



Sunshine Coast
Conservation
Association

April 28, 2023

TO: BC Timber Sales (BCTS), Pierre Aubin, BCTS Forester, Erin Moore SCNRD Regional Manager, MOF, Lars Uunila, Polar Geoscience Ltd., Robbie Johnson, Polar Geoscience Ltd.

CC: SCRD Chair & Directors, Gibsons Mayor and Council, shíshálh Nation, Squamish Nation, Nicholas Simons, PRSC MLA, Bruce Ralston, Minister of Forests, Nathan Cullen, Minister Water Lands Natural Resource Stewardship, George Heyman, Minister of Environment and Climate Change, Fin Donnelly, Parliamentary Secretary, Watershed Restoration

Re: Feedback on BCTS' Mt Elphinstone South Watershed Assessment Phase 1&2 Report

Dear BC Timber Sales and Government Decision Makers:

We are writing on behalf of the Sunshine Coast Conservation Association, and Elphinstone Community Association, in response to the Mt. Elphinstone South Watershed Assessment: Phases 1 & 2 Report completed for BCTS by Polar Geosciences Ltd. (March 7, 2023).

As described in the Executive Summary of the report, **“multiple downstream values have been identified and both local government and the public have expressed concern over these values.”** Indeed, they have.

As water purveyors and service providers, both the [Town of Gibsons \(Town\)](#) and the [Sunshine Coast Regional District \(SCRD\)](#) have raised the issues of risks caused and amplified by logging such as [flooding, landslides, road washouts, riparian area erosion](#), as well as impacts on our drinking water source areas, for decades. Meanwhile they have spent millions of dollars on research, mapping, modeling, monitoring planning, updating infrastructure, engaging, and informing the public on water use and conservation, to sustainably manage our watersheds.

The [enduring water emergency in 2022](#) made it plain. The need to diversify and sustain water source areas on the Sunshine Coast is at a critical stage. If we are to ensure long-term water supply for our community, we need to protect aquifer watersheds.

Accordingly, we are asking BC Timber Sales to heed the concerns expressed so directly by community and local government for decades, and in response to this study by:

- 1. Halting all forest development planning in the recharge areas of aquifers 560 and 552.**
- 2. Supporting a Water Sustainability Plan (WSP) to conserve these source areas.**
- 3. Deferring Phase Three planning for Mt. Elphinstone South until a full watershed assessment for the entire Mt. Elphinstone watershed (North/South) is completed.**

We are pleased that BC Timber Sales (BCTS) is undertaking hydrological study and starting to consider the complexities of the Mt Elphinstone watersheds. We appreciate the engagement we have had with BCTS around our concerns around proposed logging, and the opportunity to provide feedback on the Mt. Elphinstone South Phase 1&2 findings and recommendations.

However, although BCTS commissioned this research *in response* to community and local government concerns, **this hydrology study does not address hydro-geological issues**. Simply put, the study is focused on surface water (creeks, stormwater) not groundwater (aquifers). And its recommendations and **conclusions on groundwater impacts are unfounded**.

This study and its recommendations also don't reflect the provincial government's commitment to watershed stewardship and security, and their promised paradigm shift in BC forest management practices. **The study is solely focused on how to minimize increased hazards and risks BCTS will cause with more logging**. In fact, this study attempts to make the case that logging won't affect downstream communities too much.

Issues such as mitigation of damage to people and infrastructure caused by flooding, restoration of salmon spawning creek beds and aquifer protection are simply not considered. The study does not ask, let alone answer crucial questions to address community needs or the obligations of government as service providers and land managers. The report does not offer ways to address or decrease existing and growing threats to waters systems and communities.

We address these issues in more detail in the appended document.

The bottom line is **logging increases harmful impacts** on watersheds, ecological values, and downstream communities. In an area as hydrologically and geologically complex as Mt. Elphinstone, the risks are far reaching and impossible to fully mitigate without moving to a bonafide partial cutting forest management regime. This is precisely what this study reveals. In specific detail.

