

John Hart Generating Station Replacement Project

November-December 2018 Community Construction Update Report #65

This is the final public construction report.

Prepared by: Stephen Watson, BC Hydro

(O) 250-755-4795 or (C) 250-616-9888

Twitter: @Puntledge Email: steve.watson@bchydro.com



Project Status

General update:

- Final generator passes marketable power testing;
- Full load or three generator shut down test – ensuring the water bypass facility maintains flows in the event of a shutdown – was completed successfully;
- Fan house work continues at the entrance of both tunnels;
- Paving of the main access tunnel completed;
- Clean up of the powerhouse and construction areas;
- Electrical finishing work continues;
- Fire suppression system installation continues;
- Celebration media tour with community leaders on the generators and automated bypass going operational in November; and
- Preparation for removal of the penstocks begins.

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Campbell River Mirror

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John Hart project achieves another operational milestone

The John Hart Generating Station Replacement Project recently achieved a final water flow operational milestone with the commissioning of the automated water bypass facility.

The three water bypass valves are in place within the underground powerhouse to protect downstream fish habitat from river flow reductions.

“The water bypass facility was commissioned in early May but has been on manual control until now,” said BC Hydro spokesperson, Stephen Watson. “The final test was

on Nov. 8 when we had the three new generators, which have all been commissioned, shut down at the same time to mimic a full facility shutdown and have the required water flow redirected through the bypass facility to its full capacity to keep downstream flows in place. It worked exactly as intended.”

During the river flow test, the Campbell River flow was slowly increased from about 84 cubic metres per second (m³/s) to about 124 m³/s at full generation capacity. Then the three generators were shut down, with the water bypass



An October photo of the underground John Hart powerhouse. The water bypass facility is located within a lower floor level. BC Hydro photo

kicking in to provide about 84 m³/s downstream. About 80 m³/s is

needed to keep fish habitat within the Campbell River covered with water.

The new generators are all available and the water bypass is on automated standby should one or more generators go offline. It didn't take long as one of the generators went offline on Nov. 13, with the water bypass properly initiating to maintain river flows downstream.

“As the contractor, we're very pleased to have all the water flow facilities commissioned, and the water bypass facility operating as it

