

RECREATIONAL VALUE FOR THE WATERSHED -- COLES NOTES

Skateboarders (*-- stay with me!--*) originally played on public roads, sidewalks, or parking lots. That was dangerous! But construction of engineered skate parks enhanced safety, and the sport improved quickly. Bikes, roller-blades, and scooters brought diversity into skate parks.

NOW – swap wheely-toys for canoes, kayaks, and boards. Create safe, accessible hydraulic features (waves, holes,) on easy rivers, and you have a white water play park – for competition or for recreation. “Freestyle” is the formal version, leading to world championships. But recreational playboating is just SAFE, CLEAN FUN – (but not for Vancouver Islanders -- the nearest play parks are in Alberta!)

In the Quw’utsun Watershed, there’s local infrastructure for many outdoor recreational and / or competitive sports: skateboarding, mountain biking, rowing, sailing, hiking, paragliding... They’re located on mountains, flat spaces, lakes, oceans... But riversports continue to be undeveloped. Recreational river infrastructure has been actively opposed – and for reasons which are not valid.

RECREATION AND THE COWICHAN WATERSHED BOARD, 101

Since 2017, river recreationists have actively served the Cowichan Watershed community in general, and the Cowichan Watershed Board (CWB) in particular. A few examples: --

Paddlers worked with CWB staff on the ad hoc group supporting the CVRD referendum on drinking water and watershed support. Our “letter to the editor” was published in the local paper.

When the Weir Replacement Project, and the WEIR READY campaign, were announced in early 2019, we worked on neighbourhood promotion via social media. Again, our “letter to the editor” made the local paper. (copy avail.)

When fund-raising for Weir Project engineering began, we provided letters of support, from our provincial agencies, to secure the BCSRIF grant.

On September 30, 2019, the Paddlesport Community presented to the CWB a proposal that recreational value be included in the weir design. Specifically, we requested that one or two small engineered play waves be implemented just below the new weir’s release gates.

The request stipulated that such features would NOT require additional water release, NOR would fish passage, habitat, or riparian areas be threatened.

Minutes from that meeting are clear. The Board voted in favour of our proposal. The Co-Chair was tasked with introducing us to the weir design team. We waited, but to no avail. We slowly became aware that our project had been excluded. **The Board did NOT notify us about our exclusion.**

Months later, the CVRD suggested that a funding issue had stalled our proposal – *“the BCSRIF Grant could not be used for purposes that did not directly benefit salmon.”* We knew that all along, but we assumed that additional funding from other sources would have been in the plans. Apparently not! The CVRD refused our offer to collaborate in pursuit of additional funding. The CWB remained silent.

Believing that the RATIONALE underlying our proposal was still favoured by the CWB, we initiated our own fund-raising campaign. We’re not lazy -- we raised close to \$ 11,000 dollars in four months.

But then we were told that *“engineering was too far advanced to consider our project”*. So we engaged two world-class River Engineers, who specialize in recreational river-design. One visited our site, and examined Stantec’s design. The conclusion? *“ONE recreational wave, IS clearly feasible. And it’s not too late to integrate the design into the weir plans”*. But project management refused.

THAT’s the quick background of our project: **We NOW request that the CWB collaborate WITH us to reinstate our project into the weir design. OR, if that option is not feasible, we request that the CWB collaborate with us to seek and develop an alternative site on the Quw’utsun.**

This request adheres to the following principles:

- No blame; No fault. We can’t alter past errors. But we can surely work to ensure a just future.
- Hard on the Problem; Easy on the People. We use no names in this document.
- Transparency and full disclosure. Throughout our campaign, we have hidden no pertinent information or transaction.
- **In this new millennium, only a WIN / WIN solution is acceptable. We request (an) informal meeting(s), comprising two or three CWB members &/or staff, plus two or three members of the paddlesport community, in a neutral location.**

Hopefully, from open discussion will come ideas for solution, to be ratified ultimately by the Board and by Recreational River Users.

We’d be remiss not to offer our THANKS to Danni Paydli for her unstinting professionalism! (Rick owes you a tandemium ride!)

Further pages, below, add details or discussion points, about how our project will benefit the Quw’utsun watershed and support the CWB. **Read on !** (Coffee is advised!)

INTRODUCTIONS: WHO ARE WE?

We're one of the Board's **Target Working Groups**. Our mandate -- *Watershed Connections*.

We're river recreationists – canoeists, kayakers, rafters, boarders, and tubers -- four clubs, hundreds of Island participants.

We honour Cowichan Tribes and other Indigenous nations for our use of their traditional Island rivers. We're thankful for canoes, kayaks, and paddles, derived from Indigenous designs. We'd love to see traditional river canoes back on the Quw'utsun Sta'lo'.

RECREATIONISTS ARE WATERSHED STEWARDS: WHAT ARE OUR CHOPS?

Here are some examples:

- We combat climate change, by promoting and modelling gravity- and human-powered recreation – no emissions, no litter! We specialize in promotion, youth engagement, education, safety, and fun.
- Our activities are fish-friendly -- no threat to spawning beds, no riparian damage, no danger to habitat.
- We worked on many formal River Cleanup events – on both the Lower and Upper Cowichan. (BUT we clean up rivers on every trip!)
- We worked on every Quw'utsun Sta'lo' Skweyul.
- We worked on the WEIR READY campaign. We spread the word, via social media, among local neighbourhoods.
- When the Board applied for the BCSRIF grant, we answered staff's urgent call to provide letters of support from our Provincial Agencies. (We supplied the letters. They must have worked -- the grant was secured.)
- (And more!)

