

2008 BC Endangered Rivers list
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This year marks the 16th annual “most endangered rivers” release from the Outdoor Recreation Council.

The preparation of this list is the most comprehensive initiative of its kind in Canada

And while this list focuses on specific river issues, I also believe it does much to inform the general public of the many kinds of threats our rivers face

Regarding the process used to determine this list, the ORC solicited nominations from its 120,000 members which represent most of the conservation and recreation groups in B.C.

In addition, we also received nominations from the general public as well as resource managers from throughout the province

So the list represents the views of those who use and recreate on rivers - as well as those who manage them

A final analysis of nominations was then done by our panel which includes many of BC’s best known river conservationists

I might also add that this list is not meant to be all inclusive in that our first short-list included several dozen rivers

But the river issues on our final list are those deemed to be most urgent

With that, I’ll review this years results;

#1. The Upper Pitt River

The Upper Pitt River, located above Pitt Lake, is located just 40 kilometers from Vancouver. It is a visually spectacular and very productive river that is fed by a number of very large icecaps and mountain streams.

While the Upper Pitt is one of BC's most beautiful and salmon-rich waterways, it is also threatened by an independent power project that has twice increased in scale since it was first proposed in 2006. This project now consists of seven hydroelectric power projects on eight tributaries within 12.5 kilometers of each other. The tributaries of the Upper Pitt that are affected include Bucklin, Pinecone, Shale, Steve, Corbold, East Corbold, Homer and Boise Creeks. The project is being developed by Run of River Power Inc. and its subsidiary Northwest Cascade Power Inc

The Upper Pitt River project is primarily located within the traditional territory of the Katzie Nation. The transmission component of the project extends into Squamish Nation territory, although other first nations may have overlapping claims.

The power project is currently in the Environmental Assessment Office review process and the proponent hopes to start construction in 2009.

But given the number of IPP proposals now being considered along with only limited government resources, there's a growing concern that projects, such as this one, may not be assessed to the degree they should. There is also concern that, under the current process in combination with the lack of a broader strategy or plan for such projects, there are limitations in the ability of government to fully distinguish between those projects that may be appropriate - and those that are not.

The Upper Pitt River Valley is an area considered by many to be the last and best stronghold of wild salmon in the lower Fraser River

Valley, with a run of wild coho between 15 and 20,000 fish. The river also sustains significant other runs of salmon, an abundant trout population and the largest run of bull trout in the province.

From a wildlife perspective, the project area also sustains numerous species at risk including marbled murrelet, peregrine falcon, spotted owl, Western screech owl, great blue heron, coastal tailed frog and monarch butterfly.

From an environmental perspective, the potential for adverse impacts associated with this project is significant. Each of these hydro projects will consist of a dam/weir built at the top end of the river to collect and divert water into a pipe (penstock). The penstock diverts water downhill through forested areas that would have to be cleared or blasted (if rock is present) into a powerhouse at the bottom. The penstocks are typically several kilometers in length and deliver water down steep mountain slopes to create the "head" which drives the turbine at the bottom. The powerhouse must be in a building.

In the case of the Upper Pitt, roads in steep and mountainous terrain will be built to service this infrastructure. During heavy rainfall or snowmelt events, washouts can easily occur and silt may well be discharged into streams.

While some of the tributaries targeted for development (4 of 8) may not have a fish presence, there can still be adverse downstream impacts to habitat that will affect fish. For example, water diverted into the penstock means less water in the diverted stream to recharge groundwater and provide habitat for the aquatic insects that will eventually feed fish downstream. Reduced water flow also means less recruitment of the large organic woody debris that creates salmon habitat downstream as well as less gravel recruitment needed for spawning sites. **Perhaps most importantly, to have so many projects within a short distance along the mainstem of the Upper Pitt dramatically increases the potential for cumulative impact to fisheries habitat, an aspect to date that has yet to be properly analyzed.** In

addition, several species-at-risk including tailed frogs and the Pacific water shrew could suffer damage to their habitat

Aside from river and fish related impacts, this IPP project will also adversely affect Pinecone-Burke Provincial Park, part of which will be severed by transmission lines running from the Upper Pitt River project to a BC Hydro substation near Squamish. The 42 km transmission line would carry a 230 kv overhead through 4.3 km of the provincial park. Another 20.2 km of 25 kv overhead lines would connect the seven projects to the heavier transmission line. If approved, this would be the first transmission line approved in a BC Provincial Park under the government's 2004 Provincial Park Boundary Adjustment Policy. Consequently, many fear that the cutting up of Pinecone Burke would create a precedent for other parks. There is also concern that the transmission corridor may impact movements of wildlife ranging from grizzly bears to mountain goats.

In short, thousands of respondents felt strongly that the impacts of this particular IPP (which in truth is a cluster of projects in close proximity that include extensive road building, infrastructure and transmission lines along with the removal of parkland) were excessive and preclude this project from being considered as a green energy initiative.

In addition, many local governments have expressed concern about the potential impacts associated with the IPP proposal on the Upper Pitt. And while the right of local governments to block such proposals was eliminated by the provincial government's passage of Bill 30 in 2006, this has not stopped local Councils from taking a position. Coquitlam Council recently voiced its "strong opposition" while Maple Ridge has expressed "serious reservations".

Key Concerns about the Upper Pitt Hydro Project

1. This proposal is an unprecedented high-density cluster of projects - eight creeks would be diverted within a twelve kilometer stretch of the

pristine Upper Pitt River, a river famous for its wild salmon. This has raised serious concerns about the potential for cumulative impacts.

2. A transmission line is proposed across a 4.3 km wilderness portion of Pinecone Burke Provincial Park. Under the BC Parks Act, transmission lines are not allowed in Parks. The proponents suggest a portion of the Park should be deleted for the transmission/transportation corridor. In the view of ORC and its members, provincial park boundaries should not be “adjusted” to suit the interests of private industry. Deletion of this portion of Pinecone Burke Park would also sever an important link for wildlife movement between Garibaldi Park to southern areas of Pinecone Burke and upper Coquitlam River forests.

3. The Steve Creek corridor (a proposed creek diversion and the main transmission/transportation corridor to Squamish) has been identified by government biologists as containing sensitive wetlands and critical grizzly bear habitat. This is, possibly, the closest grizzly bear habitat to the Coquitlam/Maple Ridge area.

4. Boise Creek is home to a rare and unique hybrid of Dolly Varden/bull trout that is found throughout the proposed portion of the creek to be diverted. Boise Creek should be left untouched and not subject to a diversion of any kind.

5. Creek diversions (and associated powerhouse construction) are proposed within aquatic habitat used by ocean-migrating salmon in at least four (Boise, Bucklin, Homer, and Pinecone) of the eight creeks proposed for diversion.