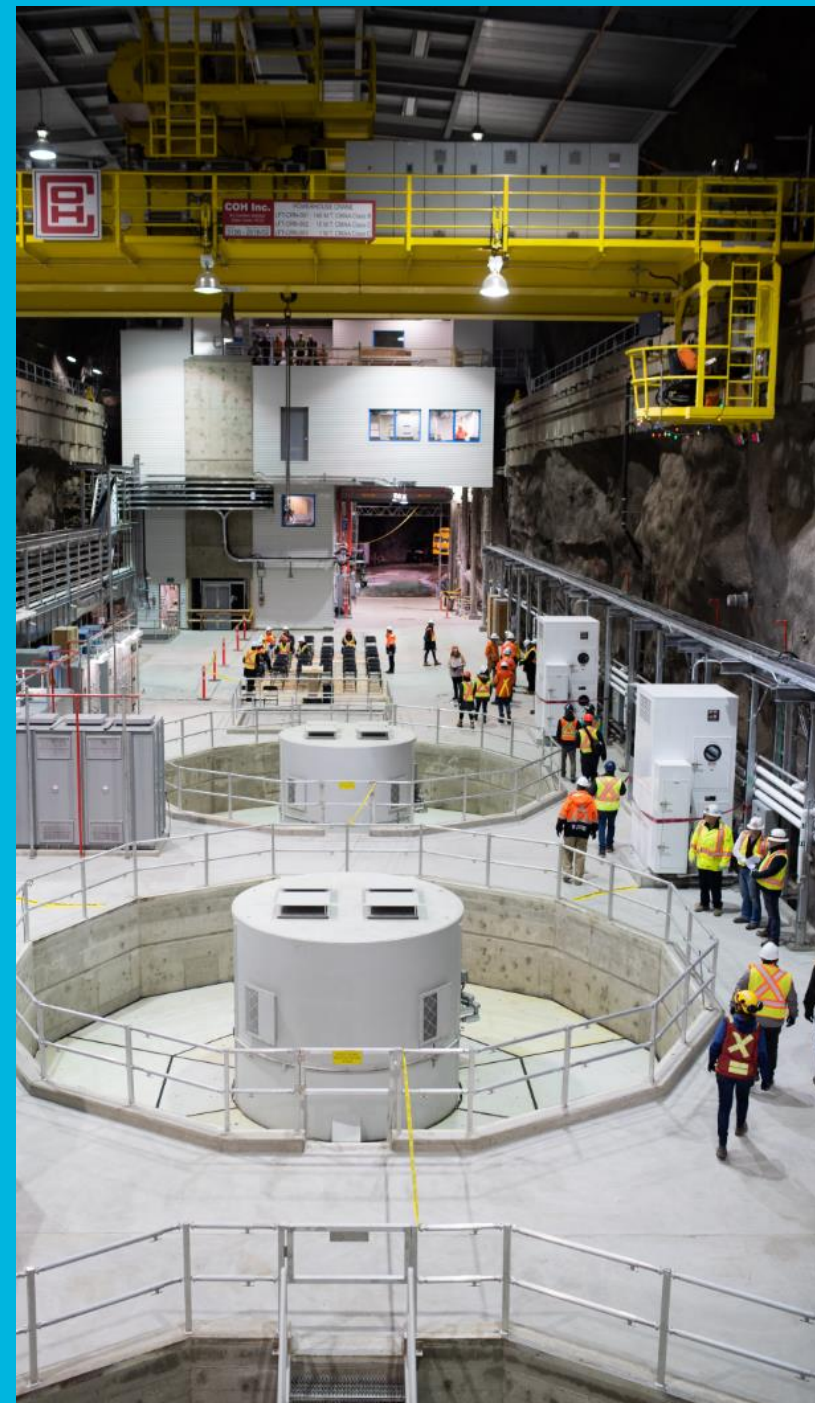
should,” said Paul Sawyer, InPower BC's CEO. “Since 2014, it has been a great team effort by SNC-Lavalin, Aecon, General Electric, and FMI to get these facilities operating as they are today.”

The John Hart project can provide about 132 MW of power, or nearly 10 per cent more power output than the old facility.

In addition to protecting downstream fish habitat, the other two project drivers of maintaining power generation reliability and being seismically strong were also achieved.

Schedule

- Early 2019: Continued work on completion of the auxiliary systems and remaining facility commissioning items;
- To April 2019: Woodstave penstock removal;
- February/March 2019: Removal of the two Surge Towers begins; and
- March/April 2019: Turbine generators from old powerhouse removed and facility is deconstructed to the ground level.



