

**RAINCOAST CONSERVATION FOUNDATION INFORMATION SESSION
FRASER RIVER ESTUARY NORTH ARM JETTY BREACHES PROJECT
MAY 27, 2021
SUMMARY**

Summary of the Raincoast Information Session about the Fraser River Estuary North Arm Jetty Breaches Project held May 27, 2021 via videoconference.

1. Welcome

Michelle Candido, Community Engagement Coordinator, External Relations, Metro Vancouver (MV), called the Meeting to order at 6:35 p.m. and welcomed participants.

The list of meeting staff and resources is included in [Appendix A](#).

Ms. Candido commenced the presentation titled “Fraser River Estuary Breaches Project” and highlighted:

- Session purpose to learn about the upcoming North Arm Jetty Breaches Project
- Request to participants to submit input to Raincoast Conservation Foundation about the North Arm Jetty Breaches project

2. Iona Island Wastewater Treatment Plant Ecological Projects

Lea Elliott, Senior Policy Analyst, Project Delivery, Metro Vancouver provided an update on the Iona Island Wastewater Treatment Plant ecological projects and highlighted:

- Project definition goals to improve water quality, maximize resource recovery, and integrate park and community
- Overall project approach has shifted from primarily focusing on the new wastewater treatment plant to an integrated program, that is intended to deliver a suite of ecological projects and the new wastewater treatment plant, respecting the surrounding rich biodiverse environment.
- Raincoast Conservation Foundation studies and restoration efforts elevated the need to restore the aquatic connectivity in the lower Fraser River.
 - The Iona Island Causeway and jetties create a loss of aquatic connectivity and prevent mixing of fresh/salt water and sediment transport.
- The project team identified 20 ecological enhancement opportunities around the Island, including breaches in the North Arm Jetty and causeway. These proposed ecological priority projects are conceptual and still require additional studies and detailed design.
- In 2021:
 - MV will launch studies regarding replacing the causeway with a bridge to connect McDonald Slough and Sturgeon Banks, and nature-based shoreline protection measures to increase resiliency.
 - Raincoast will work on the North Arm Jetty Breaches projects.

- Metro Vancouver will support Raincoast by sharing knowledge and data to restore estuary processes and fish habitat in the Lower Fraser River; and by co-hosting this engagement session.

3. Fraser River Estuary North Arm Jetty Breaches Project

Dave Scott, Raincoast Conservation Foundation Research and Restoration Coordinator, Lower Fraser Salmon Program, presented the Fraser River Estuary North Arm Jetty Breaches Project and highlighted:

Salmon and the Fraser River

- Fraser River is known as the greatest salmon producing river worldwide, boasting a remarkable diversity of salmon populations
- Currently there are significant conservation concerns for most salmon populations, especially Chinook and Sockeye
- Fraser River estuary is an important nursery habitat for juvenile salmon before they make their way out to the larger ocean

Raincoast Conservation Foundation

- Since 2016, Raincoast has been conducting research in the estuary on juvenile salmon habitat use and migration timing
- Found the highest abundance of juvenile Chinook and Chum in the inner estuary marsh habitats, with numbers growing over the five months between April through August
- Observed barriers to aquatic connectivity, such as the Fraser estuary's man-made jetties
- Embraced a Federal coastal restoration funding opportunity to restore connectivity for juvenile salmon and ecosystem health in the Fraser River estuary

Steveston Jetty Breaches

- In 2019, Raincoast constructed a series of three breaches on the Steveston Jetty
- Over the past two seasons, breaches have been highly effective for moving juvenile salmon, increasing salmon numbers, and attracting all five salmon species to the area
- Explored opportunities to do work in McDonald Slough and on the Iona Island Causeway, however MV will lead

Fraser Estuary North Arm Jetty Breaches Project

- Raincoast discovered a high density of juvenile salmon in the North Arm that would potentially benefit from increased connectivity in the area
- Proposed a series of three breaches on the North Arm Jetty
- Secured Federal funding for proposed North Arm Jetty middle breach; potential to construct two other North Arm jetty breaches in 2023, if funding is granted.
- In 2018, Raincoast contracted Northwest Hydraulic Consultants to complete a hydraulic modeling exercise on the North Arm Jetty middle breach. This exercise demonstrated that the impact on salinity, water velocities, and sediment deposition would be small and localized at the proposed breach location.

North Arm Breaches Project Design

- Proposed 30-metre-wide angled breach design that will create flow through the breach on the outgoing high tide. Incoming tide flow through the breach will not result in significant movement of water, sediment or other material from sand flat out to the river.
- During the removal of jetty material, multiple layers of rock materials will be added to the jetty to ensure the underlying jetty remains stable.
- Breach elevation expected to be zero metres geomagnetic and connected 57% of the time; the rest of the time the tidal flats will not be watered, so no need to construct the breach at a lower elevation.

