately assess the environmental impacts of this project. These are our concerns:

- The proponents of this project do not seem to take seriously the possibilities of increased surficial slumping. No actual studies were done to evaluate this possibility and our questions regarding this aspect have gone unaddressed. **An assessment of post project slope conditions was done but was described as "qualitative in nature and is not used as an exact prediction tool for estimating specific landslide volumes and frequencies".** Maps provided in the report indicate many areas in which they predict increased slumping. Many areas of high slumping are identified without an indication if they expect increases or not. **Quantified data must be collected to adequately deal with this concern.**
- A significant negative impact of surface sliding and slumping is increased opportunity for non-native species to invade what little remaining native grasslands remain on the

slopes of the Peace River. The negative impacts of this possible increased slumping are significant given the current intensive agricultural use of the surrounding uplands, wherein slumps currently seem to be invaded by introduced weedy species rather than following a natural succession to native grassland. These invasive weeds then gain a toehold and tend to extend into the adjacent native grasslands.

- Glacier Power maintains their project will have a small "footprint" because it will flood relatively little land; increased slumping of the Peace River hills may enlarge this "footprint" considerably.
- Measuring the depth of surficial material on top of the bedrock in steep versus more gradual slopes should be done with some evaluation of exactly how much slumping might be expected. Even shallow slumping will disturb the vegetation enough to require revegetation and allow invasion of non native species. It seems to us that slumping, where the surficial material is deeper and more extensive, and starts at the bottom of the slope has potential to destabilize surficial materials on the hillsides further up.

The following information is summarized from the EIA:

- From the vegetation study of the EIA: p. 33. Both near and farshore zones contain numerous introduced weedy and/or agronomic species, e.g., white and yellow sweet clovers, alfalfa, dandelion, thistle, wheatgrasses and bluegrasses. Many sites are in fact dominated by weeds.
- AEP (1997) identified grassland and wetland components of the Peace River Parkland as being "highly significant", with the Peace River Parkland only "**one of four largest remaining blocks of parkland in the world**" in a region heavily impacted by agricultural development." etc. P. 34-35.
- Given the statements above it would seem to us that potential slumping should be a major concern, which is not adequately addressed by this EIA. It would seem probable there are experts who could collect quantified information and perhaps predict fairly accurately the implications of the headpond on slumping in the Peace Valley. Until this is done this project should not be approved. If extensive slumping results this project would be a major international embarrassment.
- The EIA states: "Softening of the bedrock and subsequent slumping is expected to happen over a longer time period." GP provides no assessment of what the impacts of this slumping would be; how significant these impacts would be or if they could be mitigated.
- Fisheries: There is almost no basis provided to-date for the EUB/NRCB to make any findings about potential for negative impacts on the river ecosystem and specifically on fisheries from major slumping caused by the weir. This is a major information deficiency. The evaluation of a run of river project in BC had the following requirements:

(http://www.eao.gov.bc.ca/project/energy/cascade/stage1com/prov/prov276.htm#_toc46626853)

2.3.2.6 Upstream Erosion, Turbidity and Suspended Solids

Stability of reservoir banks is considered to be an important issue both in addressing the concerns of owners of land that fronts on the headpond as well as the risks of the introduction of a deleterious substance (sediment) into fish bearing waters. MELP's river bank inspection confirmed that there is at least one bank within the proposed reservoir that shows minor slumping as well as other banks which will be inundated. Although the velocity of flow in the proposed reservoir may be such that the existing banks are stable against erosion, the reservoir will saturate the banks, and reservoir drawdown may cause sloughing of the banks.

Specification #16

The project report is to:

- a. **provide information on anticipated frequency, rate and duration of reservoir drawdown and assess the effects of reservoir bank saturation and reservoir drawdown on bank stability; and**
- b. **provide and commit to (DR-DFO) measures to mitigate potential impacts.**

Bank erosion contributes to loss of riparian vegetation and sedimentation of fish habitat. Fine sediments infill stream cobble/gravel habitats. Particulate matter could increase during construction. After installation, it would probably decrease downstream of the dam when the floodgates are closed but increase when they are open.

The EUB/NRCB review team must require Glacier Power to provide additional credible scientific data to respond to the concerns listed above before their project is considered for approval.

C. Other Wildlife

GP was required by EUB and NRCB to “Describe the impacts that the change in river flow and ice cover will have upon wildlife, especially riparian mammals and species that may migrate across the river” before the application could be considered complete (Supplemental Information Request, Nov. 9, 2000).