The fact is – the river recreation community has never refused to support the CWB on request.

Now it's time for Recreation to ask the CWB for support. That's how partnerships work!

CURRENT WATERSHED ISSUES, AND THE NEED FOR RECREATION

Issue No. 1 – CLIMATE CHANGE:

“I used to think the top environmental problems were biodiversity loss, ecosystem collapse and climate change. I thought that thirty years of good science could address these problems. I was wrong. The top environmental problems are selfishness, greed and apathy, and to deal with these we need a cultural and spiritual transformation. And we scientists don’t know how to do that.”
(Gus Speth, Author and U.S. Advisor on Climate Change)

Let’s start here: Increasing summer drought conditions decreases river flows. That, in turn, endangers fish stocks -- salmon and steelhead. And fish are our highest priority!

(We already knew that! That’s why we’ve always supported the CWB and the Weir Replacement project!)

But effects of climate change go beyond the scope of fish biologists. Understanding any ecosystem must consider DIVERSITY and BALANCE -- among organisms, micro-climates, weather, energetics, terrain, water, nutrients, air quality, pollution... Oh! And climate change!

Naturalists and biologists, do good work MITIGATING damage from climate change. But mitigation only eases symptoms, it does not cure the disease.

Climate change is HUMAN-caused -- it’s a SOCIAL issue. Combatting it requires not biological or physical sciences, but rather social sciences: psychology, sociology, geography, economics, history, education, political science, advertising, theology, health, and recreation.

Respectfully, we point out that that replacing the weir is an example of *mitigating the damage*, not *solving the cause*.

Your Target Working Group asks, “Shouldn’t our new weir oppose the cause, as well as mitigate the damage, from climate change? Where’s the DIVERSITY in the plans? Where are the social sciences? We proposed one major strategy, and a couple of minor initiatives. To date, all have been rejected.

Our Target Working Group’s “major strategy” is to integrate recreational value -- ONE play feature – into the replacement weir design (Or, if necessary, at an alternative site.) This public infrastructure will be easily visible to the public. It will be a show-case for diversity, and a forum for public education and discussion. And live activities are much more effective than pictures on a sign-board!

Above all, this new infrastructure will demonstrate effective social sciences at work, combatting climate change, through education, promotion, engagement, and modelling. And paddlers are respected for their safe environmentally-sound programs, their positive social values, their commitment to safety, and their friendliness.

Issue No. 2 – PUBLIC HEALTH

*"People who cannot find time for recreation are obliged sooner or later to find time for illness."
(Unknown)*

We recall a presentation by Dr. Shannon Waters, at a recent Quw'utsun Sta'lo' Skweyul. Her message suggested that watershed health, and human health, are inseparable.

Among watershed residents, social issues like poverty, mental illness, substance abuse, homelessness, unemployment, theft, vandalism, violence, or despair abound. Those issues may, in turn, divert attention and resources from other watershed issues.

As for strategies, Dr. Bonnie Henry, during the COVID pandemic, told us all to get outside and get some recreation. And recreational outcomes aren't just about physical exercise. They include mental, emotional, social, and spiritual benefits.

Best of all, recreation is proactive, as well as reactive – it PREVENTS as well as CURES. (Minor Sport understands that!)

Recreation is a key component in many professional responses to health problems. Addiction recovery programs, and youth rehab projects, often feature adventure-based activities with wilderness paddlesport as the main focus. And for the mobility-challenged, paddlecraft are easily adapted for use. Falling into water is less harmful than falling onto pavement.

There are no complaints from fish.

So -- integrating healthy recreation should be a slam-dunk in our watershed community – YES ??

NOPE! – not in the Quw'utsun watershed!! For many years the local watershed stewardship movement has disregarded the importance of human health in favour of fish health. Recreation, as a social science, has been shot down, in favour of traditional "hard" sciences. Where's the diversity? (examples doc.)

Too bad! It takes healthy people to nurture a healthy watershed!

The inclusion of recreational infrastructure on the Quw'utsun River will affirm awareness that the health of humans is integral to the health of the watershed -- including fish. It will also exemplify the notion that diversity is alive, well, and embraced in our watershed, and that social sciences are crucial to the health of our river.

For youth and adults, a play feature will be an opportunity to engage in a new and reasonably-priced sport, which can be both competitive and recreational. And for spectators, it will showcase youth and adults having safe, healthy fun, while maintaining sound environmental standards in our watershed.

Issue No. 3 – PUBLIC SAFETY.

The death of thousands of young fish, in the summer of 2023, attracted wide attention -- and for good reason! It was a disaster of the highest magnitude. Still, we mourn.

That event followed another Quw'utsun fatality, one year earlier. It was an adult tuber, who missed the take-out, and perished in Marie Canyon at low water. This was a man of middle age, healthy, known for safe practices in many outdoor activities, but new to river travel.

Certainly, BC Parks responded proactively. They collaborated with paddlesport reps to improve signage. But if the rest of the Quw'utsun Watershed community mourned this loss, or encouraged positive actions to improve safety, we're not aware of it.

We note that the Quw'utsun is a "*Canadian Heritage River*", and "*Recreational Value*" is one of three criteria supporting that designation.

That's ironic, because the *BC Coroners Service* has named the Quw'utsun "*The Most Dangerous River on Vancouver Island.*" (doc. avail.)

Further, the CWB published "*A 10-Year Monitoring Report on The Cowichan: A Canadian Heritage River*" (2013) We respectfully point out that the Paddlesport Community was neither consulted, nor invited to contribute to this report.