Raincoast Next Steps

- Continue to do baseline monitoring work in the area, and LiDAR and vegetation surveys
- Work with VFPA, who manages the North Arm Jetty, and Transport Canada to ensure there is no impact on navigation
- Finish current hydraulic modeling study and execute additional hydraulic modelling studies for potential future breaches
- Federal funding is in place to construct first North Arm Jetty breach in Fall 2021
- Work with Ducks Unlimited and South Coast Conservation Land Management Program to secure funding for future proposed breaches
- Contact Dave Scott for further questions or comments about the Fraser Estuary North Arm Jetty Breaches Project at dave@raincoast.org

Issue, Comment, Question	Raincoast Conservation Foundation (RCF)/ Metro Vancouver (MV) Response
Ecological Projects	
What has been done in terms of feasibility studies?	The MV proposed ecological projects are still conceptual plans. MV is planning for feasibility and background studies on the proposed ecological projects.
Will the log storage area to the east of the causeway be removed to create habitat for the fish moving through that area?	MV noted the Provincial Ministry of Forests, Lands, Natural Resource Operations and Rural Development manages the log storage area under the Fraser River Transition Area Program. Since some of the logs are quite close to the breach area, log storage is part of the feasibility studies still needed for this area.
Fraser River Estuary North Arm Jetty Breaches Project	
Will the breaches allow boat access?	RCF indicated that generally the breaches aren't wide enough for most types of boat access, with the exception of a canoe or kayak.
What type of breach ideas are you considering?	RCF plans to create a breach opening on the North Arm Jetty without a bridge. The breach will be watered half of the time.
Is the plan aware of the contaminated site along the jetty where creosoted wharf timber was burned over the last 100 years? Is the breach site at #3 on the ecological projects map (slide 12 in information session presentation) near this area?	RCF is aware of this contaminated site and will be testing the site before construction work begins.
Is there a comprehensive management plan for the entire Fraser estuary before approaching these smaller projects? The entire ecosystem needs to be embraced as whole.	RCF is also interested in a more comprehensive plan for the Fraser estuary, however the Federal Government's funding has offered RCF an excellent opportunity to restore the connectivity that has disjointed the area for so long.
Has Raincoast reached other groups who have been safeguarding the Fraser Estuary? For example, what is being done about decommissioning the Point Grey Disposal site and the T-2 project? What have you done about consulting with groups and experts who have been defending the estuary since before 1974? What have you done about consulting with experts like Otto Langer and long-time fisher folk like Terry Slack?	RCF is systematically trying to restore connectivity across the Fraser estuary through the suite of projects accomplished at the Steveston Jetty; work planned in partnership with Ducks Unlimited to address the Woodward Jetty and the proposed North Arm Jetty breaches project. RCF is not planning on doing any disposal. RCF has defended juvenile salmon interests in the Roberts Bank Terminal project for the last several years. RCF has also met with Otto Langer and Terry Slack on several

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	occasions to address concerns. RCF has also held multiple workshops over the past few years to reach as many people as possible.
I've learned a great deal from Raincoast's connected estuary webinar series. Is YVR supporting this work as they make the claim to be North America's first salmon certified airport?	Simon Robinson (YVR Senior Environmental Specialist) explained that while the proposed breaches are of interest to YVR, the breaches do not present any major concern. YVR is mainly concerned with new marsh creation and habitat enhancements that would attract certain birds near the airport and cause an aviation safety hazard.
It's too bad the Fraser River Estuary Program (FREMP) no longer exists. Research scientists can't get access to funding to do basic research. Small interest groups and NGO's should combine efforts to lobby local politicians. To solve this, all these smaller groups should band together, and have someone take the lead on a joint lobbying program.	Raincoast agreed. Comment noted.
Metro Vancouver Board recently reached out to senior levels of government asking them to investigate reinstating FREMP: page 5 of http://www.metrovancouver.org/boards/GVSDD/SDD_2020-Nov-27_MIN.pdf	The MV Board is actively pursuing a reinstatement of the Burrard Inlet Environmental Action Plan (BIEAP) and the Fraser River Estuary Program – (FREMP). MV has reached out to senior levels of government and the 45 First Nations. All NGOs are encouraged to reach out to elected officials to pursue reinstating BIEAP - FREMP.
Your data show that marshes are key to the survival of juvenile salmon. Are you looking at the long-term viability of these marshes?	RCF has partnered with Ducks Unlimited and the Province of BC to secure funding from the BC salmon restoration innovation fund to construct additional breaches. RCF is working with World Wildlife Federation to secure funds for a sediment deposition pilot project out on Sturgeon Bank. RCF is also working with Ducks Unlimited to restore access to fields eight and nine out at the national wildlife area at Alaksen. All these projects aim to restore connectivity to the marsh, provide access to the isolated marsh habitats and build long term resiliency for marsh habitats to protect juvenile salmon.
A research paper currently under review has highlighted a serious amount of loss to the	RCF is working with Eric Balke (South Coast Conservation Land Management Program) and Sean