To date the only information GP has provided re wildlife crossing the river during frozen conditions was based on one day of study in February 2002. Considerable cross-river movement on ice was observed. Yet GP concludes that “open water below Dunvegan is unlikely to present a barrier.” Apparently the reason for this conclusion is that the Dunvegan project will not result in ice conditions that do not occur presently (during warm winters). The concern, of course, is the impacts on wildlife crossings up to 80 km. downstream of the weir in cold winters when the water will remain open due to the weir. Extreme winter conditions can present limiting factors for the survival of many species. The author of the one-day study in fact concluded: “However, we lack sufficient observations to determine whether these movements are more or less frequent during open or frozen conditions.” The application of common sense might be appropriate in this case—crossing open water in extremely cold temperatures would seem unlikely, or harmful to those animals that choose that option. The results of not being able to take advantage of the ability to readily move back and forth across the river (being quite different ecologically due to a north versus south exposure) is a serious concern.

.It was noted in the Wildlife Survey that:”*Where tributary valleys were opposite of each other (on the north and south side of the river) observations of tracks increased. These areas appeared to be important wildlife movement corridors.*” The weir location is therefore going to be problematic for the important wildlife corridors provided by Dunvegan and Hines Creeks, which are virtually on opposite sides of the river from each other. The close proximity of the Ksituan River on the wrong side of the proposed weir to permit wildlife to cross to the Hines Creek corridor is also very concerning. It seems likely that cross-river movement in the area of the proposed weir is significant and much of this movement will be negatively affected by the location of the weir. The potential impact of this project due to its proximity to tributary wildlife corridors, relatively uncommon on the Peace River, must be assessed in detail. This should be done from the point of view of the construction phase, the weirs long term existence, and the vastly increased human use of the corridor given its proximity to a popular park, since many people will want to see the weir up close.

The cumulative effects of settlement and agriculture development on mammalian wildlife in the Peace Valley area is significant. The addition of this project needs to be considered in light of its cumulative effects on wildlife and their movements.

Lack of knowledge of the current importance of crossing the river ice in cold winters to moose, deer and coyotes requires that more study be done before this project is allowed to proceed. Impacts of the project on the Ksituan/Dunvegan/Hines Creek Wildlife Corridor must be assessed. Investigation of impacts on cross-river movement was a requirement in 2000 and much more needs to be done if the environmental impacts assessment of this project is to be taken seriously.

D. Transportation

- Increased fog and ice fog seem to be a logical effect of the weir. Fog and ice raise serious safety concerns, as well as concern for the potentially decreased lifespan of the bridge due to efforts that may be necessary to deal with this ice. The mild winters encountered in the Peace Country the past years are atypical and do not indicate the extent of the problem under colder conditions and open water. Increased fog and associated hazards with respect to the nearby highway and Dunvegan bridge has not adequately been addressed in the EIA or the "Reply" or the Information Update 2002, yet it was a requirement of the EUG and NRCB (Information Request 2000, #52).

In consideration of the considerable danger to the public that would be caused by increased fog and icing at the Dunvegan bridge it is necessary to have an expanded, professional and independent evaluation of this potential consequence of the weir before this project proceeds. A look at past highway accidents on the bridge and police reports might provide some useful information.

E. Cumulative Effects related to the Bennett Dam

This issue remains an outstanding deficiency in the EIA. The EUB/NRCB has erred in not finding this to be a major issue for the hearing. The EUB/NRCB is failing its requirements to assess cumulative effects by largely ignoring this issue.

The submission to the pre-hearing by the Athabasca Chipewyan First Nation provides a good discussion of this issue. We agree with the analysis this submission provides to the EUB/NRCB.

For the record, we repeat our comments on this issue as follows:

The Bennett Dam alters the natural flow of the Peace River, thereby having significant negative impacts on the Peace-Athabasca Delta and Wood Buffalo National Park. First Nations downstream of Dunvegan require and are seeking mitigation of these impacts and reclamation.

First Nations downstream and Parks Canada require BC Hydro to restore a more natural flow regime to the Peace River. There is no discussion in GP's submissions regarding the potential environmental impact of GP's weir on efforts to mitigate delta damage through high volume spring releases of water from the Bennett Dam in the future. In GPs' submissions it has however acknowledged it is dependent on the existing regulated flow regime.

The EUB/NRCB does not have information before it that allows it to address this cumulative effects issue: GP must be required to document what the impacts its needs for flow regulation will have on BC Hydro's ability to restore more natural flows. In other words, how much would the proposed Glacier weir be negatively affected by such releases, or the consequently lower releases of water later in the year?

In our assessment, in the future, when the Bennett Dam is required to provide high mitigative spring flows to the delta, the Dunvegan project will be an impediment. Based on the limited information provided to date, it seems clear Glacier Power would be negatively affected by having their potential to generate power compromised. Given their economic interest, it is reasonable to conclude the GP will lobby to oppose restoration of more natural flows.