IF we had been part of the team, we would have provided pertinent insights into both safe, and unsafe, features of our Heritage River.

It might have saved a human life.

One of two "minor initiatives" proposed by this Target Working Group was to create an informal "task force" or "committee," to include paddlers, anglers, parks officials (for all levels of local government), first responders, and local residents. This group would monitor the river for emerging hazards, and initiate appropriate action to communicate, mitigate or (rarely) remove such hazards, as needed.

Our initiative, was flatly refused.

It might have saved a human life.

Playboating on a recreational wave will be a safe alternative to floating the river – especially for kids. Even the "Tube Run" (Weir to Little Beach) includes significant hazards to untrained river users. Coaches or parents working with youngsters on a safe wave, in a permanent location, will find supervision and instruction much easier. And there's no need for shuttle vehicles! Washrooms and garbage cans will reduce "littering" and "peeing in the river". Above all, fish will be happy with natural-looking waves and eddies, as designed by professional engineers.

Issue No. 4 – SUPPORT FOR THE QUW’UTSUN TOURISM INDUSTRY

So, why spend money on a play feature on the Quw’utsun?” Simple! White water play features pay for themselves – they generate significant amounts of tourism revenue!!

Check out **Cascade, Idaho** (population around 1,000), located about 100 miles north of Boise, on the North Fork of the Payette River. In 2010, **Kelly’s Whitewater Park** opened in Cascade. It’s a small park -- an amenities building, and 5 waves, from beginner to expert -- open to the public 24 / 7 – no charge!

Summer flows are dam-controlled, guaranteeing predictable waves. You’ll see crowds of boaters and boarders at KWP. But you’ll also see anglers hanging around. They know that fish love play parks!

But – here’s the Bonus! After TWO years of operation, KWP had generated close to \$ 1.5 million per year (USD) in economic benefits to Cascade and area. And this amount increases annually. (Doc. *U. of Idaho – “Economic Impact of Kelly’s WW Park, Cascade, Idaho.”* Link avail.)

Meanwhile, back on the Quw’utsun, the Weir Replacement Project promotes ONE outcome only – support for fish stocks in summer drought conditions. Only one significant funding source (BCSRIF) was tapped to cover engineering costs. (Diversity? Not much!)

If weir proponents had increased their list of outcomes, it would have opened up a wide array of funding sources. There were MANY government grants available for COVID-Recovery Tourism Infrastructure. The new weir could have benefitted not only fish, but also the local tourism industry.

Our proposed play wave will function as long as the weir is “on control” – roughly April to October. In tourism lingo – that’s not just “*the summer season*”, but also both “*shoulder seasons*” -- call it FIVE OR SIX months. (And that IS huge for the local tourism economy.)

AS noted, paddlers already raised \$11,000 toward recreational engineering for a playfeature at the weir.. (Copy of engineering report avail.) We could have – would have -- pursued further grant funding, but were prevented from doing so because we were not recognized as official reps of the CWB.

Regardless of location – weir or alternate site -- IF our project is feasible from an engineering stance, our commitment is to be very active, working with the Board, on fund-raising initiatives.

The addition of one engineered wave – at the weir, or elsewhere on the river -- has the potential to generate significant tourism revenue – not as much as might be accrued from a complete whitewater play park, but enough to benefit the local economy.

Implementing such an addition is not like dividing a pie. Giving a slice of support to recreation will not diminish the slice for fish. ALL will get pie! Embracing diversity will enrich fish, and also people, making it more truly a community project.

Pie for all!

Issue No. 5 – THOSE WHO PAY THE BILLS:

Government funding for Weir Replacement comes largely from taxpayers. We believe the Weir Replacement Project is, therefore, public infrastructure.

That raises questions about consultation with taxpayers: How will the new weir benefit them?

During the engineering phase, (summer or 2020,) the CVRD staged a public input opportunity about the weir design. There was an online survey, and a PlaceSpeak forum for comments. Congratulations to the CVRD for a clear, simple process, with clear questions, and with (mostly-unbiased) reporting afterward – and all during a pandemic!

As to the sincerity of this initiative, we respectfully wonder why the survey wasn't launched at the start of the engineering phase, rather than part-way through. An earlier start would have been more useful about possibly integrating suggestions or alterations.

For each question in the survey, results from respondents were presented on 3 graphs:

- **ALL respondents;** (239)
- **LOCAL residents / property owners** (51 % of respondents)
- **NON LOCAL residents / property owners** (49 % of respondents)

Each graph reported on 4 possible opinions:

- ***I would REALLY LIKE to see this feature/option***
- ***I would LIKE to see this feature/option***
- ***I am NEUTRAL about this feature/option***
- ***I DO NOT WANT to see this feature/option***

Now -- the question: ***There is potential for the outflow to serve as both a fishway and a watercourse (play channel). Would you like to see recreational opportunities included in the design if possible?***

Here are results from ALL respondents (Omitting “Neutral” responses)

- **REALLY LIKE and LIKE – 78 %**
- **DO NOT WANT – 10%**

Results from LOCAL

- **REALLY LIKE and LIKE – 59 %**
- **DO NOT WANT – 21 %**

Results from NON LOCAL

- **REALLY LIKE and LIKE – 96 %**
- **DO NOT WANT – 4 %**

Two points are salient:

FIRST, the results are clear – YES, taxpayers WANT our proposed play feature implemented in the weir design! They clearly want recreation. They clearly value diversity.