6. In addition to impacts from a fisheries and wildlife perspective, there is a widely held view that this project would seriously diminish the recreational values currently found in the Upper Pitt River valley.

7. The energy produced by many small scale run-of-river projects tends to be intermittent. Less power is produced in winter when high elevation intakes are frozen, and yet, this is the period of highest electricity demand in BC. On the other hand, power production from

these projects tends to peak in the spring when BC Hydro usually has a surplus of power. When weighing the benefits and costs of the Upper Pitt proposal, the O.R.C., along with many British Columbians, believe the highest values of this valley lie in its wild salmon, recreation, scenery, wildlife habitat, hot springs and forests.

2. (tied) Flathead River;

As one of North America's most beautiful rivers flowing through both south-eastern BC and the state of Montana, the Flathead continues to face an array of threats and, for the second consecutive year, finds itself in the number one position. Foremost among the threats confronting this waterway is the proposed Cline open-pit coal mine, which would be located in the headwaters of the Flathead River about 50 km south of Fernie. If approved, the mine would produce about 2 million tons of bituminous coal per year.

The Flathead River runs through the largest, unsettled, low elevation valley in southern Canada and is one of North America's wildest and most beautiful waterways. No other region along the Canadian - US border sustains such a diversity of wildlife and ecosystems.

The river and its surrounding terrain, which forms the western boundary of the Waterton - Glacier International peace Park, supports many important wildlife populations ranging from grizzly bears to tailed frogs, both of which are blue-listed species. The river also has some of the best water quality of any river in Canada (if not North America) and supports important trans-boundary fish populations that include the blue-listed bull trout as well as westslope cutthroat trout - and the river's floodplain is a critical travel corridor for wolves, grizzlies and elk. It's also important to note that the Flathead supports perhaps the highest density of inland grizzly bears in North America.

Yet, the BC portion of the Flathead River and its surrounding environs remain vulnerable and unprotected.

The proposed mine that would be developed by Cline Mine Corporation (often referred to as the Lodgepole Mine) would have a lifespan of approximately 20 years and would be located on Foisey Creek, a tributary of the Flathead. To service the mine, up to 40 km of road would have to be developed.

While most British Columbians fully acknowledge that mining is an important and major industry in our province, there is also a belief that some places are not appropriate to mine, and the Flathead River is one of them. There are also widespread concerns that the impacts associated with the proposed mine will be difficult, if not impossible, to mitigate due to its size and location at the headwaters of one of North America's wildest river valleys.

Looking at nearby coal mines in other watersheds, high rates of selenium, nitrates and sulphates have often been found in wastewater run-off and many of the standard toxicity tests that have been conducted in streams capturing coal mine run-off have resulted in some significant fish kills. The Flathead should be spared from such a fate.

In addition, even many past proponents of mining appear to be questioning whether there's an actual need for this particular mine in light of the region's growing and diverse economy combined with the Flathead's long history of recreational use.

Given that the Flathead is an international waterway, any adverse impacts associated with the proposed mine will also extend downstream close to Montana's Glacier National Park and then to Flathead Lake. The river's U.S. stretch has also been designated under the "Wild and Scenic River" system and it's estimated that, if a pollution event were to occur, contaminated water could reach Montana's Flathead Lake within 48 hours of discharge from the mine.

At present, the terms of reference for the mine is currently being reviewed by the BC Environmental Assessment Office (EAO) which will ultimately gauge whether or not the risks associated with the mine can be mitigated. To date, public sentiment and feedback towards the

mine has been overwhelmingly negative. In addition, many believe that approval of the mine would be very difficult to justify from a scientific perspective in that there is not enough information to accurately determine the impacts of the project on the entire Flathead Basin.

Consequently, in light of this uncertainty, the ORC believes the EAO and the BC government should take a risk-averse approach - and, for the good of the river and its valley, block the mine. We believe this is the best and most sound approach. If the EAO considers other options, then Cline Mining Corporation at the very least should be required to conduct a thorough, basin-scale environmental assessment for the trans-boundary Flathead Valley, including 3-5 years of baseline data collection before the mine is further considered. Such an assessment we believe would reveal significant environmental costs attached to this proposal.

Many river advocates and conservationists are also dismayed to hear that the federal government, which was ceded the Dominion Coal Blocks in the upper Flathead under the Crow's Nest Pass Act of 1897, has dropped their long standing requirement for a National Park Reserve feasibility study before transferring the land back to the province. Furthermore, many respondents felt it was premature for the federal government to transfer the land in that federal jurisdiction would help to ensure that the Canadian Environmental Assessment process would apply to this development as opposed to weaker provincial standards.

To make matters worse, many believe the approval of the mine would be a stepping stone to other coal-field development in the watershed.

Still other threats to the Flathead include proposed coalbed methane developments (the Province recently invited British Petroleum to undertake exploration) along with the associated infrastructure of roads and pipelines. In addition, a new forestry road is being considered for the upper Flathead; a new BC mineral mine is being proposed for an area close to the border; and unchecked land development and uncontrolled motorized access remain issues of concern.

Finally, we believe the current Southern Rocky Mountain Land Use Plan doesn't adequately recognize the exquisite values of the Flathead River and should be revisited and modified so as to enhance the stewardship and protection of this incredible waterway.

#2 (tied) Fraser River

The Fraser remains in the top 5 for the 15th time in 16 years. While long standing issues such as sewage and pollution continue to be problematic, there are also a host of emerging issues that are the cause of much concern. Among these are missing sockeye salmon, periodic low flows in most of the last several years, unchecked agricultural impacts, reduced protection for many urban stream tributaries and a growing interest in establishing a water highway (which would include a series of ports and in all likelihood, extensive dredging to accommodate container barges) upriver to Hope.

In addition, the river continues to be threatened by impacts associated with rapid urbanization, urban run-off, extensive logging in its headwaters, widespread bank armouring, industrial pollution (especially along the north arm), gravel extraction and rapid development along its most productive stretch between Hope and Mission. There are also a number of old contaminated sites that continue to be problematic.

Other areas of concern are the North and Middle Arms of the Fraser, along with the continued retrogression of the outer delta marshes, which provide important habitat to juvenile salmon as well as large numbers of waterfowl. This situation may further worsen in light of an array of new development proposals near Iona Spit on the north arm, ranging from airport expansion to a new ferry terminal.

All of these issues have played a role in this year's listing and there are increasing concerns about the river's long term health and our commitment to sustainability. And while it's important to note that progress has been made on some fronts over the past decade thanks

to the valiant efforts of many stewardship groups, a significant number of respondents expressed concern that many of the most pressing issues facing the Fraser are not being addressed to the extent they should.