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marshes in the Fraser estuary over the past four decades. The paper identified marshes as a nursery for salmon and noted the wider ecological effects of marsh loss. Marsh resiliency is important to the Fraser estuary and should be incorporated into the research associated with the breaches project.	Boyd, Environment and Climate Change Canada, to explore options for marsh resiliency, and investigate that big marsh recession.
Some of our bird surveys in the offshore areas indicate that most of the fish-eating birds are found off the North Arm. Will send the results of these surveys over to RCF.	Comment noted.
Kudos to Raincoast for the work being done. Important to note that 90% of the habitat has been lost in Fraser estuary. The key element will be to breach the McDonald Slough area. Raincoast should also consider the airports plans for the area. What are MV's plans for the IWWTP?	MV's plan for the new treatment plant is to provide tertiary treatment. MV has been working closely with Musqueam on the new plant and the ecological projects.
What are the maintenance estimates for these angled breaches? Are they in danger of silting up?	RCF's goal is to make the breaches self-scouring. Currently consultants are doing modelling work to explore different designs to keep the logs from jamming up. On the Steveston Jetty breaches, RCF found that some logs settle into the breach for a while and then are flushed out at high tide. Since the breach opening will be approximately 30 metres wide, it should be wide enough to flush out previous logs that would get clogged up in a culvert. RCF's goal is to make these breaches maintenance free.
How do we access finished project reports?	RFC can share the Northwest Hydraulics Consultants report. Moving forward, RFC will publish the monitoring data in a journal to share how the breaches have been forming these channels over time.
Has anyone reached out to First Nations peoples about this project for partnership and funding opportunities?	RFC partnered with Tsawwassen First Nation and the Lower Fraser Fisheries Alliance for a funding application to create two additional North Arm Jetty breaches. RFC is regularly in conversation with Tsawwassen First Nation and Musqueam Indian Band.

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Has RCF reached out to any fishing, outdoor or conservation network shows that might be interested in supporting this project?	A fishing network show did reach out to RCF, expressing interest in adult chinook, but not the juvenile species RCF is focussed on. RCF has pursued all funding options.
The Fraser River estuary is often phrased as a “working river”. Can we challenge the notion of the Fraser River as a working river by re-examining where that phrase is coming from? Is it possible that we could think there is more value in the North Arm being used for migration and that the South Arm should be phrased as a “working river?” And Is there any leadership from Metro Vancouver to support this concept? The current log storage creates a complete dead zone underneath the Fraser River.	<p>The re-establishment of BIEAP-FREMP would provide the opportunity to re-examine the vision for the Fraser River estuary. MV is also advocating for improved log storage practices in McDonald Slough.</p> <p>RCF agreed that the Fraser River is more of a working river rather than a living one. RCF has been asking the Province to address the log storage area management. Since the leases are only two years in length, RFC is hoping that new informed leaseholders can contribute to better practices to reduce the amount of log storage in McDonald Slough and prevent the log booms from detaching and ending up in the marsh.</p>
Will the Port Authority be involved in the management of the breaches after they are dug out?	RFC is working on a short-term lease agreement with the Port Authority to work on the breach. RFC aims to minimize the breach maintenance requirements.
All this is exacerbated by climate change and sea level rise leading to coastal squeeze.	RFC is working with Ducks Unlimited Canada and the South Coast Conservation Land Management Program (SCCLMP) on a sediment enhancement project. RFC is also active in the Lower Mainland Flood Management strategy process to advocate for better approaches to flood management as opposed to hard walls.
There was some work that was started by Natural Resources Canada (NRCan) 15-20 years ago. That work looked at some of the beneficial reuses of the dredged soils coming out of the Fraser River. RCF should talk to Phil Hill at NRCan.	Comment noted. Ducks Unlimited and the SCCLMP’s potential approach is to take some of that material from the dredge boat and pump it out on to the foreshore instead of dumping it at sand heads.
Have you considered White Sturgeon movement or habitat?	Over the past six years, RFC has never sighted a sturgeon in the Fraser River estuary, however they have been seen in regular fishing spots in Ladner Reach. Recent work done by the Province is showing that sturgeon do come down to the estuary, but RFC isn’t aware of how often they use the marsh