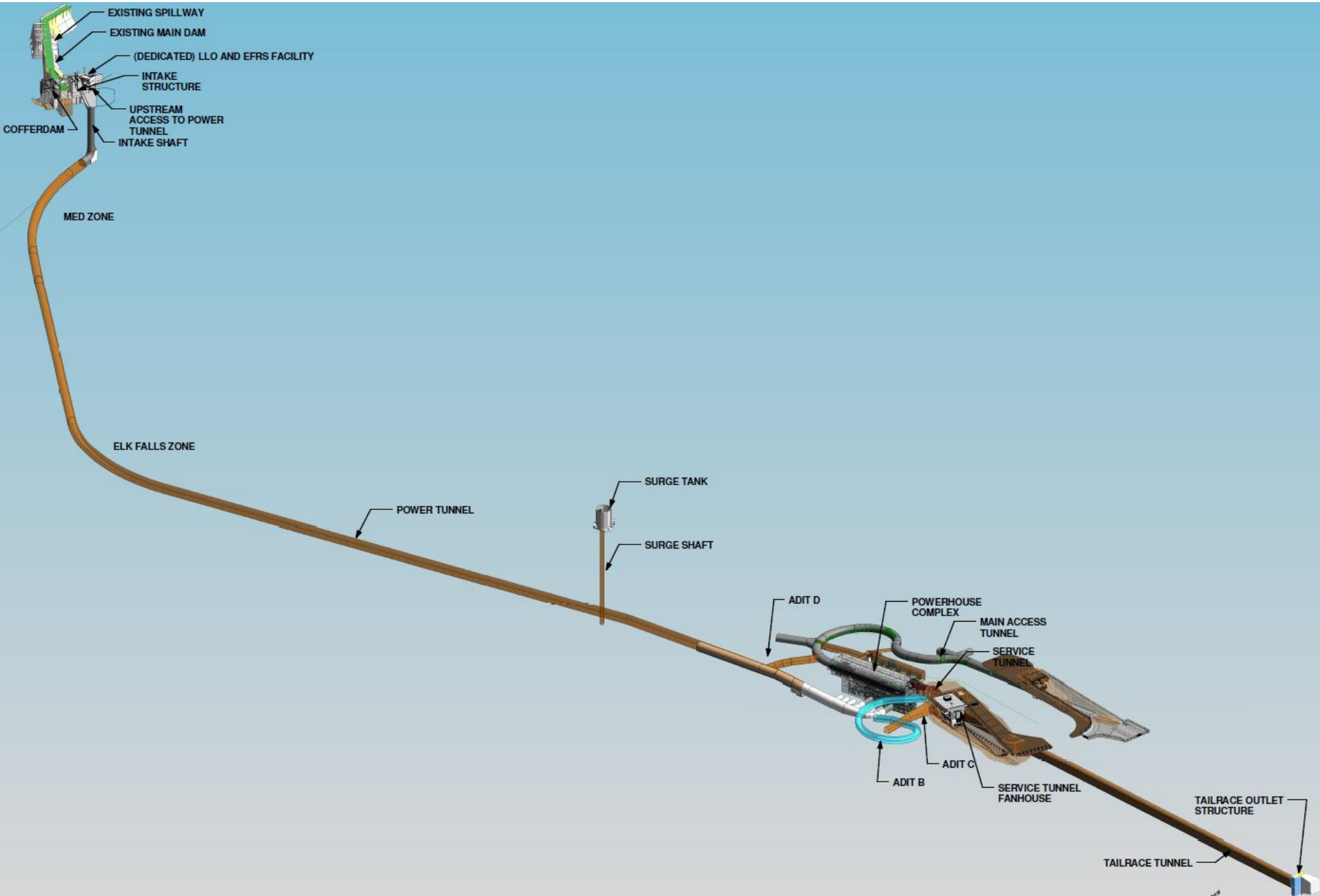
Pictures of the John Hart project operational celebration media event on December 13.

Awards

- The project has received major accolades since it started in 2014, and recently received two more awards. Here are the four major awards won:
- Canadian Hydropower Association: 2018 Outstanding Project Award (shown on right);
- Tunnelling Association of Canada: 2018 Innovative Project Of The Year (shown below left);
- P3 Awards: 2015 Projects Grand Prix (Best Overall Project); and
- Canadian Council For Public-Private Partnerships: 2014 Gold Award.



John Hart Project Underground Site Map



On the downstream side of the John Hart dam, a water release valve passing water down Elk Falls Canyon.



The underground John Hart generating station.
The three generators are all operating.



View of the powerhouse towards the other side.





View from the generator floor over the three generators to the service tunnel up top, in the background

Same view, different angle.