One of the most publicized events in recent years has been the mysterious disappearance of large numbers of sockeye salmon before they could return to their spawning grounds. In 2004 for example, while more than 2 million sockeye were expected to return to spawn, less than 500,000 actually made it, making this one of the poorest sockeye returns in decades. Similarly, in the fall of 2005, large numbers of sockeye disappeared while in 2007, actual sockeye returns were far below original projections.

The causes of this, while not yet fully understood, may range from warmer water temperatures to excessive and/or unauthorized fishing. Whatever the reason, however, these occurrences (on top of similar, but less severe instances in recent years) indicates the need for a more cautious, risk averse approach to the management of the fishery until the causal factors behind these events are fully comprehended and acted upon to the greatest extent possible.

There is also a clear need to allocate additional resources to the DFO so that they can fulfill their management and enforcement obligations. On a positive note, the DFO has recently acted to limit or curtail fishing opportunities when the conservation of certain salmon stocks appeared to be at stake.

Still another example of the many diverse issues facing the Fraser occurred in early March, 2006, when the building of a berm to access Big Island near Rosedale for gravel extraction effectively dewatered a major back channel, destroying literally thousands of redds and killing millions of alevins, or newly hatched pink salmon. The use of adequate culverts, or the building of a bridge to access this gravel bar would have prevented this from occurring - and the fact that events like this continue to happen startled and angered many river advocates.

Another long-standing threat to the Fraser pertains to sewage pollution. While there are other examples elsewhere in the watershed, many respondents expressed ongoing concern that the Iona treatment plant still provides only primary treatment. And while this plant's effluent is discharged into the Strait of Georgia as opposed to the mainstem of the river, many millions of young Fraser River salmon pass through the discharge area on their journey out to sea. At present, the upgrading of major sewage facilities to secondary treatment levels is not scheduled to be completed until 2030 at earliest, an excessive timeframe in the view of many.

Agricultural impacts along the Fraser and its tributaries throughout the Fraser Valley farmbelt also continue to be problematic. Along many of the river's smaller tributaries that run through agricultural settings, there is a lack of riparian protection while other issues relate to the inappropriate use of pesticides and fertilizers. Another significant issue in much of the valley centers on the inappropriate disposal of manure during winter months in close proximity to streams. This is pertinent in that the Fraser Valley has the greatest concentration of farm animals (ie. sheep, hogs, cows, turkeys and chickens) anywhere in Canada that generate a volume of untreated waste equivalent to what 800,000 people would produce in a year.

While the inappropriate disposal of this waste poses a problem for rivers and fish, there are also increasing concerns about the potential for human health implications. Yet, this past winter as in previous years, a number of offences were cited but seldom acted upon, in part because of a lack of available staff.

In terms of mitigating agricultural issues, there must be increased efforts to enforce existing regulations and there's a need to continue recent efforts to develop a "best management practices" philosophy throughout the farming community. There is also need for a plan to better protect and restore streamside vegetation along many key tributaries throughout the Fraser Valley farmbelt. In addition, there must be even more vigilance in terms of protecting lands within the ALR, especially in light of continuing pressure to remove large parcels for development purposes.

On a positive note, despite the potential for conflict, agricultural land also presents an opportunity to protect stream habitat and the ORC believes that farms and fish can co-exist side by side. In an effort to achieve this, farmers are being encouraged to develop “environmental farm plans” (EFP’s) which could be very helpful in mitigating various environmental impacts. The ORC is fully supportive of this initiative.

But while EFP’s hold much promise for the future, this initiative has yet to be widely implemented. Yet, river advocates remain hopeful though that it will expand significantly over the next few years.

There is also extensive concern about the need to better protect the Hope to Mission stretch of the Fraser, which is one of the most productive stretches of river in the world. This section sustains more than 30 species of fish (more than any other BC waterway), including all species of salmon as well as Canada’s largest population of sturgeon. In addition, more than 9 million pink salmon spawn in this part of the Fraser mainstem in peak years and million of other fish migrate through this section.

Yet, while this area remains extremely productive in terms of fish habitat and is still largely in its natural state, there is currently no collaborative plan to protect key riparian areas along this part of the river.

In an effort to address this, the new “Heart of the Fraser” campaign was launched in 2006 with widespread support and it remains a beacon of hope along part of the river. A key part of this innovative initiative deals with the acquisition of key private lands for conservation purposes. This is being spearheaded largely by the private and non-government sectors (including groups such as BCIT, the Nature Trust, the North Growth Foundation, the PFRCC and ORC). However, there will also be extensive efforts to work with First Nations and various governments in the hope that certain key crown lands might also be better managed or protected. This is one of the most exciting conservation initiatives in Canada and some major

headway has already been made with the purchase and protection of much of the Harrison Knob (which in turn has been turned over by the Nature Trust to the Skowlitz First Nation to manage in perpetuity). The recent acquisition and protection of the Tom Berry Ranch property near Hope in the fall of 2007 was also great news for the river.

And finally, there's a need for a more integrated approach to reducing the flood risk along parts of the lower Fraser. There are concerns amongst river stewards and scientists that some gravel extraction proposals are excessive in size for single locations. In addition, when gravel is extracted from various islands and bars, efforts should be made to avoid pink salmon spawning years in key areas to avoid massive fish mortalities (such as what occurred at the Big Bar site in March of 2006). Furthermore, there is often a lack of science behind gravel removal decisions. Last but not least, highly productive side channel fisheries habitats that are more sheltered from flows (and hence less likely to heal quickly from gravel extractions) should be protected.

A recent report from the Pacific Fisheries Resource Conservation Council called for multi-sectorial task force that would strive to integrate both environmental and flood-related concerns. Such a task force could also potentially take some initial steps towards the development of a collaborative plan for this part of the river. The Minister of Environment, Barry Penner, recently indicated that he would consider this recommendation and, if such a committee is struck, that will create an opportunity for progress on this front.

In closing, "the Fraser is the heart and soul of our province and the world's greatest salmon river" said Mark Angelo, ORC Rivers Chair. "Yet, the river continues to face an array of threats and there are still too many instances where land-use and resource management decisions are made at the expense of this great waterway. There is also a need for a host of policy and regulatory changes that will more vigorously address the most pressing issues facing the Fraser."

"From a habitat protection perspective, there is also strong support for the development of an extensive and collaborative plan for the Fraser

River lowlands" said Angelo. "This corridor extends from Hope to Mission and such a plan would focus on the proper management and care of key riparian lands. This particular part of the river is a jewel in Vancouver's own backyard and such a plan, as outlined in the Heart of the Fraser initiative (www.heartofthefraser.bc.ca) would be helpful in sustaining the exceptional fish and wildlife values that exist along one of the world's most productive river sections".