SECOND, the results were quietly and completely Disregarded. Taxpayers' opinions have been ignored and tossed aside. NO changes have been made toward implementing taxpayers' wishes concerning our play-feature proposal.

“What happened to democratic process in the Quw'utsun Watershed?” we wonder. Where's the respect for taxpayers, who paid for the weir?

TO SUMMARIZE – In accordance with our mandate as a CWB Target Working Group, (“Watershed Connections,”) the river recreational community has re-introduced a proposal originally adopted by the Board in 2019. That proposal is – *“To add recreational value into the Weir Replacement Project, by integrating one single playwave into the weir design, to be located in the outflow channel of the new weir.”*

However, in the interest of supporting the “give-and-take” of collaboration, we are agreeable to accepting an other location on the Quw'utsun ONLY IF PRELIMINARY ENGINEERING INDICATES THAT THE ALTERNATE LOCATION IS FEASIBLE.

This document has presented discussion points concerning five different watershed issues which currently affect the Quw'utsun. Further, we mention ways in which our proposal will address these issues:

1. Combatting climate change;
2. Attaining and maintaining health – for fish, for humans, and for the watershed;
3. Ensuring that our watershed is safe;
4. Generating tourism revenue which will support local communities;
5. Reaffirming that the needs and wishes of those who paid for the new weir – taxpayers -- are fulfilled.

In conclusion, here's a quote from the Board's webpage: *"Nutsamat kws yaay'us tu qa': We come together as a whole to work together to be stronger as partners for the watershed."*

We've always been there for the "work together" part! Now we can look forward to enjoying “partner” status, with a river play feature to seal the partnership! Sleeves rolled, gloves on...

PADDLES UP!

Play Features & Play Parks 101

Have you watched skateboarders play in skate parks? They do tricks with their boards on engineered features. You'll see bikes, roller blades, and scooters too! (Diversity!)

Now -- think '*river*'. Replace concrete structures with river waves or hydraulic holes.

Swap wheely toys for canoes, kayaks, boogie boards, or surf boards, and – have fun! Diversity (on the river!)

You can surf, spin, cartwheel, loop – for fun, OR for Freestyle competition. YES – Freestyle IS an International Championship Sport! And sports start with KIDS!

“Play features” (waves) form when water flows over obstacles -- rocks or ledges -- on the river bed.

What makes a wave *good* for play?

- Size and shape of the wave: not too big, not too small; not too steep, not too flat
- Safety of the location: away from log jams, waterfalls, and spawning beds.
- Access to the wave: eddies adjoining the wave, providing easy entry / exit.

Two variables define play waves:

- Flow, (volume and speed of the river,)
- Shape and size of the obstacles

Play waves are friendly for fish passage! Engineered waves are just as attractive to fish as natural waves are.

What's wrong with natural waves? Nothing, sometimes! However when flows change, natural waves may appear or disappear. But engineered features are predictable, accessible and safe.

Creating a wave involves controlling one, or both, of the variables defining the feature:

1. Control the obstacles: - Wave shapers (hydraulic flaps) are costly to install, and use. They consume power, and they must be adjusted continually, depending on river flows. NOT OUR CHOICE!

2. Control the flow: Engineered features (rocks or ledges on the riverbed) are low-cost to install and maintain, and last indefinitely, AND they look natural – to people and fish! Flows are easy to control. That’s what weirs do!

Constructing obstacles while the river-bed is exposed for weir-construction minimizes disruption to the river AND is cost effective.

When a new weir is in the plans, integrating a play wave should be a “slam-dunk!”

For background -- *What’s a WHITE WATER PLAY PARK?*

Create several waves in one location, and that’s a Play Park! Features might include big waves for experts, and little waves for novices. Amenities often include vehicle parking, washrooms, garbage cans, picnic tables -- and possibly camping.

There are many whitewater parks in the U.S. But very few in Canada! Calgary’s Harvie Passage Park bypasses a killer weir on the Bow River. There’s a park on the Kananaskis River near Canmore. Saskatoon is considering a park as part of a hydro project. Quesnel envisions a park downtown on the Quesnel River.

“Why spend the money?” Simple! White water parks pay for themselves – they generate huge amounts of tourist dollars!! (Documentation available.)

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We’re not proposing a complete white water park on the Cowichan! We ask only for ONE wave, to be created immediately below the outflow from the new weir.

What do white water play parks look like? Here’s a couple:

Kelly’s Whitewater Park, Cascade, Idaho:

<https://www.youtube.com/watch?v=3l02FF5EK8>

Manchester Whitewater Park, Iowa:

https://www.youtube.com/watch?v=vtCRh_YDUYU

*White water parks are **WIN / WIN / WIN / WIN** – for recreation, for fish, for the tourism industry, and for minor sport !!*

WEIR For Recreation:

Positive Outcomes

A **BOOST** FOR THE ECONOMY:

Why spend money on recreational features in the weir design?"

Simple! White water features pay for themselves – they generate huge amounts of tourist dollars!!

Here's an example: **Cascade, Idaho** (population about 1,000) is located about 100 miles north of Boise, on the North Fork of the Payette River.

In 2010, **Kelly's Whitewater Park** opened in Cascade. It's a small park, with an amenities building, and 5 waves ranging from beginner to expert. The park is open to the public – no charge.

Since then, KWP generates approximately **\$ 1.5 million per year**, in economic benefits to Cascade and area. (This amount increases annually.)