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	channels or how much they would use the breach.
<p>White Sturgeon are listed as an endangered species. There has been a 70% decline in the White Sturgeon juvenile abundance in the last 15 years in the lower Fraser population. Juvenile sturgeon are susceptible in that area because they're not tolerant to salinity over, about 17 parts, but should be kept on RCF's radar.</p> <p>Agree that any openings and breaching would be a benefit for all species down there. You'll want to keep predation on your radar too, such as seals. The Sturgeon Society would be interested in supporting RCF's work and will send a link to connect. It's wonderful to hear this is happening – thanks.</p>	<p>RCF had not considered sturgeon making it out to the breaches, but will now. More connectivity in the estuary aims to limit the options for seals to focus on the one spot where the fish are all coming through. RCF is also keeping an eye out for all predators such as heron predation at one of our Steveston Jetty breaches. Intent is to send the juvenile fish out into the tidal flats to give them more options to avoid predators.</p>
<p>Fish friendly dike pumps would open up so much habitat.</p>	<p>A huge amount of habitat is being isolated right now by all those flood control structures in the lower Fraser. RCF is working hard to support their partners at Watershed Watch to address some of those different floodgates and pump stations.</p>
<p>What is currently being done with the Iona WWTP sludge and what are the plans for the sludge once the plant has been upgraded? I read this recent article from The Guardian newspaper regarding WWTP sludge containing toxic 'forever chemicals' being sold as fertilizer by places such as Home Hardware and wonder whether this is or will be occurring in Canada and the Iona WWTP.</p>	<p>The IWWTP currently produces biosolids from treated sludge through a land-drying process. These land-dried biosolids are used to create a sub-soil for reclaiming gravel mines; topsoil containing biosolids from other Metro Vancouver wastewater treatment plants is placed over the sub-soil and provides nutrients for plants to grow. After the new IWWTP is constructed, the plant will continue to produce biosolids.</p> <p>These biosolids will be used in a manner similar to biosolids from the other wastewater treatment plants, which are beneficially used in the region as an ingredient in landscaping soil and throughout the province to reclaim mines and gravel pits, fertilize rangeland, and reduce emissions from landfills.</p> <p>Metro Vancouver is also considering construction of a regional biosolids drying facility to serve all five of our wastewater treatment plants.</p>

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	<p>Canada produces over 2.5 million tonnes of sludge and biosolids per year. The Canadian Council of Ministers of the Environment supports land application of biosolids. They are used Canada-wide in agriculture and land restoration, and as an ingredient in topsoil and soil amendments such as composts. A number of these products are available to home gardeners.</p> <p>PFAS are compounds commonly found in items we use in our daily lives, such as food packaging, non-stick cookware, stain and water-repellant fabrics, cleaning products, dental floss, and cosmetics, which is how they end up in wastewater and biosolids. They are known as ‘forever chemicals’ because they are resistant to microbial degradation, so once they make their way into the environment they persist. They are now found in most soils, sediments and water.</p> <p>Not all biosolids are the same. PFAS in biosolids are a concern where wastewater treatment plants receive sewage from industries that produce PFAS or from locations where fire-fighting foam is used in training. Metro Vancouver’s wastewater treatment plants do not receive these types of inputs.</p>
<p>Regarding the potential chemical toxicity of WWTP sludge, as mentioned in The Guardian newspaper article, I have concerns about the effluent released by the Iona WWTP pipe that empties into the surrounding ocean. If the breaches in the jetty do proceed, is there a chance that there will be increased toxic chemical exposure to the marshland surrounding Wreck Beach and to the health and safety of people recreating at Wreck Beach and swimming in the ocean?</p>	<p>The treated effluent from the IWWTP is discharged through a deep sea outfall 7 km out in the Strait of Georgia. The effluent plume does not surface and does not interact with Wreck Beach or the marshland surrounding Wreck Beach and therefore would have no impact to the proposed North Arm Jetty breaches. In addition, the upgrade to IWWTP will result in improvement in the quality of treated effluent.</p>

4. Closing Remarks

Ms. Candido thanked meeting participants for their attendance and contributions. She advised that the Meeting presentation and summary will be posted on the Metro Vancouver website within the next month.

The meeting concluded at 8:30 p.m.

APPENDIX A – STAFF AND RESOURCES

Staff and Resources:

Lea Elliott	Metro Vancouver
Dave Scott	Raincoast Conservation Foundation
Gary Bouwman	Raincoast Conservation Foundation
Tom Sadleir	Metro Vancouver
Michelle Candido	Metro Vancouver
Deanna McGillivray	Metro Vancouver
Tina Chiu	Metro Vancouver
Sylvia Pendl	Metro Vancouver