#3) Taku River - Located 100 km south of Atlin, BC's most threatened wilderness river faces the prospect of a controversial proposed mine. At present, the Taku is the largest undeveloped and unprotected watershed on the Pacific coast of North America but this could soon be changed as Redcorp Ventures edges closer to opening the controversial Tulsequah mine.

River advocates have expressed concern about acid leechate problems, particularly in light of ongoing leechate (or acid mine drainage) problems associated with earlier mining activity in the area. There are also concerns about the adverse environmental impacts associated with the proposed use of hover barges to move the mined material. Barging-related concerns range from the potential to alter the structure of the river to wake-related impacts and the need for on-shore infrastructure. The Taku First Nation recently drafted a letter demanding additional information in this regard and identifying areas of concern not identified in the company's project description documents. If barging proves not to be feasible, a proposed 160 km access road would have to be built to access the mine.

This year is a particularly crucial time for the Taku in that government agencies in Alaska and Canada will soon decide on whether to approve hoverbarge access. In addition, in 2007, the company raised 250 million dollars for project funding and is determined to have the mine in full commercial production in 2009.

On a positive note, the province has been in discussions with the Tlingit First Nation regarding the launching of a land use planning process. However, rather than provide the basis for how development

might take place, the government's position appears to be that the mine will go ahead and the planning process will apply to the remainder of the watershed.

The Taku drainage is one of BC's most spectacular wilderness areas with significant wildlife and fisheries values. Earlier court decisions ruled that government must adequately address the concerns of the Taku River Tlingit First Nation before a permit for the project was issued. However, the re-opening of the mine continues to edge closer to reality.

The members of the ORC believe that environmental and social concerns associated with this project have yet to be adequately addressed. There is also a growing concern about cumulative impacts in that Canarc is interested in re-opening the New Polaris mine which is across the river from the Tulsequah Chief.

In addition, the ORC continues to advocate the need for a comprehensive land use plan for the area before such developments are considered and there is a need for a more collaborative working relationship with the Taku River Tlingit First Nation. In the absence of the above, there is a rapidly growing concern that the adverse impacts of both the mine and associated transportation infrastructure (be it barges or a major access road) will outweigh the perceived benefits.

4. Peace River

The Peace River is once again threatened by the possibility of a third hydroelectric mega-dam project known as "Site C" (although the consultation and assessment process looking at the feasibility of this project is still in its preliminary stages). If the dam is eventually built, it would flood more than 80 kilometers of the last significant wild stretch of the Peace River in BC.

Also, while some refer to the fact that the Peace is already dammed as a way of justifying the project, it's important to note that dam-related impacts tend to be cumulative in nature.

In terms of how this project will be assessed, ORC is a strong advocate of **full-cost accounting** and is very supportive of the need for an extensive public consultation process that allows ample debate while ensuring that environmental and social costs are fully weighed against perceived benefits.

And while formal approval of this project is still years away, the fact that the Peace already appears on this list is a reflection of the concern that many local residents, conservationists and First Nations have. Furthermore, in March of 2007, the **BC Treaty 8 Tribal Association** passed a motion in strong opposition to the Site C proposal.

From an environmental perspective, many believe that the addition of this dam would compound problems for the already severely threatened river and all of those who rely upon it. Since the project site is located in the headwater area of the Mackenzie River watershed, all downstream waterways would be affected. For example, unacceptable levels of methyl mercury produced by the existing reservoirs are already found in fish of the Peace/Athabasca delta (Timoney et. al., 2007.)

If Site C goes ahead, it will add to the energy production of the other dams on the Peace River while also providing an unpublicized seasonal amount of energy to the Northwestern United States.

However, the Site C project will also come with a **6 Billion dollar price tag**, - and it will impact the Mackenzie watershed environment for centuries to come. In this regard, there are a myriad of specific concerns that have been expressed by both British Columbians and Albertans.

Among the many key points mentioned by respondents are as follows;

- Large dams are often the cause of mercury contamination. Bull trout in Williston Lake (the upstream reservoir created by the WAC Bennett dam) have levels of mercury close to 0.6 ppm, which is higher than the Canadian standard for human consumption (0.5ppm).
- The Peace River valley is home to the only class 1 agricultural land in BC north of Quesnel. If Site C is built, much of this valuable land will be lost.
- Large numbers of rainbow, dolly varden, whitefish and grayling are found in this section of the Peace. Numerous birds are also found here (including large numbers of migrating geese and swans) while deer, elk and moose roam the river's banks. There have yet to be adequate studies on how these populations would be impacted.
- The Peace/Athabasca Delta has suffered a surprising amount from the two already existing upstream dams on the Peace. The unnatural control of water flow (loss of seasonal fluctuation), and mercury contamination are among the major problems affecting the delta that will only be exacerbated by the construction of another dam.
- Much of the area that would be flooded includes traditional First Nations lands and archeological finds to date have documented First Nations use of this area dating back at least 10,500 years ago. In addition, under the 1899 Treaty 8, First Nations were promised that their traditional way of life in this area would be preserved and protected.
- Water loss (through ground seepage, lack of downstream ice-cover, and evaporation due to the increased surface area of reservoirs), is also likely. Related to this, water temperatures may also be further influenced with the construction of Site C.
- Many of the people who live in the valley are descendants of the first pioneers to settle here. The flooding of the valley would result in these families being forced to relocate and abandon their homes and land that, in many cases, have been occupied by family members/descendants for generations.
- The land that would be lost is important wildlife habitat and the warmer sub-climate in the valley provides important refuge for many animals during the cold, winter months. Moose, for example, are rarely seen in the valley during summer, but as soon as heavy snows and colder temperatures hit, they become a common sight. Vast areas of

willow flats would also be inundated, removing much of their food supply.

- The flood zone area forms an irreplaceable part of the 'Yellowstone 2 Yukon' corridor. If this part of the valley is flooded, it will largely sever this corridor, which is so important as a migration corridor to many animals.

- If the valley were flooded, many valuable heritage sites, both aboriginal and paleontological, would be destroyed. A report done for BC Hydro (ie. The Site C Heritage Resource and Inventory Assessment) states that the significance of this cannot be overstressed. It says that the Peace River valley provides a unique window into 10,000 years of history, all of which would be lost.

- The scenic Peace River is currently used by many recreational boaters, canoeists, and campers. Yet, the Site C "Report and Recommendations to the Lieutenant-Governor-in Council" by the British Columbia Utilities Commission says that "The commission concludes that the creation of the reservoir will provide recreational opportunities of a **significantly lower quality** than the ones that will be lost". As an example, Williston Lake has proven to be of little value even for transportation and, because of driftwood and deadheads, it remains dangerous to this time.