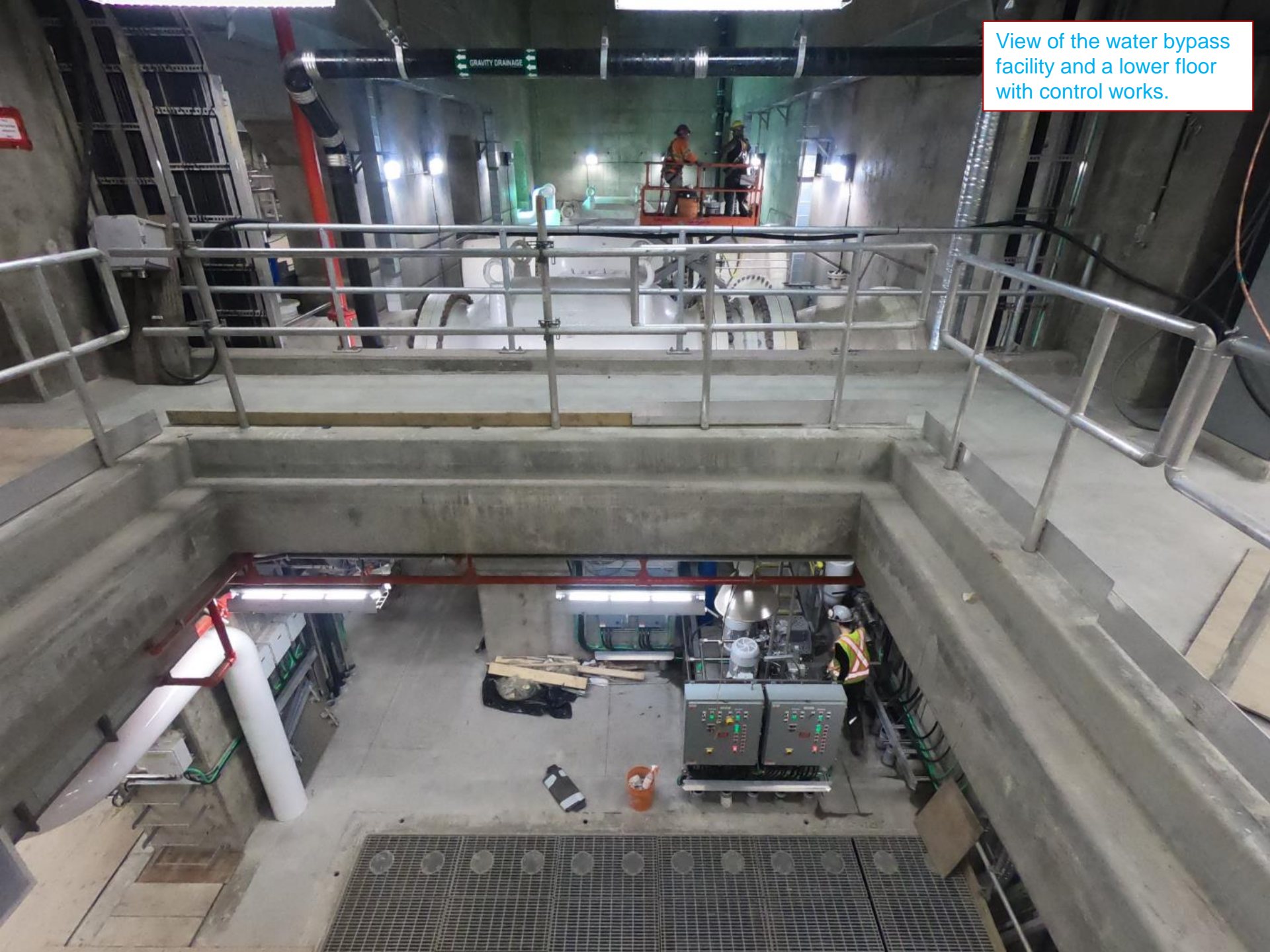
One of the three generators.



Cleaning the three water bypass valves.



View of the water bypass facility and a lower floor with control works.



The three water inlets into the generators. The water flows in, from the power tunnel, from right to left.



Full Flow Test: Water Bypass Facility

A key test in the commissioning of the automation of the new water bypass facility, was to force the three operating generators out of service (132 MW to 0 MW) and see that the flow would be redirected through the three bypass valves designed to protect downstream fish habitat. The full test was completed on November 8, and was a key environmental driver for the project. The test was a success.

Here are some details:

- The full-megawatt test was conducted with 124 m³/s passing through the three units. 7 m³/s was held consistently through the Elk Falls Canyon.
- All three bypass systems successfully opened and passed 80 m³/s downstream into the Campbell River when the units shut down. The project had a water flow ramp rate variance in place to account for the sudden drop in flows from 124 m³/s to 80 m³/s.
- Environmental Monitors were in place to check for any abnormal activity in the river related to flows, water quality, and to be in place in case of a malfunction resulting in the need for a fish salvage. There were no environmental concerns noted.

Since the November commissioning of the automated water bypass facility, the valves have been called up a few times to redirect flows past a generator that has briefly gone out of service. They have worked well and exactly as intended.