When questioned by Gibsons Council members during a presentation about the study, as to why BCTS would even consider logging in the watershed of their sole drinking water source, BCTS staff were honest. "It's because that's our land use designation", they said.

"If you want us to stop logging in the watershed, you need to change the land use."

That's the rub. BCTS is a forestry company with a mandate to clear cut forests on the geotechnically hazardous slopes above our communities, in our aquifer recharge areas. They don't have the same obligations local governments have to purvey water and services to citizens. **Local governments are working overtime to sustain and manage our natural assets, while BCTS' mandate is to liquidate and monetize them.**

This report by Polar literally illustrates how and why clearcut logging in Mt. Elphinstone watersheds and community development are **not mutually compatible land uses**. We simply can't have our water, fish, infrastructure etc. and clear cut the slopes above too.

After years of study, monitoring and planning and millions of dollars invested by governments; after myriad recommendations and multiple requests of the Province to help protect these source areas; after back-to-back droughts and a water emergency, it is discouraging that BCTS would make an assessment aimed at supporting their ongoing logging mandate to the detriment of so many other stakeholders.

It's time to solve this problem by changing the land use designation.

That is why we are asking First Nations, all levels of government, community, and industry, including BCTS, to work together to develop a Water Sustainability Plan. We believe this is the only fair, and equitable approach to resolve increasing land use conflicts.

We truly appreciate the effort BCTS and Polar have put into this hydrological study and their continued engagement with us around District Lot 1313, risks to the recharge area and downstream communities from BCTS logging proposals. Their openness, responsiveness and candour are, in our view, **a positive step toward long needed changes in BC forestry** management. We sincerely hope BCTS will get behind and fully participate in the WSP process.

That said, we also have **grave concerns about the growing issues and risks this forestry study brings to light** as well as those it neglects to fully consider because its focus is on how to minimize greater risks and hazards caused by the logging BCTS is mandated to do.

In the analysis appended to this letter, and in the many emails we have supplied to BCTS and Polar, we have provided feedback on key aspects of the Mt Elphinstone South Watershed Assessment Phase 1 & 2 Findings and Recommendations. In the interests of all parties dependent on the creeks and watersheds in our community, we hope that our feedback will be fully considered and acted on.

We look forward to working together with you all further in the future.

Sincerely,

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[SCCA-ECA Comments on 2023 Mt Elphinstone South Watershed Assessment Phase 1&2 Report Findings and Recommendations by Polar Geosciences](#)

Drinking Water Aquifers

The Town of Gibsons (Town) and Sunshine Coast Regional District (SCRD) must supply drinking water to over 30,000 full and part time residents on the Sunshine Coast. Our community has reached **Stage 4 Water Restrictions five times in the last seven years**. In 2022 we became the first community in Canada to declare a [State of Emergency](#) due to impacts of drought on our water supply.

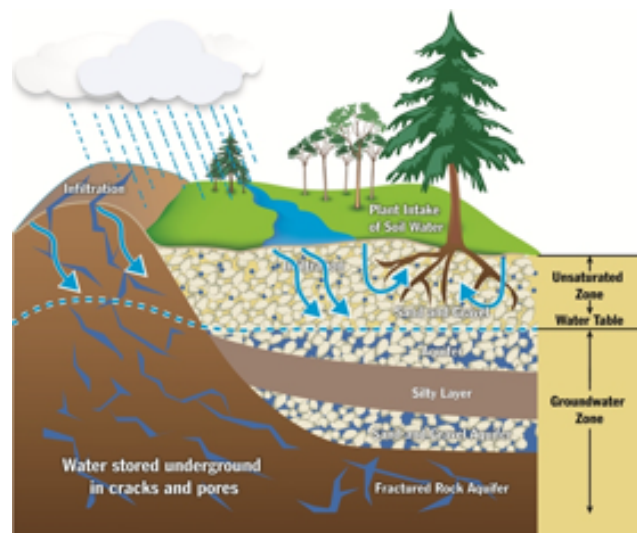


As concerns mount over climate impacts and prior logging activities on the primary Chapman Creek Watershed and its capacity to supply our community, the Sunshine Coast is increasingly relying on the [Elphinstone Gibsons Granthams Aquifer 560](#) and [Hopkins-Langdale Aquifer 552](#) to provide drinking water for our communities.