- Silt is collected in the reservoirs created by dams, which leaves the river downstream depleted of nutrients. This is a particular concern in the case of the Site C dam in that some of the upstream tributaries carry large amounts of silt.

- Dams are never intended to last forever (and due to siltation levels, the life of this dam may be only a century or so, give or take a few years) – but the adverse impacts of this dam will be felt far beyond its useful lifespan.

#5) Sacred headwaters of the Stikine, Skeena and Nass (threatened by coal bed methane development)

In a rugged knot of mountains, in the remote reaches of northern British Columbia, lies a stunningly beautiful valley known to the first nations as the Sacred Headwaters. Located there in on the southern

edge of the Spatsizi Wilderness – the Serengeti of Canada – are the headwaters of three of Canada’s most important salmon rivers: the Skeena, Stikine, and Nass.

Contrary to the wishes of all first nations, the B.C. government has opened the Sacred Headwaters to industrial development. The most ominous project is a proposal by Royal Dutch Shell to extract coal-bed methane gas from the area’s anthracite deposit, across an enormous tenure of close to a million acres. Should this project go ahead, it would imply a network of several thousand wells, linked by roads and pipelines, laid across the landscape of much of the entire Sacred Headwaters basin.

Because CBM development requires a higher density of wells than conventional gas development, it causes serious impacts on wilderness landscapes. The maze of linear roads and pipelines required fragments wildlife habitat and inhibits natural animal movement patterns. There are also disturbance concerns related to industrial machinery, noise from compressors (used to move the gas through pipelines), dust, and gas flaring.

However, the most serious impacts of coalbed methane extraction relate to water. CBM wells produce vast quantities of toxic wastewater from deep underground that often contains salts and heavy metals. In other parts of North America, disposal of this wastewater has caused serious environmental damage. Although the BC government has said it will require companies to re-inject waste underground, this procedure is largely unproven and risks contaminating groundwater aquifers. Given the link between groundwater and surface flows, this could have a dramatic impact on the biological richness of the three great salmon rivers that flow nearby. Wild salmon currently spawn within a stone’s throw of Shell’s proposed drilling sites.

It’s not by accident that, to date, no major coal bed methane project has co-existed with healthy salmon populations. Consequently, the Iskut elders, almost all of whom grew up on the land, have formally

called for the end of all industrial activity in the valley and the creation of a Sacred Headwaters Tribal Heritage Area.

Since the summer of 2005, Iskut men, women and children, together with Tahltan supporters from Telegraph Creek and beyond, have maintained an educational camp at the head of the only road access to the Sacred Headwaters. They have also widely shared an alternative vision of a new era of sustainable stewardship, both for their homeland and the entire northwest quadrant of the province. After more than two years on the line, they are not about to give up. Nevertheless, Royal Dutch Shell has forged ahead and is currently repairing road access into the headwaters area with the hope of drilling its initial wells in the coming months.

6. Kettle River – (excessive water extraction, development, small scale hydro development)

The Kettle River is confronted by an array of threats ranging from development and excessive water withdrawal in its upper reaches to a controversial small scale hydro proposal in cascade canyon. Just as worrisome, the events unfolding on the Kettle may well foreshadow what other streams in the region might be confronted with in the face of ongoing climate change.

Last spring, despite an above average snow pack, there was no noticeable runoff or peak in the entire Kettle River system for the very first time. In the view of many locals, this was a clear indication of water extraction pressures and yet, new proposals continue to come forward. Among these are large scale condo development, golf courses and ever expanding land development and settlement.

Last summer, the River was at an all-time low flow (so low that locals couldn't even tube down stretches of it). Such low flows result in increased temperature, increased algal growth and the deterioration of habitat for fish and other aquatic organisms.

To further complicate matters, there is a proposed water use application from Big White that would extract 350 million gallons of clean water from the existing Kettle River supply (this would represent a 228% increase in their existing license). This is tied to expansion plans for the ski hill and would entail the construction of upstream storage dams.

This would, in all likelihood, mean less water available for existing downstream residential and agricultural users. In addition, local stakeholders, such as the village of Midway, have expressed concern about the ecological impacts of such storage dams as well as the impacts to the stream associated with a huge volume of urban effluent that would find its way into the Kettle.

In an effort to deal with these impacts, there is a need for the provincial government to establish a Watershed Management Plan for the Kettle River. This is essential in the view of many given the seemingly unbridled development now taking place within the upper watershed. It's also important to note that there are many authorized licenses that were not fully utilized during last year's period of record low flows and yet, their right to extract water remains in effect. On top of that, there appears to be an increasing number of unauthorized withdrawals. In light of all this, the development of a management plan must recognize that there are clear ecological limits to water withdrawal from the Kettle River system.

Another area of concern centers on cattle grazing and an apparent relaxation in the requirements of range-use plans that is resulting in greater degradation of riparian zones and general water quality. These effects are most significant in dry land zones such as those in the Kettle watersheds.

And finally, the river is also threatened by a planned independent power project on the Kettle River at Cascade Canyon (in the southern interior of BC about 20 km east of Grand Forks), a beautiful setting with significant recreational values.

The proposal, the Cascade Heritage Power Project, calls for the development of a 25 MW run-of-the-river dam on the Kettle River, just above the Cascade Canyon, and about 20km east of Grand Forks. It involves the construction of a rubber weir above the canyon, and some 800 meters of tunnel to a powerhouse at the base of the canyon. During low water flows, the amount of water that will be allowed to flow through the canyon will be reduced to 4 cubic meters per second or less.

An independent socioeconomic survey conducted by Yarnell and Associates (2001) determined that this power project “does not create significant long-term employment opportunities or other benefits for the community... [and is] inconsistent with commitments to respect neighbors, local land-use plans and First Nations” and that “the project would compromise the aesthetic value of the falls and general area, which is essential to the community’s economic and social well-being”.

Aside from cultural and tourism concerns, the Kettle River is also home to at least three red-listed and five blue-listed species of fish. One of these species is the speckled dace (*Rhinichthys osculus*) which is being considered for listing under the Species at Risk Act, and the bulk, if not all of the Canadian population, is found in the Kettle River watershed. The IPP proponent states that impacts to these species-at-risk will be minimal, but in the mind of many, any potential risk to species-at-risk and their habitat is unacceptable.

The ORC believes that the Cascade Canyon should be preserved as a Goal 2 (Special Feature) provincial park as recommended by the Regional Protected Area Team for West Kootenay-Boundary through BC’s Protected Area Strategy, and as an Inter-agency Management Committee was considering in the late 1990s.

7. Coquitlam River – The Coquitlam has unfortunately appeared on this list many times - and once again, the major issue continues to

revolve around excessive sediment loads most of which is caused by gravel mining.