Staff monitoring the automated water bypass test on Nov 8.

John Hart Generating Station fully operational

MIKE DAVIES
Campbell River Mirror

The new John Hart Generating station, over a decade after its initial conception, is now officially complete and fully operational.

Representatives from all levels of government involved in the project, along with chiefs of local First Nations and dignitaries from all facets of the station's construction gathered for one more tour of the facility Thursday, touting the project's importance to the corporation, the community and the people.

"It's been a wonderful opportunity to see, first hand, the extraordinary scope of this work," says North-Island MLA and Minister of Transportation and Infrastructure Claire Trevena. "I remember a number of years ago, sitting outside by the parking lot as this was being announced. Now to be here just when the finishing touches are being completed is truly impressive."

Trevena calls the project an important step in "making sure that we are going to have more clean energy for B.C." and says she references the John Hart Generating Station project as a key example of how the Community Benefits Agreement works.

She also says hydroelectricity is a key component of the shift required to meet our climate targets.

"We must increase our use of cleaner energy – especially hydroelectricity – in our lives and in key sectors of our economy, shifting away from our reliance on fossil fuels for

transportation, for industry and for housing. This project will help ensure that we have the power we need to support that low-carbon electrification and meet our climate goals."

Chris O'Riley, president of BC Hydro – who actually began his career with BC Hydro at the old John Hart facility – says the facility is "a really key part of our system on Vancouver Island, but it is also a key part of the region's history."

The construction of the dam itself 71 years ago, O'Riley says, "kicked off the growth in the North Island. In particular, it enabled the Elk Falls mill, which allowed this town to grow up from a small fishing town into the robust community that we know today, and John Hart continues to build those connections and fill that role today and into the future."

But the original power plant, "was recognized as one of the biggest environmental risks in the company," O'Riley says, and when they eventually settled on putting the new powerhouse underground, "it solved a lot of problems and constraints," but it also forced them "to really change how we thought about building a plant and forced us to be open to different approaches and open to other ideas."

Chief Chris Roberts of the Wei Wai Kum First Nation says he's happy with the environmental considerations BC Hydro has made throughout the planning and construction.

"I've only been in this position for about eight months," Roberts says, "and a lot of people here have talked about being here



North Island MLA and Minister of Transportation and Infrastructure Claire Trevena admires the expansive powerhouse cavern at the John Hart Generating Station alongside Wei Wai Kum Chief Chris Roberts. Photo by Mike Davies/Campbell River Mirror

from the beginning. But for me, our people have been here since the very beginning of when this infrastructure was first put in place.

"In those days, there was no effort of consultation on engagement of how this might impact a place that we call home. When I learned about some of the details about what this project has in terms of being environmentally-aware infrastructure – I was very pleased to see that it was an improvement rather than just a replacement."

Chief Brian Assu of the Wei Wai Kai was

involved through the entire process, and agrees with Roberts about the relationships between First Nations and the company.

"I've been involved with BC Hydro for a very long time," Assu says. "But I'd especially like to recognize and thank past Chief Ralph Dick and Chief Robert Pollard. They were integral to forming the new relationship that has developed between not only our First Nations, but also BC Hydro and SNC (Lavalin). We were all working together over time and the results are just fantastic."

The powerhouse, with the office complex and main access tunnel in the background. Getting ready for the speeches after the tour.





COH Inc. POWERHOUSE CRANE
LFT-CRN-001 : 140 M.T. CMAA Class B
LFT-CRN-002 : 10 M.T. CMAA Class C
LFT-CRN-003 : 1 M.T. CMAA Class C



View from the crane rail walkway.



Emcee Stephen Watson kicks things off with about 50 people present.



Hon. Claire Trevena, Minister of Transportation and Infrastructure, and North Island MLA.



Chris O'Riley, BC Hydro, President and COO.