Aquifers are **underground layers of unconsolidated materials** (gravel/sand), which become saturated with fresh water when rains and snowmelt absorb into the earth and infiltrate the gravel/sand layers. The process of fresh water filling the Aquifers is known as **“recharge.”** The forested ecosystems on the southeast slopes of Mount Elphinstone in West Howe Sound are the main “recharge area” for these two aquifers.

The forests play an integral role in moderating the aquifer systems by providing land cover which allows for the development of a rich understory, including roots, soils, and mycorrhiza. The understory acts like a sponge, gradually absorbing and releasing water, slowing the release of snow melt, supporting soil structure and slope stability, mitigating against both drought and floods.

Removal of the forest cover in the recharge area through industrial logging (and gravel mining) dramatically disrupts the recharge process, results in less water entering the system over time, increases erosion, water turbidity, slope instability, landslides and impacts the long-term ecological resilience of the watershed.



BC Timber Sales is undertaking a watershed assessment (hydrology study) for Mt. Elphinstone.

Mount Elphinstone South is the area for which this current hydrology assessment applies. We don't know when BCTS will complete the full watershed assessment.



There are three main aquifers in the Mt. Elphinstone *South* watershed study area.

Mt. Elphinstone South

1. [Aquifer 560 Elphinstone-Gibsons-Granthams](#) is a deep, artesian aquifer. The sole drinking water source for the Town of Gibsons (up to 10,000 pop). It is a critical secondary source for the SCR D, and an emergency source (from the Town) during times of drought. It is also a source for private wells in Elphinstone and West Howe Sound.

The SCR D has suffered acute water shortages in 5 of the past 7 years, including a ban on outdoor water use, including farm and commercial purposes. If it were not for the water supplied from Aquifer 560 the SCR D would not have been able to meet the demand for residential drinking water in the fall of 2022. Aquifer 560 (formerly referred to as “Gibsons Aquifer”) is by far the best understood aquifer of the three. It is the sole source of drinking water for the Town of Gibsons.

The Town of Gibsons has in-depth and ongoing studies and modelling of Aquifer 560 that could serve as a starting point for a more realistic analysis of the effects of logging on the security of our drinking water. Based on the Gibsons Aquifer (560) mapping study update, commissioned by the Town of Gibsons (May 30, 2022), it is likely that many of the shallower wells at the foot of Mt. Elphinstone is supplied by the unconfined Capilano Aquifer, as this formation is estimated to have a thickness of up to 51m in this area. It is important to note that the Capilano is much more responsive to seasonal changes and less stable than the deeper aquifer 560.

2. [Aquifer 555 Roberts Creek](#) is a shallower aquifer which feeds private property wells that are not serviced by the SCR D water supply system. Many residents above Highway 101 in the assessment area rely on private well water from Aquifer 555. At this time Aquifer 555 has not been studied and its relative importance to well water remains unknown.
3. **Capilano Aquifer** is an unconfined surficial aquifer which sits on top of the others. It serves as a ground water source for properties in Elphinstone and West Howe Sound. The Capilano Aquifer has also not been well studied. However new research being done by the

town seems to indicate hydraulic connectivity between Aquifer 560 and the Capilano may be greater than previously understood.

There are two more aquifers in the Mt. Elphinstone North, that aren't addressed in this study.

4. [Aquifer 552 Langdale-Hopkins](#) is a critical secondary source for the SCRD's main water system. The SCRD plans to develop the Langdale well field and increase extraction from this well to help address its growing water deficit over time.
5. [Aquifer 1220 Eastern slope of Mount Elphinstone](#) is lesser known and studied. It also feeds private wells throughout West Howe Sound.

The Mt Elphinstone South Watershed Assessment is not a hydrogeology (groundwater) study.

The research was done, and the report authored by surface water/erosion professionals, who freely acknowledge that they are not groundwater experts, and cannot make fully informed comments on the impact of logging on groundwater aquifer recharge.