On a positive note, there has been some progress in recent years such as the creation of some significant new off channel habitat. The ORC is also encouraged that the feasibility of sockeye re-introduction is being examined. In addition, praise should go to BC Hydro for moving ahead with the Water Use Planning process.

However, there continues to be major problems with silt and sediment loads from nearby gravel mines and, for much of the winter, silt levels continue to exceed those deemed damaging to fish. The settling pond failure that occurred in 2004 was also a troublesome event. As a result, there continues to be a need for a thorough review of current gravel operations and the strict enforcement of existing environmental legislation.

And while some significant funds have been spent by local gravel firms in an effort to control silt, there is a clear need to do much more. One need only drive above the gravel mines on a rainy day to see the difference in water quality there as opposed what exists downstream of the mines. And it's estimated that for close to 200 days each year, siltation levels along much of the river are considered to be at levels deemed harmful to fish.

If this situation is to finally be resolved, the GVRD, BC Hydro, the Province, local government and the DFO must all decide to act in unison for the good of the river. As part of this, they must develop an appropriate strategy for the river corridor below the dam and demand that the silt and sediment issue associated with the gravel mines be addressed. And given that both BC Hydro and the GVRD have been a major extractor of water (which often worsens the siltation issue due to less dilution and lower flows), many believe they should also be significant financial contributors to the restoration of this waterway along with other stakeholders, including the gravel sector.

Other problems in the watershed include rapid urbanization and urban runoff. The advent of additional bridges coming on line (the David/

Pathan Bridge was recently completed) combined with an estimated 20 to 30,000 new residents moving onto the lower slopes of Burke Mountain, will place added pressure on the river system.

Consequently, every step possible must be taken to protect the integrity of the river.

There is some hope, however, that the significant interest in the river that is being shown by some members of City Council as well as a plethora of individuals and citizen groups will be helpful in turning things around for this wonderful local waterway.

#8) Glacier, Howser Creeks (near Kaslo, BC - threatened by IPP proposal)

A proposed independent power project threatens these creeks which are located close to Kaslo. The proponent of the project, Purcell Green Power, recently received approval for the final terms of reference and the submission of the company's final proposal is eminent.

Among the possible impacts associated with this project are; the potential damage to blue-listed Bull Trout habitat; possible run-off and siltation from waste rock (from tunneling), impacts to the MacBeth Icefield Trail; potential impacts on blue-listed Grizzly Bears and Wolverines; extensive clearing for a 91.5 km transmission line, 25 roads and seismic lines; and runoff from roads that would have to be built in precipitous terrain.

Many local respondents, once again, expressed concern about the approval process for IPP's along with the associated gold-rush mentality that has existed in recent years. Just as importantly, there is a lack of a broader regional strategy for such projects and such proposals have not been included in past land use planning processes.

In addition, many from this area, which lies in the heart of the Columbia Basin, still have memories of the last round of energy projects which displaced 2300 residents from their farms and homes,

destroyed the prime wildlife habitat of the region, and inundated First Nation cultural sites.

The proposed Glacier/Howser Hydroelectric project is a \$240 million 125MW private project 100 km north of Nelson, B.C. They were awarded a B.C. Hydro contract in the 2006 Call for Power and now participating in the Environmental Assessment Office review. The area is part of long-standing park proposals by both the Western Canada Wilderness Committee, and the Valhalla Wilderness Society.

#9. Coldwater River;

On a positive note, the drought conditions that helped propel the Coldwater closer to the top of this list in recent years have eased somewhat. However, the outlook for the Coldwater remains troubling and record low summer flows seem to becoming the norm.

In addition, the low flow period is becoming prolonged by an earlier onset, in all likelihood a result of climate change. This has also resulted in increased summer water temperatures which continue to remain near lethal limits for fish. Also, if snowpacks melt too quickly this spring, this may again cause flow related problems this coming summer.

Due to concerns in past years that centered on excessive water extraction and the adverse impacts this is having on fish stocks, the Nicola and Coldwater Rivers have been widely viewed as endangered. These rivers are key tributaries of the renowned Thompson River system and yet, in recent summers, much of their flow has been diverted and removed. Furthermore, there are already enough water licenses in place to potentially dewater lower parts of the Coldwater while other tributaries, such as Spius Creek, are also being significantly affected by excessive water extraction.

As a result, fish stocks have been increasingly stressed and, in August of 2004, 05 and 06, in the midst of dry hot conditions, stream temperatures soared to lethal limits. The release of some stored water

from Nicola Lake was all that kept the river's salmon runs alive and, as the river's tributaries warmed and withered, juvenile fish were forced to crowd into what little habitat remained.

It must also be noted that Steelhead numbers in the entire Thompson system have dwindled significantly. These fish are clearly threatened and about 60% of this world-renowned stock originates from the Nicola system. Consequently, there is an urgent need for a watershed-specific Steelhead recovery plan developed in consultation with all stakeholders. The development of such a plan has been spearheaded by the BC Wildlife Federation which is certainly viewed as a positive development. To succeed, such a plan will require adequate flows among other habitat improvements. In addition to widespread concerns about Steelhead, southern interior Coho (many of which return to the Nicola to spawn) are also officially viewed as a species at risk.

In recent years, water use in the Nicola drainage has been relentless, an issue recently highlighted in a special report by the Pacific Fisheries Resource Conservation Council. Based on its own observations, the Outdoor Recreation Council has also concluded that, while some ranch operators have proven to be good stewards and conservers of water, others clearly have not. This past summer, during the hottest dry spell of late August (and after the most profitable crops were cut), there were still many documented incidents of sprinklers running 24/7. Much of this water was clearly being lost to evaporation. Consequently, there's a pressing need to look at more efficient drip irrigation systems and regimes.

But on a more positive note, the BC government has recently consolidated the management of water in the province through the creation of the Water Stewardship Division within the Ministry of Environment. This will be helpful in trying to resolve water use issues in areas such as the Nicola River drainage.

In spite of far reaching concerns about the maintenance of adequate flows for the watershed, requests for new water withdrawals in this area are still being considered by the province. Licenses for thousands

of acre feet of water stored in Nicola Lake are on the pending approval list. There is also a proposal for a large, all season resort development near Juliet Creek in the headwaters of the Coldwater drainage while additional proposals for a resort, subdivision and a golf course near the site of the Merritt Mountain Music Festival would exert additional pressure on local water resources.

Consequently, any water management plan for this area must respond to a number of key questions; Where will the new licensed water come from? Who will monitor its careful use? What will be left for the river, particularly in light of the increasing frequency of hot, drought like conditions?