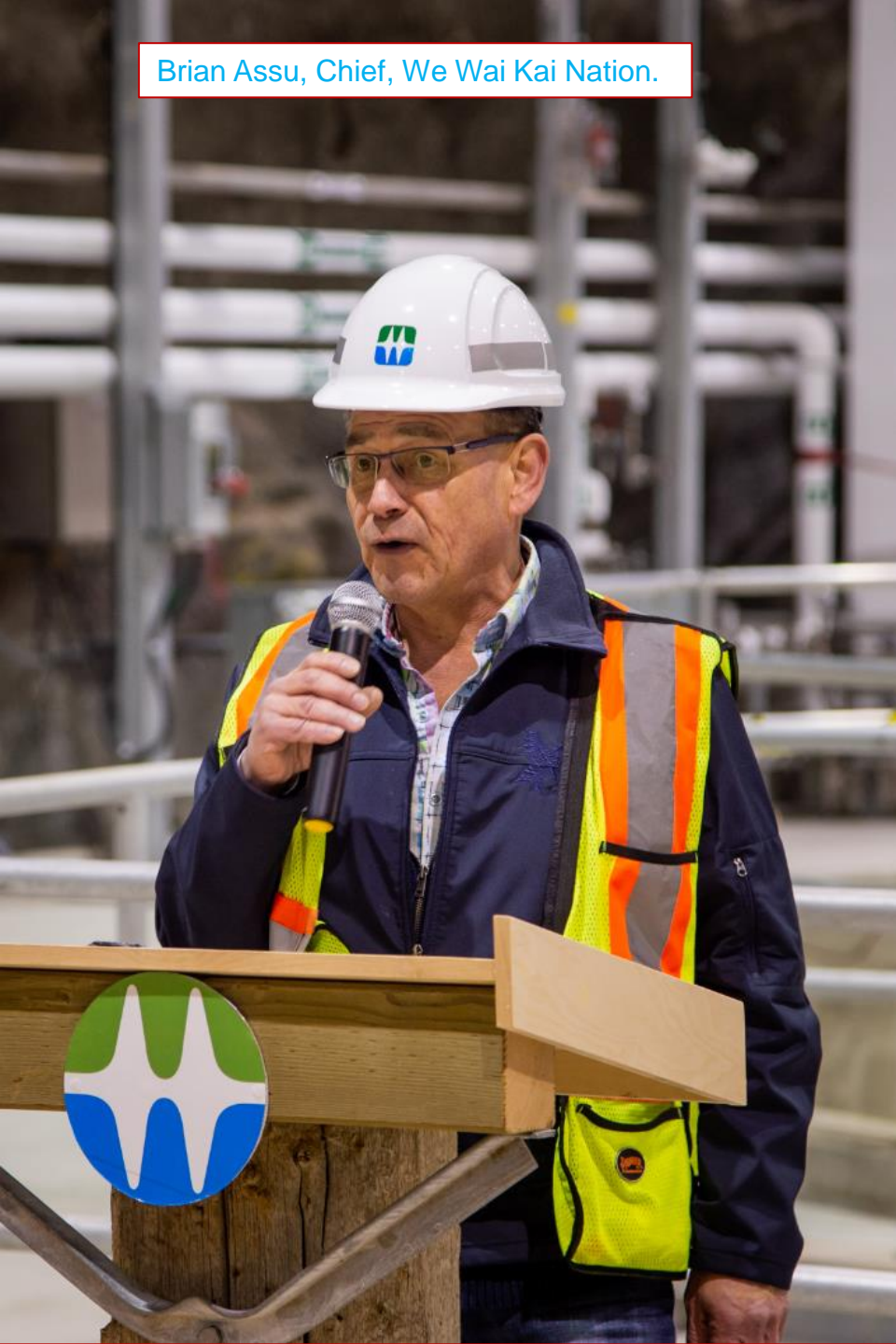
Travis Smith, SNC-Lavalin, Senior Vice President and General Manager.



Andy Adams, Mayor, City of Campbell River.



Brian Assu, Chief, We Wai Kai Nation.



Chris Roberts, Chief, Wei Wai Kum Nation.