The Mt. Elphinstone South uses data from the BC Groundwater Wells and Aquifers database. Data from this database is of limited use given that many wells are not indicated and/or may be or placed at a wrong location. For instance, a well on Reed Road (drilled in 2016) shows up somewhere north of Prince George on the database map. Other wells drilled after 2016, are simply not on the map. Even the important Chaster Well providing 1000 m³/day to SCRD water users during summer droughts is misplaced by half a block. Thus, any negative impact of logging on local property owner's drinking water supply may affect many more residents than the Polar hydrology report suggests.

In part 6.1.3 of the Report Polar provides a one-page summary which suggests that "relatively little research has been conducted on interactions between forest management activities and groundwater system citing Smeardon et al 2009." But, since 2009, a large body of research has been completed and the topic of impacts of logging in aquifer recharge areas remains an ongoing concern for local governments.

For example, for the 2013 [Town of Gibsons Aquifer Mapping Study](#), the Town's expert, Waterline Resources worked with [UBC Student Jessica Doyle](#) to use environmental tracers to investigate recharge mechanisms and refine conceptual hydrogeological models for Aquifer 560.

The recent [\(May 2022\) Aquifer Study update](#) recommends the Town "Continue to engage in discussions with the SCRD, FLNR and community stakeholders regarding aquifer monitoring and watershed management activities. This will be particularly important for the protection of the recharge areas located outside the Town of Gibsons in the SCRD. Further investigations should be completed in the upper reaches of the Chaster Creek and Gibsons Creek watersheds to assess the recharge characteristics of Aquifer 560 and its component aquifer lobes."

Yet, the basic groundwater/aquifer assumptions and conclusions put forward in the Polar report seem to contradict these expert recommendations.

We are surprised by the Polar report's assumption that the risk of logging to the groundwater supply and aquifer recharge is low based on their simplistic analysis. The Polar report states also that nobody really knows the risk, as this topic is not well understood. Thus, since nobody can assess the risk, we conclude that Polar cannot make the statement that the risk to groundwater is low. Polar's comment that the effects may not be known for years after logging suggests neither they nor BCTS could be held responsible for how their actions affect the aquifer. This is irresponsible.

Ideally this study would have also included input by groundwater specialists. As it does not, the conclusions and suppositions outlined in section 7 Risk Hazard Summary, and Section 9 Risk management options are not credible.

Moving forward, we would like to see BCTS/Polar engage hydrogeologists to (at least) undertake a literature review, to explore questions around hydraulic connectivity between creeks, watersheds, and aquifers and how forest cover removal will impact them over the long term and update their current findings and recommendations accordingly.

Finally, many of these aquifers are, to varying extents, hydraulically connected. Much is known about Aquifer 560. Less is known about 552, but that is changing as the SCRD continues its groundwater investigations. Far less is known about aquifers 555 and 1220. In future, these aquifers may also have a crucial role to play in the provision of a sustainable water supply for the SCRD, and the Sunshine Coast communities over time. We look forward to ongoing engagement with BCTS on the Mt Elphinstone South and North Watershed Assessments.

Mapping and Data Gaps

The Polar report improves the mapping of Chaster Creek and as such provides a service to our community as many tributaries are misplaced on existing maps. The report highlights further that the largest of the studied watersheds, the Chaster creek watershed, has become even larger, as the upper portion of Walker (or Inge) creek had been diverted some 30 years ago and has become the most western feeder of Chaster creek.

The report does not show the ditches draining the Town of Gibsons subdivisions in the east of the watershed that by nature are very flashy. The report unfortunately omits the important fact that because of these diversions there is a significant increase in risk of flooding in these feeder stream systems. Further, the tributaries of Chaster creek extend further upslope than shown on the Polar map. Thus, surface water is running in more kilometers of tributaries. This suggests that it is likely there is more water in lower Chaster Creek during flood events than was considered by Polar.