Despite this conventional economic interest and logic, we note however, that in our August 29, 2001 meeting with Mr. Johnson, he stated that Glacier was not concerned about potential impact to their proposed project if altered flow regimes were required of the Bennett Dam. Hence the EUB/NRCB, must require, if this proposal receives approval, that Glacier Power be required to accept as a **legally binding** condition of approval of their project that they will not object to any such mitigation measures or seek compensation, should they be proposed or implemented at some future time.

Given that Glacier Power as per Mr. Johnson's statements, accepts restoration of high spring flows, GP must provide evidence that the fishways proposed will remain effective under conditions of altered flow regime. Restoration of high spring flows would potentially prevent successful upstream migration of fish at the Dunvegan fishway. Unless this is addressed, then negative impacts on fish at Dunvegan would be a further impediment to the mitigation of delta

damage. This would be a significant and negative cumulative effect of the proposed Dunvegan project.

The GP project will potentially be a significant contributor to negative environmental impacts through this cumulative effects interaction with the Bennett Dam. GP has also not provided adequate information to discuss the incremental effects of its project with the Bennett Dam effects as the baseline. The project will make worse the existing negative effects.

Significant negative cumulative effects on communities and ecosystems downstream due to additional flow regulation requirements of the Dunvegan HydroElectric Project are a significant reason why this project should be the subject of a full public Panel Review under the Canadian Environmental Assessment Act.

F. Other Cumulative Effects:

- The Peace River ecosystem receives pollution from various pulp mills and petroleum industries, and severe impacts from the Bennett Dam. Global warming is another impact with unknown future consequences. The EUB/NRCB should assess the existing cumulative effects on the Peace River from existing developments, to develop a base-line against which the incremental effects of GP's project can be assessed.
- Additional weirs: Several other weirs have been proposed for the Peace River and should be considered as reasonable expectations for future development, especially as the approval of one will likely set a precedent for others. The cumulative effects of a series of weirs on the Peace River would be significant if slumping, fish passage and wildlife crossing proves problematic. GP has done studies related to the development of a site at Shaftesbury. They report that those studies identified several major issues and that they do not intend to proceed with the development of the project **at this time**. (Information Update p. v. bold added.) **If Glacier is to avoid having to deal with future hydroelectric developments in a cumulative effects assessment for this EIA, they and their parent company should be required to provide a legally binding guarantee that they will not be involved in any projects on the Peace River in the future.**

The terms of reference for this project issued by the Alberta government indicate that they are to consider the environmental effects from 'reasonably foreseeable activities in the region'. It is a reasonable assumption that the approval of this project will encourage and set a precedent that facilitates the development of future weirs along the Peace River, yet no cumulative effects determination has been done by GP- contrary to the requirements in their terms of reference.

- Cascade Projects Ltd has been quoted as planning one or more weirs on the Peace River, including one near the proposed Glacier Power site. We first became aware of their proposed activity at the October 2000 public meeting when regulatory agency staff made a general announcement to the audience to that effect. Subsequently Mr. Doug Main was quoted in the local Fairview Post about his company's proposals. No reference to Cascade Projects' proposal is made in Glacier Power's March 2000 "Reply". However, clearly there is interest by other developers in more weirs on the Peace.

- If Glacier Power is so certain that there are no potential further developments that are “reasonably foreseeable” and because they do not know where alternate projects might be proposed (p177), why do they state on page 24 of their “reply” to the SIR that they have examined other potential sites for weir locations but cannot disclose those sites for “competitive reasons”. The review team should require Glacier Power to more completely deal with the potential cumulative effects on the river of other similar projects.
- If the EUB and NRCB does not require GP to do a cumulative effects assessment based on the likelihood of future additional weirs on the Peace River, then they should provide **legally binding** assurances to the public that no future weirs will be permitted on the Peace River.

In summary, the EUB/NRCB review team should require Glacier Power to provide additional credible scientific data to answer the concerns listed above before their project is considered for approval.

G. Alternatives to the project:

Alternative means of power generation should be evaluated in light of the information that BC Hydro would suffer a severe reduction in power generation capacity due to the extended ice flow control related to GP's weir. To date we have not been convinced the operations of BC Hydro would not be affected by this proposed project.

In summary

The EUB/NRCB review team should require Glacier Power to provide additional credible scientific data to respond to the concerns listed above before their project is considered for approval. **A full public Panel Review under the Canadian Environmental Assessment Act is required to enable the public to more critically examine this project.**

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