"Economic Impact of Kelly's WW Park, Cascade, ID"

S

Study by University of Idaho -- (See pp 15, 16)

<https://static1.squarespace.com/static/5617ffade4b0f733b489eab8/t/5e2a1323d32b23b07d659e5/15798157180>

We're not proposing a complete white water park on the Cowichan! We ask only for one wave, to be created immediately below the outflow from the new weir.

A **BOOST** FOR DIVERSITY -- HEALTHY FISH, AND A HEALTHY COMMUNITY:

Check out this excerpt from a video, showing how a whitewater park increased well-being for an entire community: People + Fish = Diversity!

https://www.youtube.com/watch?v=vtCRh_YDUYU&t=229s

Manchester Iowa video:

Full Video:

https://www.youtube.com/watch?v=vtCRh_YDUYU

Excerpt:

https://www.youtube.com/watch?v=vtCRh_YDUYU&t=229s

RECORD OF MEETING

Date and Time: 28 June 2021, 10:00-11:00 AM MDT
Meeting Location: Web Conference

Prepared By: Darren Shepherd, M.Sc., P.Eng. – SG1 Water Consulting Ltd.
Issued Date: 5 July 2021
Revision Number: 0
Attachments: *None*

Attendees: Rick Bryan (RB) – Vancouver Island Whitewater Paddling Society (VIWPS); rickbryan@shaw.ca
 Edmond Duggan (ED) – VIWPS; edmond_duggan@yahoo.ca
 Gary Lacy (GL) – Recreation Engineering & Planning (REP); gary@boaterparks.com
 Darren Shepherd (DS) – SG1 Water Consulting Ltd. (SG1); Darren@SG1water.ca

Distribution (via email): All attendees

Re: **Lake Cowichan Weir Modification Project**
Follow-up to SG1’s Site Visit and Discussion on Path Forward

Item No.	Discussion	Action By
1	<p>DS present the following proposed agenda for this meeting, which was used to steer the conversation:</p> <ul style="list-style-type: none"> i. Discussion of work completed to-date by the Cowichan Valley Regional District (CVRD) and its subconsultants. ii. Review of observations and findings at the Lake Cowichan Weir (Site “A”). iii. Review of observations and findings at the Greendale Trestle Bridge (Site “B”). iv. Feasibility of developing a recreational hydraulic feature(s) as part of the weir modification project, including user safety and integration with existing and proposed infrastructure. v. Strategies for collaborating with CVRD and others in having a recreational hydraulic feature(s) incorporated into the weir design modifications, including approaches to funding for engineering design and analysis, user safety plans, and confirmation of hydraulic and fisheries performance. vi. Path forward for the VIWPS, including discussion on REP and SG1’s involvement in subsequent project phases 	Info
2	<p>DS noted that a local news article by Robert Barron, dated 5 March 2021, states that “In 2019, senior levels of government announced the weir project would receive \$4.08 million over three years from the joint-federal/provincial BC Salmon Restoration and Innovation Fund.” RB mentioned that the \$4.08M in current funding includes a survey/assessment of lakefront properties to delineate and define the natural boundary of Cowichan Lake.</p> <p>The article suggests that this funding did not include budget required for construction of the proposed weir modifications. DS wondered what portion of the current funds, if any, could be allocated to improving the recreational qualities of the weir modification</p>	Info

Item No.	Discussion	Action By
	<p>project. DS noted that incorporating a recreational feature(s) into the design of the modified facility could be done in a manner that improves fish passage, thus possibly making it a fundable component of the work.</p> <p>RB mentioned that external funding is available for construction of the proposed walkway structure (bridge) over the facility as depicted in Stantec’s preliminary design presentation from 10 December 2020.</p>	
3	<p>DS spoke to the overwhelming response from both local and non-resident respondents for the weir modification project to serve as both a fishway and a watercourse, as noted in Stantec’s Cowichan Valley Weir Design [Public Survey] report dated 22 July 2020. It is presumed that, over the past year, the CVRD and Stantec have assessed the feasibility of incorporating a recreational feature into the design. RB stated that the CVRD has not released any new information on the project for nearly a year.</p>	Info
4	<p>Select field photographs from the site visit by DS on 22 June 2021 were presented and salient site features were discussed. The weir facility was operating on control with discharge gradually being reduced over the span of an approximately one week to a set flow rate of approximately 7 m³/s. At the time of the site visit, discharge on the Cowichan River below the weir was on the order of 8-9 m³/s with all the flow being released through the north half of the outlet structure (i.e., two of four gates open). The head drop through the outlet structure was on the order of 0.5 m to 0.6 m with a relatively even flow distribution among the two open gates.</p> <p>Being a hot summer day, there were several tubers observed on the river throughout the day. Those who chose to put in at the dock on the south shore at Saywell Park all floated (or hand paddled) downstream with no intention of heading upstream to recreate in the vicinity of the outlet structure, weir, or boat lock.</p>	Info
5	<p>ED noted that the CVRD is planning to provide the public with a project update on 8 July 2021 from 6:00-7:00 PM PDT. The link to this online meeting is https://cowichanlakeweir.ca/july-8-project-update/. The meeting will presumably be hosted by the CVRD with input and co-presentation by Stantec Consulting Ltd., the engineering firm hired to design the weir modifications. The CVRD is requesting that attendees submit their questions in advance through the webpage.</p> <p>ED and RB suggested that DS and GL attend the meeting, if available. RB also encouraged DS and GL to submit questions in advance if desired. DS stated that he would prefer to see how the meeting evolves and then, presuming it is possible, submit questions at the end of the presentation during the scheduled one-hour Q&A session. RM said that he will encourage the VIWPS members and resident of Lake Cowichan to attend the project update meeting and to submit any questions they might have in advance.</p>	Info
6	<p>ED stated that incorporating a recreational amenity into the weir modification may need to consider having a no boating period during the fall salmon run, which typically starts once discharge on the Cowichan River reaches 10 m³/s or higher. ED further noted that such flow rates occur in mid-September or October when paddlers are usually boating other rivers and sections of the Cowichan River anyway. Therefore, having an no boating period to accommodate fish is not likely to pose an issue regarding usability.</p>	Info