There is some reason for encouragement in that some of these questions are beginning to be addressed - but until there are clear answers, ORC believes that extreme caution should be exercised on the issuance of new water licenses for the Nicola system as well as transfers of currently unused licenses, unless these are used for conservation purposes. There is also some potential for the increasing use of partial term or seasonal licenses where appropriate if they can be justified based on present (as opposed to historical) flow records and if there is adequate compliance with agreed upon cut-off dates.

In summary, the placement of the Coldwater River on this list continues to reflect the broader need to better manage BC's water resources and, in future, we must strike an appropriate balance between allocating water for development while also ensuring we protect the needs of fish and other aquatic life.

#10) Okanagan River - For decades, the Okanagan River has been damaged by channelization, water extraction, urban encroachment, riparian habitat loss and the building of dams and weirs. In many sections, it now resembles more of a ditch than a river.

In addition, there are still serious issues pertaining to water management, examples of which were cited throughout much of the

watershed. Among these were the inadequate management of groundwater, the over allocation of water licenses and the unauthorized removal of surface water.

On the bright side however, a strong effort is underway to try and restore this great waterway - and, while you can't immediately turn things around for a river that has been abused for so long, some progress has definitely been made.

As an example of this, the Okanagan River continues to be an ideal candidate for a major habitat restoration initiative that would include a significant "de-engineering" component. Some of this work has already been done and, if such work continues, this could dramatically improve the state of the river.

Kudos for this must be given to the many groups and individuals throughout the Okanagan basin that are working to restore the river. Because of their efforts, a major restoration initiative is now being formulated by staff within the Ministry of Environment and the Okanagan Nation Alliance has been an especially strong advocate for this. The ORC supports this proposal and we believe it should be endorsed, and funded, by both the federal and provincial governments.

The annual return of significant numbers of sockeye (one of only 2 significant remaining populations in the Columbia drainage) to the Okanagan River system also reinforces the potential of such a program - and the recent re-introduction of sockeye to Skaha Lake is an exciting recent development.

Over time, such a restoration initiative could improve flow regimes, enhance off channel habitat and improve fish passage. Riparian habitat could also be restored in many areas, which would enhance fish values as well as improve wildlife habitat for red-listed species such as the tiger salamander and western screech owl.

Specific fisheries enhancement measures might include the building of set back dykes, land trades, the restoration of meanders, riffle-pool

construction and perhaps even the decommissioning of the McIntyre dam.

On another positive note, within Douglas County near the town of Oliver, a very successful habitat restoration project was undertaken a few years ago which created several hundred meters of renewed fisheries habitat. This proved to be very successful and is an example of the restoration possibilities that exist.

#11) Salmon River (located near Salmon Arm, BC)

The Salmon River, which rises in the dry grassland of the Douglas Plateau and then winds through a rich agricultural valley before flowing into Shuswap Lake, faces an array of issues and threats.

Among these are periodic low flows, often exacerbated by excessive water withdrawals. Last year, flows were so low that salmon could not enter the mouth. As a result, a number of salmon were actually transported by both local volunteers and the DFO to appropriate spawning areas upriver.

In future, lower summer flows may become even more pronounced and frequent as the pine beetle epidemic continues to spread. The pine beetle has already attacked 119,000 hectares within the Okanagan-Shuswap Forest District alone and may eventually affect 80% of the pine in the district. Perhaps 40% of the upper elevation forests in the Salmon River watershed will be lost. Such a widespread loss of vegetative cover may result in increased siltation along with both an earlier and heavier run-off in the spring. This same scenario may also lead to a reduction in flows in the summer, although more research is needed on the hydrological impacts associated with the pine beetle outbreak.

There are also concerns about the loss of riparian habitat which, in conjunction with low flows, has led to higher water temperatures. In

mid summer, water temperatures have often reached 21 degrees C, which adversely affects the health of juvenile salmon. In addition, damage to streamside vegetation is often compounded by the grazing and feeding of cattle along stream banks.

Water quality has also diminished in recent years. High sediment loads have often occurred as a result of logging and localized flooding. Agricultural activity in close proximity to the rivers edge increases the amount of animal waste and fertilizers that find their way into the river.

Another issue of concern to many locals and river advocates centers on a proposed big box store development that will be located adjacent to mouth of the Salmon River. The property in question will require up to 3 meters of fill as well as a holding pond on the banks of the river. This could add to the many cumulative impacts already confronting the waterway. Similarly, the outlets of many local rivers in the region are facing increased development pressures.

On a positive note, a number of local stream stewards, including the Salmon Arm Bay Enhancement Society, the Shuswap First Nation, Neskainlith First Nation, the Salmon Arm Fish and Game Club and others are working to restore the river's once plentiful salmon runs. There are also renewed efforts to work with farmers on developing "best practices" which could yield positive results.

12) Little Campbell River (South Surrey, White Rock)

The Little Campbell River (LCR) faces an array of threats that are typical of many streams in rapidly developing areas of the lower mainland. And while the creek continues to support many salmonids, the waterway is clearly under stress and the species of salmon that exist in the stream (along with sea-run Cutthroat trout) are all showing large decreases and fluctuations in their escapement numbers. Since 1980, the Little Campbell River Voluntary Hatchery has been caring for the salmon resources of the Little Campbell River(LCR), in an attempt to ensure that the salmon runs are not depleted. Unfortunately,

decreases in the number of fish from the many threats listed below are beginning to outweigh the huge inputs from this volunteer hatchery, since the main purpose of the hatchery is to augment the wild numbers rather than be the main supplier of salmon progeny.

Development Pressures: Urban, Industrial (Campbell Heights business park) and Semi-rural (High Point) developments are all effecting the watershed through increasing impermeable surfaces, loss of riparian habitats and tributary streams and decreasing water quality. Campbell Heights, Phase 1 contributed large amounts of siltation downstream and had a number of fish streams reconstructed. Before construction of Phase 2 and 3 commences, the City of Surrey will hopefully re-evaluate how the first phase was done, prior to preceding with similar types of high intensity development. High siltation levels from these and other developments during the critical salmon egg incubation period in the mainstem gravel beds are impacting wild salmon stocks of the LCR.

Agricultural threats: the eastern drainage of the LCR is predominantly rural agricultural acreages and hobby farms in south Langley and parts of south Surrey. Along this part of the river, threats include the trampling of many riparian areas by livestock, the historical diversion or filling-in of wetlands and ephemeral streams, water quality issues around improper manure use, and old and failing rural septic systems. While some riparian areas have been fenced, many agricultural areas have lost much of their riparian stream edges and habitats along the mainstem LCR and key tributary streams.

