



Steelhead Society of British Columbia

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RE: Proposed Garibaldi at Squamish (2013) Development

The most recent incarnation of the GARIBALDI AT SQUAMISH (2013) proposal encompasses a land base of approximately 4900 hectares (12108 acres. For comparison, that is approximately 12 times the size of Stanley Park) of which 2,580 hectares (6,373 acres), will be developed including two 18-hole golf courses.

Of the total, 1,670 hectares (4,125 acres) will be ski and snowboarding terrain including approximately 150 trails and 23 lifts. This has been estimated to support a Comfortable Carrying Capacity of 19,437

skiers/riders at one time. The Base area village, upper hotel area and adjacent residential communities will include 6,500 square meters (70,000 square feet) of commercial space, 1480 single family homes; 1762 condo units; 806 town homes, over 1,700 hotel rooms/units (for a total of 22, 502 bed units) with parking and support amenities to be developed on the remaining 910 hectares (2,250 acres).

GARIBALDI AT SQUAMISH proposes to provide snowmaking on 40% of the trails, approximately 110 hectares of trail area, at a snow depth of 0.5 metres (one square m at a snow depth of 0.5 m uses 0.25 m³ of water). Running the snowmaking system for 12 hours per day requires a water flow of 140 litres per second equating to 6 mega-litres per day over a 45-day duration. Preliminary estimates of flow demand indicate that the fire flow standard is 11,356 litres per minute. Total storage for fire protection would, therefore, become 2,044,080 litres (540,000 gallons).

The total water storage required to meet a one-day culinary usage combined with a three-hour fire storage supply would be 13,797,000 litres (3,650,000 gallons). The proponent uses the Squamish District target number of 455 litres of water to calculate potable water usage. The reality is the District of Squamish per capita use is 688 litres per day.

<http://www.squamishchief.com/article/20120405/SQUAMISH0101/304059951/-1/squamish/solving-squamish-8217-s-water-mystery> For comparison the Resort Municipality of Whistler uses 575 liters of water per day per capita (<http://summit.sfu.ca/item/10087>)

<http://www.whistler2020.ca/whistler/site/indicator2.acds?instanceid=9058397&context=9057959>

As a result of the Minister's June 10th, 2010 decision and subsequent Section 17 Order under the Act, GAS is now proposing to access and develop a groundwater water supply (and not any surface water withdrawals from Brohm creek) to provide sufficient water to develop and operate the resort and all of its related facilities at full build. Off site development is proposed to include the plan for a groundwater water supply, and transmission routing into the resort. Five large open potable water storage reservoirs and three snowmaking water storage reservoirs and associated dams, up to 50 m high, were previously proposed to store potable water and water for irrigation, firefighting and snowmaking purposes. This water storage infrastructure is no longer proposed or required except for one snow making storage reservoir removing the potentially significant project effects previously associated with water storage reservoirs and associated dams. A 10 m high dam structure, which could be incorporated into the roadway design, would provide approximately 300,000 m³ of storage volume. This impoundment would be filled by diverting water during spring runoff. No water license will be required for operating the groundwater wells as the sole source of potable water supply. Water licensing for the snowmaking reservoir remains unchanged from the 2009 submission to the 2013 addendum.

http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_project_home_404.html

A desk top study to confirm ground water availability in the Cheakamus valley near the Tenderfoot fish hatchery was conducted. Some of the conclusions were:

“Based on a review of the information described above I conclude the following:

- I concur with Piteau’s conclusion that the Cheakamus Valley aquifer (near the Tenderfoot Fish Hatchery) has a very high (95%) probability of supplying the required (year-round) water supply of 70 L/s.
- However, in my opinion, there is insufficient information to evaluate the potential environmental impact(s) of the proposed groundwater extraction on valued components (specifically well interference with nearby groundwater users) with adequate degree of confidence.

I therefore recommend that additional information be collected by the proponent for an environmental assessment of the proposed groundwater extraction scheme (see section 5 for more details).”

http://a100.gov.bc.ca/appsdata/epic/documents/p286/d22325/1158359303033_6b41ed254f354fb7b9e8d635500aa91f.pdf

The Environmental Assessment Office recommended a ten day pumping test to confirm the steady supply of 70 L/s; the proponent countered with a 3 day test that left significant data gaps, i.e. the 3 day test was insufficient to determine if there was any drawdown in nearby residential wells or to the ground water supply well of the Tenderfoot Fish hatchery.

Furthermore there is a discrepancy from the proponent’s previous submission regarding the actual water volumes/rates needed. The proponents fire flow standard calculations determined that 11,356 litres per minute was required and the snow making system demand for 12 hours per day requires a water flow of 140 litres per second in addition to the 455 L/person per day x 20,000 people/day target requirement is significantly different than the 70 L/s number that the proponent loosely confirmed from the Cheakamus groundwater source tests. This discrepancy needs to be justified and clarified by the proponent.

Some concerns centric to the Steelhead Society of BC regarding the GAS proposal

The Squamish River contains chinook, coho, chum, sockeye and pink salmon, and steelhead, rainbow, cutthroat trout and bull trout. A number of non-sport fish are also present.

- Chinook salmon numbers have ranged from a high of 35,000 fish in the mid-1960's to a low of 640 fish in 1986
- Chum salmon escapements have ranged from a low of 3,500 in 1965 to a high of 160,000 fish in 1985.
- Coho salmon numbers have ranged from 1,500 fish in 1959 to 75,000 fish in 1974.
- Odd year pink salmon fluctuate from 1,000 fish to 175,000 fish. To the recent record run of probably well over a million fish in 2013
- Steelhead trout numbers have ranged from a high of 18,000 fish in 1972 to a low of 500 fish in 1983.

As evidenced by the preceding numbers, most salmonid populations in the Squamish system are in a dramatic steady state of decline and are mere fractions of historical run sizes. Much of the impact historically within our control was from commercial fishing over harvest, habitat loss, water diversion from BC Hydro, industrial pollution, to the impacts of logging. A caustic soda spill from a train derailment in 2005 on the Cheakamus River had a severe affect on fish populations. Every living thing in the river below the spill site was killed. The Cheakamus River is still in a state of recovery from that as evidenced in widely swinging and unstable fish population numbers.

Much effort towards recovery by many concerned and active groups over a very long sustained period of decades is now seeing some salmonid populations slowly rebound. The damage of clear-cut logging on steep mountain sides and valley bottoms is greening up, stabilising the ground of the cut areas slowing down water release and runoff, confining water diversion to actual permit use allowances by BC Hydro, and cleaning up old polluted industrial sites have all contributed to this rebound. However there still are ongoing and new threats. Ongoing non-compliance by IPP operators regarding water ramping issues resulting in fish kills are but one example. Some of the Cheakamus river tributaries such as Brohm creek run through areas of volcanic rock which results in very productive and favorable fish growing water chemistry. Clearing these upland areas for ski runs, two golf courses, approximately 100 km of roadways and housing developments will result in a change in the way the water runs off the land. Runoff from roadways and golf course fertiliser/pesticides/herbicides could dramatically change water chemistry. Removing vast amounts of water from the local water table could potentially have serious negative effects as well. A three day pumping test by the proponent simply doesn't yield the quality data required to make any kind of responsible informed decision in this regard and is reason enough to not allow this project to move forward.