Item No.	Discussion	Action By
7	<p>DS expressed concern over the ability of Stantec’s proposed fishway structure to successfully pass fish. He wondered whether the design had been hydraulically evaluated at this point in the project, or if it remains in a conceptual state with limited to no analysis supporting the design. DS and GL both agreed that fish passage could likely be improved by replacing the proposed highly engineered fishway with one or two nature-mimicking drop structures in series, separated by recovery pools. Such a design change would serve double duty in providing fish passage and a recreational hydraulic feature for a wide range of river users. GL mentioned that whitewater drop structures can be designed to accommodate fish passage in both directions. DS spoke of successful upstream migration of salmonids beyond the man-made recreational hydraulic features on the Bow River in Calgary at Harvie Passage.</p>	Info
8	<p>DS explained how REP and SG1 recommend constructing a combined fishway and watercourse along the right (south) bank, adjacent to the outlet structure where Stantec currently intends to construct the new fishway. This location was chosen over the raised overflow weir section (between the island and boat lock) for the following reasons:</p> <ol style="list-style-type: none"> 1) It allows for easy access to the recreational feature by river users of all types. 2) Spectators would have good access to the area for viewing river users as they play on the water. Bank access is also beneficial for those running lessons as it allows beginner paddlers to progressively make their way into the water. 3) There is direct and easier access to parking in Saywell Park. 4) Rescue personnel would have quicker and easier access to the site should an incident occur. 5) It would be easier and more enjoyable for tubers and paddlers alike to portage along the right bank after floating through the watercourse rather than trying to attain the channel (probably only possible in a slalom kayak). <p>The new waterway would be designed to meet the minimum flow requirements for fish passage while providing sufficient water for recreational whitewater use during the boating season while the facility is operating “on control.” From an operational perspective, it may be necessary to regulate one or more of the gates at the outlet structure to control flow releases to the river. River users could be kept away from the forebay of the outlet structure through use of a floating buoy line and appropriate safety signage. REP and SG1 have experience in designing whitewater parks so that river users stay away from restricted and potentially unsafe areas. While there are always issues and challenges regarding public safety around dams, those anticipated at this site are not insurmountable.</p> <p>DS and GL are not in favour of incorporating recreational features into the new weir, because (i) it might lead to safety issues and/or incidents between boaters/tubers and motorized boats that need to use the boat lock on the left (north) bank; (ii) the feature would not be easy for all user types to access unless they floated in from the boat launch above the boat lock; and (iii) it could end up being challenging for rescue personnel to access the area and respond quickly to an incident. However, with the weir being raised an additional 0.7 m, it should be hydraulically assessed to ensure the hydraulic jump that forms at the drop exit is not hazardous or life threatening to river users. Mitigative measures should be taken to eliminate any potential for a strong retentive hydraulic and/or towback from developing over the range of expected</p>	Info

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	outflows - - even if weir operation does not coincide with the boating season. REP and SG1 have many years of experience in eliminating hazards at overflow weirs.	
9	RB stated how the Cowichan River is one of the most heavily studied waterbodies on Vancouver Island. Therefore, it will be important for us to convince the CVRD and other stakeholders that our conceptual design alternative provides an improvement on what Stantec is currently proposing. DS wondered how much engineering analysis has gone into Stantec's work at this point since the information and updates provided thus far appear rather high-level conceptual and preliminary in nature.	Info
10	GL raised concern over Stantec's proposed fishway being extremely hazardous to river users. While it may not be intended for river users to recreate above the outlet structure, the ported fishway could be very dangerous and create a drowning hazard.	Info
11	<p>RB stated that there appears to be very little consideration on human use as part of the weir modification project. For this reason, we cannot assume that user safety is being held in high regard. CVRD's team seems to lack the expertise and experience in evaluating and incorporating recreational hydraulic features into weir/dam improvement projects. The hope is that the CVRD will see merit in engaging with REP and SG1 on this important aspect of the project.</p> <p>GL and DS stated their firms would prefer to work alongside Stantec as opposed to working as one of their subconsultants. Our experience is that projects of this nature work best when the designers form a partnership and both report directly to the owner/prime consultant.</p>	Info
12	<p>ED expressed concern with "pulling the safety card" on the weir modification project as it could cause the stakeholders to shut down the project altogether to avoid all liability and risks. DS thought that user safety is paramount to the success of the project and worth discussing regardless of its potential implications. RB stated that there is validity to our arguments and concerns over user safety.</p> <p>GL surmised that Stantec's lack of discussion on user safety could be stemming from them not being aware of the approaches and measures involved in designing and incorporating recreational hydraulic features into fish passage systems (i.e., ignorance over the matter as opposed to intentionally avoiding). DS concurred and is hopeful that Stantec will see REP and SG1's involvement as an opportunity to improve the outcome of the project and gain further support and confidence from the public regarding its design. All agreed that it would be a missed opportunity if recreational amenities were not incorporated as part of this project, especially given the strong outcry from the public to do so.</p>	Info
13	<p>DS and GL discussed how developing a whitewater feature at the Greendale Trestle Bridge (Site "B") is not feasible for the following reasons:</p> <ul style="list-style-type: none"> ▪ Poor access from the north due to a very steep and heavily vegetated bank slope. The road (cul-de-sac) on the south bank is narrow and no parking spaces are available adjacent to the toe of the bridge approach. ▪ Limited parking on the north overbank, with no potential to increase the size of the parking lot due to the memorial gardens. ▪ Insufficient hydraulic drop (head) at the existing rapid; the river would need to be constricted by a considerable amount to produce sufficient head for a 	Info