It is not surprising, given the lack of hydrogeological understanding, that the report neglects to identify full aquifer boundaries (including recharge areas) within the study area. It is our hope that BCTS will update the Mt. Elphinstone Watershed Assessment mapping to include full aquifer recharge areas boundaries.

We greatly appreciate the opportunity to engage with BCTS and Polar Geoscience Ltd. at the meeting held in Sechelt on March 22, 2023, and the invitation to provide detailed feedback on this study, directly to Polar. We have now provided 16 follow up emails and provided 39 photographs to Polar showing erosion and flood damage to the populated portions of Chaster Creek, which have not been fully considered in their report. We also sent Polar 11 photographs of flowing water (streams) upstream of their observations in tributaries of Chaster Creek, which don't appear to have been accurately mapped as riparian areas in the study. We have not included these photos and information in this submission as it would make the file unwieldy, and we trust Polar will integrate the information into their findings and recommendations.

NOTE: Chaster Creek is by far the largest of those studied, and its watershed encompasses much of Area E - Elphinstone and the recharge aquifer 560 recharge area. ECA members participate in ongoing stream keeping and monitoring of this creek. Hence our familiarity with it, and the fact that the report is missing information about it. We do wonder, if the study has not fully understood or considered the full impacts on a watershed like Chaster, what may have been missed with regard to the other creeks? And how might this affect the study conclusions?

Peak Flow Hazards (PFH)

We are concerned by the assessment of the peak flow hazard (PFH) that the Polar report provides as guidance. It appears that the estimates are chosen deliberately at the designation "low" to allow maximal clear-cut logging, thus favouring logging even when the data presented indicates that a creek should not have further logging in its watershed. For example, although the report recommends a 20% equivalent clearcut area (ECA) limit, logging is still recommended in the Chaster watershed that has a 33.9% ECA above the mouth.

During the two atmospheric river events of October and November 2021 there was significant flooding at the mouth of Chaster creek. The bridge to Chaster House has been closed due to abutment damage since that time. Chaster Park and Ocean Beach Esplanade flood regularly now because of the alluvial deposits in the estuary brought down the creek by high flow events. We are already below forest coverage needed for the Chaster creek watershed to retain water during extreme rainfall events and any additional logging will only increase the risk of downstream flooding.

Furthermore, the report states on page 112 that lower Chaster Creek between the mouth and the falls Point of interest (PoI #1 and PoI #2) have a "high" peak flow hazard. Yet in the conclusions point 9 (page 142 and other locations in the analysis) the report downgrades the hazard in Chaster Creek below Shirley Creek (i.e., the same area) to a "moderate" peak flow hazard. This area is impacted every year by high peak flows.

PFH for Shirley creek Pol #4 south of Russel Rd. is also assessed as moderate. Based on our observations it should be high. Russel Rd has washed out twice (in 2014 and 2018) and the newly replaced culverts were barely able to handle the atmospheric rivers of October and November 2021, with Shirley creek running very close to capacity. Note: this Pol is affected by the Walker/Inge Creek diversion.

The PFH values for Pol #6 Inge creek, Pol #7 (Tretheway spring) and Pol #8 (Co-op spring) are all assessed as low. They should be listed as high. Pol #6 is the combination of an unnamed creek & the diverted Walker/Inge creek. The creek washed out a resident's driveway (Jenean Rd) in 2021. Tretheway spring was flooding Reed Rd during the November 15, 2021, atmospheric river event and washed-out Reed Rd. during the October 15 atmospheric river event. Co-op spring was running to the top of the culvert (below Reed Rd) during 2021 atmospheric river events.

Tributary systems 3, 6, 6.1 and 6.2 are shown as discontinuous but in the winter peak flow period they contribute as much water as any of the other tributaries to the lower ravine area between Pol #1 and #2. This tributary system is very flashy due to developments in SCR D and Town of Gibsons lands. It has alternately eroded then filled in its channel passing through farmland. Peak flows in 2017 and 2021 led to wash out damage to properties including an SCR D water main break. This tributary has not even been assigned a PFH rating or given a Pol by BCTS, yet it affects the PFH in lower Chaster Creek as much as any other tributary.