Water Quality: The water quality concerns associated with livestock and human wastes is contributing to potential eutrophication and coliform pollution. In the 2003 Hay and Co. Report, the LCR was noted as a significant contributor of fecal coliforms into Semiahmoo Bay. This resulted in a 2006 BC Environment Water Quality Report on the lower LCR, which indicated that there were significant fecal coliforms coming from the tributaries and storm drains downstream of Highway 99. The continued urbanization of eastern White Rock and western south Surrey has also resulted in very flashy and polluted stormwater runoffs from the McNally and Fergus Creeks along with numerous other stormwater outfalls, which drain into the lower LCR. Currently,

the BC Ministry of Environment is working to correct this problem, yet there is still the need for further fecal coliform and water quality investigations for the upper watershed, which is plagued by leaking septic fields and agricultural nutrient run-off.

Other Biological Threats: Benthic invertebrate studies have been undertaken by A Rocha Canada, downstream of the 16 Avenue Bridge in 2004, 2006 and 2007. Results from these years indicate that the lower LCR system is under varying degrees of biological stress. Invasive plants, such as Reed canary grass has totally invaded the river areas and the riparian edges, Himalayan blackberry has overtaken many tributary streams and riparian areas, giant hogweed, lambium, Japanese knotweed and others are continuing to out-compete native plants species throughout the river system.

Threats to Wetlands: LCR wetlands are at risk from human disturbances, including agricultural, urban and recreational pressures along with ground water extractions, pollution and nutrient loading. The remaining wetlands within the LCR watershed provide critical habitat for hundreds of species, many of which are endangered, threatened or vulnerable. The protected wetlands in Campbell Valley Regional Park (CVP), located along the LCR, supports 174 bird species, 70 of which breed there. In addition, many of the salmon species continue through these wetlands to spawn in the LCR headwaters. The continued health of these wetlands is critical to the biotic survival of the LCR.

Hydrological threats: The LCR has become increasingly flashier with at least 4 major flood events during the winter of 2006-07, with the majority occurring post- salmon spawning between November and March. These floods have had significant erosional effects on the river, since this has served to dislodge large amounts of gravels downstream. A large mid-section of the LCR is underlain with large glacial gravel that serves to drain off large amounts of summer flows. In addition to this seepage, the LCR is over-subscribed with many historical Water Licenses for domestic and agricultural usage. Due to the inability of Agencies to monitor and regulate water withdrawals, large water extractions (particularly during dry years such as 2006)

result in a loss of available water and habitat for juvenile salmonids. Also, in many years during the months of July and August, large sections of the LCR dry up downstream of Campbell Valley Park in Langley, stranding large numbers of coho fry. While fish salvage operations undertaken by volunteers have rescued large numbers of these fish, many are also lost to predators and drought.

- Key rivers and issues to watch in the year ahead;

1. **The Similkameen River** – the lower part of the BC section of this beautiful waterway is threatened by the proposed Shanker's Bend hydroelectric project on the US side in the state of Washington. This project consists of two dams, the existing Enloe Dam and the proposed Shanker's Bend dam just south of the border. As currently proposed, the new dam would create a reservoir of about 18,000 acres, half of which would be in BC, and potentially flood the Similkameen River valley almost as far upstream as Keremeos.

The project is proposed by the Okanagan Public Utility District in Washington, and they have already submitted an application to study the project to the US regulatory agency FERC (Federal Energy Regulatory Commission). They have obtained a \$300k grant from Washington state to review the project.

This project is still early in the assessment process but it will be watched carefully in the year ahead. The reservoir created from this dam would provide little or no benefits to our province while flooding a beautiful and ecologically significant riverine landscape.

2. **Klinaklini** - A run-of-river hydroelectric development of unparalleled scale has been proposed for the Klinaklini River. The exceptional ecological value of the Klinaklini River lies in it's remoteness from industrial impacts and the unique abundance of nutrients carried through the Coast Mountains from it's headwaters in the Chilcotin Plateau. The river sustains some of the strongest salmon and steelhead runs of the west coast, one of the last stable eulachon

runs and a healthy Grizzly Bear population.

The (800 MW) run-of-the-river hydro development proposal for the Klinaklini River is entering the Environmental Assessment process. The project would divert most of the natural river flow by bi-passing a major pristine canyon. As well as the usual threats, many believe an undeclared threat would be the later firming of power production and thus profitability by damming the river upstream and thereby flooding a large pristine protected area

The transmission line for the project would cross the very sensitive estuary of the Klinaklini, which is an important Conservancy in itself, and would then cross highly sensitive visual management areas on route to Vancouver Island.

Once approved, this project, including future damming to create an upstream storage reservoir would be difficult to stop due to the investment involved. While salmon cannot ascend beyond the canyon, they would in all likelihood be impacted by flow and temperature changes when an upstream reservoir would be created.

3. Como Creek watershed (and other urban waterways) ; As one of the few lower mainland streams to support wild salmon only along with sea run cutthroat, this urban jewel faces an uncertain future. The creek, which epitomizes the pressures faced by many urban streams, flows through south Coquitlam from its headwaters near Como Lake Avenue to the Fraser River, east of historic Fraser Mills. Like many local waterways, this stream has suffered from a host of impacts associated with urbanization. To make matters worse, the creek's main stem was recently hard-hit by toxic runoff from a large fire event and subsequent spills wiped out close to 90% of all fish species over a 2 kilometer stretch of stream. Other concerns include continued development in the creek's headwaters, non-point source pollution, invasive non native plant species and the degradation of remaining natural areas.

4. the need for new legislation pertaining to groundwater ;

Winfield Creek (in the headwaters of the Okanagan River watershed) is a small Kokanee spawning channel in the District of Lake Country. Like so many other streams, urban development has resulted in changes to the groundwater recharge area, resulting in a loss of surface flow at the creek's headwaters. This creek is only one of many such examples throughout BC. As more and more waterways are impacted by changes to the aquifer (which usually play a key role in recharging streams), either through excessive groundwater extraction or development, the need for groundwater-related legislation is becoming more and more evident. At present, BC is the only province without legislation governing the use of groundwater.

In closing, according to Mark Angelo, Rivers Chair of the ORC, "the problems outlined in this year's list are extensive and diverse, ranging from concerns about industrial run-off to the impacts of low summer flows - and from controversial dam proposals to much needed efforts to restore damaged habitats. Furthermore, these issues highlight the fact that you cannot separate the health of our fish stocks from the health of our rivers; they are completely inter-dependent. And within any given watershed, if river habitat is destroyed or significantly damaged, you lose any chance you may have to protect or rebuild fish stocks. Yet, while the waterways on this year's list face many habitat-related problems, things can still be turned around if there is a strong enough will to do so".

On a more positive note, the province increased the support last year for the Living Rivers Program to a total of 21 million dollars. While this was an important step forward and the province should be commended, additional funds will ultimately be required to turn things around. Consequently, we're hoping that the BC government will consider allocating significant additional funding (perhaps as a river legacy fund) over the next year.