Item No.	Discussion	Action By
	<p>desirable whitewater feature, which in turn would raise water levels in the reach upstream.</p> <ul style="list-style-type: none"> ▪ Any changes to the channel geometry would need to ensure that no impacts are made to the existing buried pipeline crossing (a significant length of the pipeline is exposed along the north bank due to bank erosion). <p>DS further stated that creating a whitewater feature at the trestle bridge would likely require the VIWPS to come up with 100 percent of the funding rather than incorporating recreational features at Site “A” using money available through the BC Salmon Restoration and Innovation Fund.</p>	
14	<p>RB stated that making any channel modifications at Site “B” would likely be a non-starter if the reach in the vicinity of the Greendale Trestle Bridge happens to be a spawning bed.</p>	Info
15	<p>RB mentioned the feasibility of developing a recreational whitewater feature at Little Beach where the tubers typically take out. DS confirmed that this site is out of the question as there is insufficient head at the hydraulic control (riffle) immediately downstream from the take-out. In addition, ED noted that areas of the river at the Little Beach take-out are known to be spawning beds. Over the years, ED has observed salmon spawning along the left (north) bank just below the beach area.</p>	Info
16	<p>DS recommended that a collaborative stance be taken in convincing the CVRD and other stakeholders to consider incorporating a recreational amenity into the modified design of the Lake Cowichan Weir. The objective should be to work with the CVRD and Stantec to come up with a design concept that addresses the public’s needs, desires, and concerns regarding instream recreation. The VIWPS is encouraged to find ways to become more of an official stakeholder in the project rather than being seen as a local grassroots entity that wishes to oppose or critique the proposed development.</p>	Info
17	<p>RB believes there is still lots of time to work with the CVRD, designers, and local politicians on coming up with a suitable design for the project, because no party has yet to show a willingness to serve as the license holder. DS expressed concern that Stantec might not be willing to revise the current design at this stage, using the excuse that they are too far along with the detailed (final) design to make substantial changes. The upcoming project update meeting on July 8 will hopefully shed some light on the status of the modified weir design elements.</p>	Info
18	<p>RB is of the opinion that the VIWPS should go into the July 8th project update meeting intent on asking some pointed questions based on discussions held herein with REP and SG1 regarding what Stantec has done to-date and what still needs doing before the final design can be accepted.</p> <p>RB questioned whether REP and SG1 should openly voice their opinions during the project update meeting on July 8. Responses were as follows:</p> <ul style="list-style-type: none"> ▪ DS is concerned with potentially putting the CVRD and Stantec on the defensive. He suggested that it might be better for SG1 to be a “fly on the wall” during the meeting and request a private audience with them afterwards if we all feel it is necessary to do so. DS made it clear that this does not mean the VIWPS should ask questions or raise concerns during the meeting. 	Info

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	<ul style="list-style-type: none"><li data-bbox="358 289 1260 415">GL thinks that time is crucial and of the essence. He implored that the VIPWS do what they can to get a seat at the table before Stantec gets too far along with the design and is no longer willing to incorporate changes from a river users' perspective regardless of how meaningful and important they might be.	
19	RB plans to prepare a set of questions/comments to ask the CVRD and others in advance of the July 8 th project update meeting. He plans to circulate them to ED, GL, and DS for review and feedback prior to submitting them to the CVRD.	RB (6-Jul-2021)

** END OF NOTES **

SG1 Ref. No. 10222

25 August 2021

VANCOUVER ISLAND WHITEWATER PADDLING SOCIETY

P.O. Box 193
Ucluelet, BC
V0R 3A0

Attention: Mr. J.R. (Rick) Bryan
Project Lead

Via email: rickbryan@shaw.ca

**Re: Lake Cowichan Weir Modification Project
Engineering and Technical Support with Recreational Hydraulic Issues and Concerns
Follow-up to Recreational Memo Discussion with CVRD and Stantec**

Dear Mr. Bryan:

This memorandum is a follow-up to a technical meeting involving key personnel from the Vancouver Island Whitewater Paddling Society (VIWPS), the Cowichan Valley Regional District (CVRD), Stantec Consulting Ltd. (Stantec), Recreation Engineering and Planning Inc. (REP), and SG1 Water Consulting Ltd. (SG1) that was held via web conference on 18 August 2021. The CVRD retained Stantec to develop the engineering design for the Lake Cowichan Weir Modification Project. REP and SG1 are acting on behalf of the VIWPS to provide engineering input and technical support regarding instream user safety and the potential for incorporating recreational amenities into the proposed modified design of the facility. Both SG1 and REP have been in the business of designing river improvement projects for over 35 years, including public recreational and safety projects, fish passage projects, dam removal / rehabilitation projects, and riverside parks and greenways.