These example flooding events in the Chaster feeder creeks are in strong contrast to the peak flow risk assessment listed in Table 6.2. Note: The 2021 atmospheric river events were rain only events and not rain-on-snow events that according to the authors of the Polar report are often responsible for producing some of the largest peak flows.

The Polar report highlights the fact that *risk identification and analysis* are provided by the hydrologist writing the report, but that *risk evaluation* is done solely by BCTS and that it is up to BCTS' risk tolerance criteria (acceptable, tolerable, or unacceptable) to decide on logging activity. **This decision process is unacceptable.** Risk tolerance must not be decided by the logging company. It must be decided by the local government representing those most affected by the risk and informed by independent third-party experts.

Effects of Urbanization

The report lacks consideration of the effects urbanization has and continues to have on the creeks. Damages in downstream locations on local creeks are the result of a combination of a century of poor logging practices on Mt Elphinstone and poor urban planning with structures that are too small or too close to creeks and ravines coupled with flashy peak flows due to extensive forest cover replacement by hard surfaced farm, road, and housing structures.

All our local creeks are under serious risk of flooding. Costly repairs to infrastructure occur annually. Efforts by local governments and MoTI to mitigate urbanization caused dangers must not be jeopardized by upstream logging.

Many small incremental changes have accumulated to make an untenable situation in urbanized areas. One more ditch doesn't change much. However, the sum of many years of development has made a considerable impact on the lower portion of the creeks in the area.

In its calculations Polar neglects to consider these effects because they weren't caused by logging. Yet regardless of what "caused" the effects to begin with, they must be accounted for. This is the most basic and fundamental starting point when it comes to determining **cumulative effects** of any activity.

It's bizarre that BCTS would not account for Cumulative Effects given that the BC government is currently doing Cumulative Effects Assessments on watershed hazards in the South Coast Region to support the "paradigm shift" in forest management practices to Forest Landscape Planning. And that preliminary findings of the CEA work shows that Mt. Elphinstone Watersheds have been hit hard by intensive logging.

Similarly, BCTS must not hide behind the notion that incremental logging will not create a noticeable effect downstream. Given the costly damage occurring in the urbanized areas an ongoing incremental approach to clear cut logging is not acceptable.

Salmon Spawner Impact

Chaster Creek supports Chum, Coho and Cutthroat Trout as well as a number of other species like crayfish, sculpins, and pacific lamprey. Salmon spawner counts carried out by the Sunshine Coast Streamkeepers Society (SCSS) from 2019 to 2022 have found 4, 108, 2, 13 live Chum respectively for each year. A number of dead salmon were also counted. More elusive, coho salmon are rarely counted but are definitely known to spawn in the creek because fry have been videoed in the lower ravine area. The other species are seen occasionally.

Salmon used to be abundant in Chaster creek. Over the years a number of changes have led to a drastic decline in fish numbers. Pool habitat is lacking and there are essentially no off-channel sanctuaries left for fry to thrive. The stream bed material has too many areas of sand and fine gravel that are unsuitable for spawning salmon. Both of these issues stem from high water flows. Large woody debris that would help form pools and direct flow into side channels have been swept away and rapid erosion of ravine walls brings in the less desirable bed material.

On the other hand, during low summer flows, the water in the lower creek area has warmed up to 20°C on hot days, a temperature that is approaching the upper limit for salmon bearing creeks. With global warming predicting more temperature increases, this could signal the end of salmon in our creeks. Loss of canopy cover by logging and development only exacerbates this problem.

Further, it has been noted that cool groundwater enters Chaster Creek in the summer. If logging disrupts groundwater flow in the near surface (Capilano) till, cool water refuge areas needed for salmon fry to survive warm summer days could be irreversibly lost.

Salmon spawning can be considered an indicator of the health of our watershed. Spawner numbers are strongly down from historic levels of hundreds of fish. Single digit counts of live spawners have been made in two of the last 4 years. Based on this, if anything, the watershed needs rehabilitation not additional logging.