This summary is based on discussions held during the August 18 meeting along with a review of the draft Preliminary Design Report by Stantec, dated 4 June 2021, and the Final Design Presentation by the CVRD and Stantec held online in a public forum on 8 July 2021 and attended by REP and the VIWPS. In addition, Darren Shepherd of SG1 conducted a site reconnaissance on 22 June 2021 when the weir was "on control" and the river discharge was being ramped down and close to its mandated set point of 7 m³/s. The information and observations gathered on this project have allowed REP and SG1 to thoroughly review and to provide meaningful input on the weir modification project.

The CVRD stated at the outset of the meeting that (i) the final design of the weir modifications is now complete as per the terms of the funding agreement and (ii) they have no desire to revise the proposed final design concept. We were informed that the funds for this project are strictly for fish improvements, not for recreational improvements. It was also made clear that the only way to possibly include recreational amenities as part of the project would be to utilize the reach of the Cowichan River immediately downstream of one of the four control structure gates; under no circumstances would the

design or layout of the proposed south abutment fishway be modified to accommodate boat passage or river users. Developing a recreational amenity (in the form of a playwave feature) by modifying one of the control gate bays and utilizing its outflow may be feasible from an engineering perspective; however, such an approach would require the facility operator to release flow past Lake Cowichan Weir in addition to what is necessary for operation of the new south abutment fishway. Based on our experience, developing a decent playwave for kayakers in this situation would require a minimum flow rate on the order of 4 m³/s to 5 m³/s. For this feature to function properly, the CVRD would need to agree to release this amount of water through a dedicated bay of the control structure over the summer months – and possibly over the fall and winter seasons when flow releases are higher and the weir is no longer on control.

The overall purpose of the weir modification project is to raise the weir crest elevation by 0.7 m and includes improvements and/or upgrades to the boat lock, island sill, vertical slot fish passage, and control structure. Our main concern is regarding the proposed new south abutment fishway that will extend south of the control structure on the right (south) overbank. This fish passage facility is intended to pass adult and juvenile migrants in both directions throughout the year, with the target species being salmon (coho, chum, chinook, and kokanee) and trout (rainbow, steelhead, cutthroat, and brown). As shown on Stantec’s Drawing No. 20093-S501, the proposed facility is composed of an upstream forebay that is separated from a rockfill ramp fishway channel by a vertical concrete partition wall. The wall is comprised of nine gated rectangular ports, each 1500 mm wide by 400 mm high and with a 200 mm wide by 550 mm high slot at the bottom, set at varying elevations along the length of the wall. It is understood that the gate openings will be manually adjusted by the facility operator based on lake levels and flow release requirements to the Cowichan River. It is not a “natural-like” fishway as presented in the Stantec (2021) report.

Our concerns with the south abutment fishway proposed by Stantec and accepted by the CVRD are as follows:

- 1) The partition wall poses a serious threat to public safety as people who inadvertently enter the water upstream of the partition wall could be drawn into the gated ports (under pressure) and held under water and potentially drown. The geometry and placement of the ports within the water column make them highly susceptible to trapping a body and/or limb entrapment. In addition, the proposed rockfill ramp structure downstream of the wall poses a threat to human safety by having protruding sharp rocks installed at its surface.
- 2) The facility requires fish to attain the rockfill ramp, then swim through gated openings in a concrete wall that may be closed, under pressure, or above the lake surface depending on the lake level and river flow. There appears to be a lack of hydraulic modelling to support and confirm whether the proposed fishway is capable of successfully passing upstream migrants over the range of flows, let alone using such a design-aid tool to evaluate the hydraulic design of the facility. It is not clear from the Stantec (2021) report if the design considered the expected flow conditions for fish movement periods, which include spring and fall spawners.
- 3) The fish passage facility will not provide any open water connectivity between the lake and the river for fish or recreational boat passage. From an aesthetic perspective, it will appear to be an unsightly concrete wall to the public, not a nature-mimicking facility as presented by the CVRD and Stantec.

An open water channel was included as an alternative design for the south abutment fishway; however, Stantec confirmed that it was eliminated because “the geometry was an issue” and that it would be difficult hydraulically to accommodate the fluctuation in lake level. Furthermore, the Stantec (2021) report states that, “The outcome of the discussion [regarding the two options for the south abutment fishway] was direction that Stantec should proceed with the design of Option B [which is the final design as it currently stands].” The open-channel option, which was only assessed by Stantec at a conceptual level and not studied in detail, would provide for a more effective and reliable design for fish passage and could also be utilized to create a recreational amenity that is firmly supported, as evidenced by the public survey conducted by Stantec in June/July 2020.

We are confident that it is possible to achieve an open-channel design for a new fishway structure along the right bank that is effective at facilitating fish movement while also improving public safety and creating an attractive recreational amenity with user safety as its primary objective. The cost to construct this combined fishway/recreational bypass option should be as cost effective as Stantec’s proposed fishway. In fact, it is expected that the costs associated with operation and long-term maintenance of the combined bypass option would be considerably less than that of the facility currently proposed by Stantec.

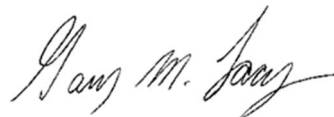
There are many examples of fish/recreational bypass channels similar to this project that have been developed adjacent to water management facilities. REP and SG1 have not been commissioned to complete a detailed hydrotechnical assessment for the bypass option; however, we have reviewed the project design in enough detail to be confident that the more natural open-channel bypass option, as proposed herein, is the more viable and effective option.

We trust that the information contained in this memorandum is sufficient for your present needs. Please do not hesitate to contact the undersigned should you have any questions or wish to discuss.

Sincerely,

SG1 WATER CONSULTING LTD.

RECREATION ENGINEERING AND PLANNING



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