Climate Change Projections

Climate change projections are incorporated in the report but (as stated by its authors), projections may have a high uncertainty and there is a big variability. It is however a fact that weather extremes (temperature, rainfall, snowfall, days of drought) are becoming bigger and more frequent than expected.

Annual precipitation averages are increasing, winters are wetter, while summers are drier. This impacts ecosystem function, e.g., the watershed's ability to hold and store water. These impacts, and their consequences, are plain to see in the [Chapman Creek Watershed](#).

The report does acknowledge that drought, thinning snowpack, rain on snow events and rapid runoff, high intensity rainfall, severity of rainstorms, changes in timing and duration of flows are all important to consider. It does not do enough to address these issues.

Heavy rains and flooding are an increasing challenge for rural communities. In [2018, heavy rains](#) knocked out roads across the Sunshine Coast. In 2021, Atmospheric river events devastated British Columbia as creeks blew their banks, landslides inundated and undermined roads cutting the lower mainland off from the rest of Canada. On the Sunshine Coast Redroofs Road blew out and residents were cut off for days; an evacuation order was issued for two cabins on Ocean Beach Esplanade while an evacuation alert was active for other homes in the area. Parts of the SCR D were on a boil water advisory for over a week while the SCR D was tasked with [managing a local emergency](#). The series of atmospheric rivers that plagued California in recent months were a stark reminder. With only a small change in the wind pattern these rivers could have drenched our area, again.

Healthy mature forests help mitigate the flooding and drought caused by climate extremes. Once the forests are logged out, their ability to support soils, hold water, and mitigate these impacts is lost, and we cannot get them back in a century. Why anyone would consider clear-cut logging forest in watershed areas that supply water for over 15,000 people, living in downstream portions of the watershed, is incomprehensible.

Conclusions

1. The Mt Elphinstone South Watershed Assessment Phase 1&2 **Report contains a lot of useful information.** The report and the opportunity for feedback is a welcome change to BCTS forestry planning practices.
2. The Report was **created to justify continued logging** in Elphinstone South Watersheds. It does not address critical points of community interest such as drinking water security, protection of public and private infrastructure and sustainability of salmon runs. It **omits to consider the need, or opportunity, for a change in land-use designation.**
3. The report **authors are not qualified to opine on the effect of logging on aquifers.** The risk assessment does not adequately account for risks to the aquifer or the number of residents dependent on Aquifer 560 for drinking water.
4. The report has **arbitrarily reduced the peak flow hazard rating** below the assessed value and well below the reality of on-the-ground damages in lower Chaster Creek to justify its conclusion to incrementally log Mt Elphinstone South Watersheds. This is one example of a creek we are very familiar with. We have not looked at the other creeks in this detail.
5. The **risk assessment methodology is flawed as it uses a comparative rather than a cumulative approach.** Particularly in analysing peak flow rates in populated areas. Comparison is not a reasonable way to measure real impacts. Further, the report equates damage from urbanization with damage caused by logging, seemingly to justify continued logging above BCTS' own risk threshold of 20% ECA.
6. The risk **assessment is missing critical information** on salmon counts, habitat assessments and water temperature measurements available from local Streamkeepers that verify the fragility of Chaster Creek salmon run. Again, Chaster is an example of a creek we are familiar with. We have not done analysis of missing data on other creeks.
7. Although climate change data is variable, it is well understood that climate events are increasing in severity, with far reaching impacts. Effects are well known, although challenging to predict and model. The reality of the severity and frequency of these events suggest we **need to take a more precautionary approach** in assessing risk and hazard of logging in watersheds for downstream communities and fish.
8. Given all of the above, we recommend that BCTS **defer Phase Three planning** for Mt. Elphinstone South until the watershed assessment for the entire Mt. Elphinstone watershed area is completed, and the above questions are answered.
9. Finally, we think the most practical path forward to resolve the ongoing and increasing conflict in the study area, is for BC Timber Sales **halt all forest development planning** in the recharge areas of aquifers 560 and 552 and **support a Water Sustainability Plan (WSP)** to conserve these source areas.