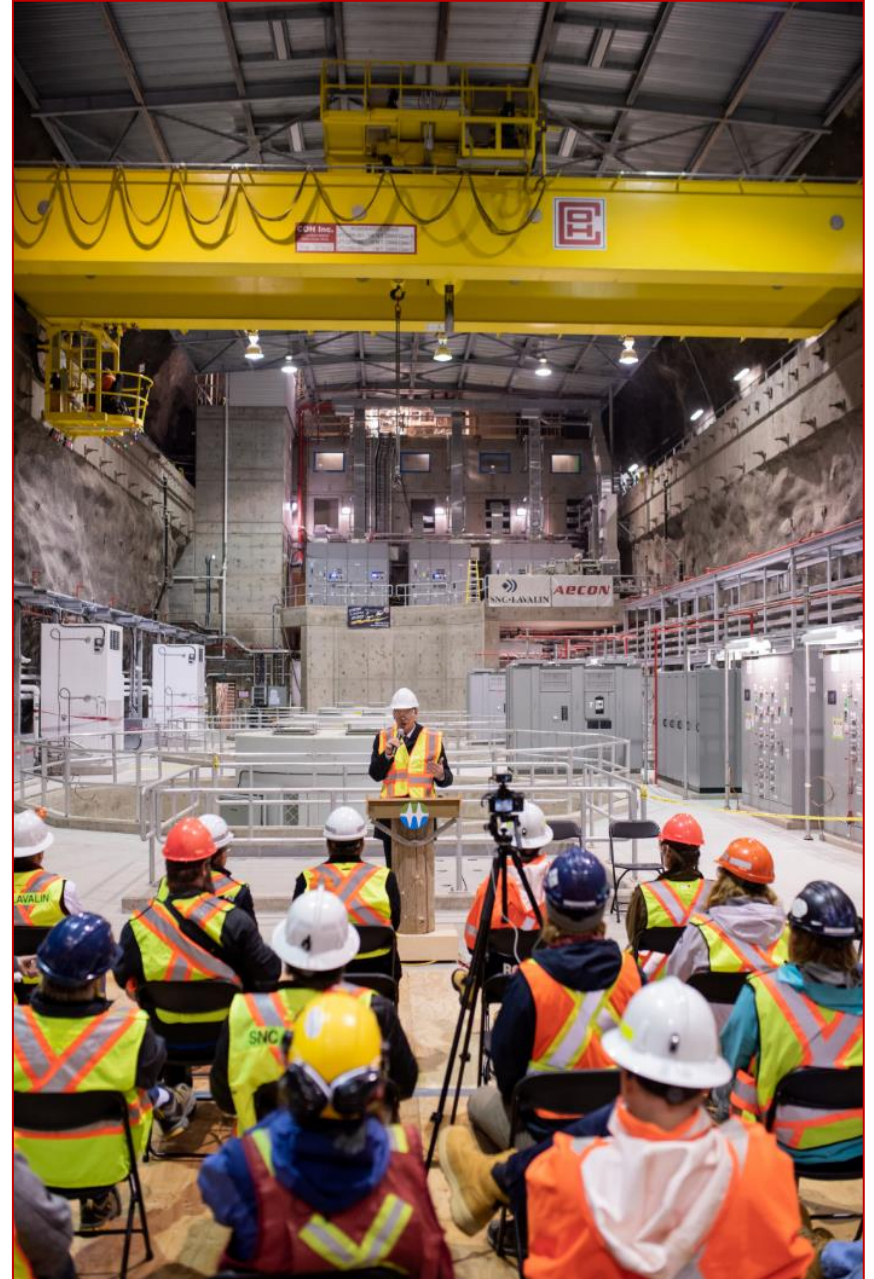


Group discussion and media interviews, as the event concluded.



We've Come A Long Way Since 2014

July 2014 celebration event on the beginning of project construction.



People Profile – Barry Konkin

About Barry

Background:

Barry and his wife Gladys have been all around the Province, from one 'dam' place to another, as he completed projects in the construction and maintenance of Hydro Electric Power Facilities. Barry began as an Electrical Inspector (QC) at the Mica Dam in 1977, then Protection Tech at GMS and eventually Plant Manager at the Revelstoke Generating Station. Retiring in 2009, he just couldn't get the draw of the powerhouse out of his system so he launched a small consulting company "B.Konkin Powerhouse Solutions Inc." – and has never worked harder.

Home:

Barry and Gladys make their home high in the hills of West Kelowna overlooking the Pinot Noir Vineyards and the sparkling Lake Okanagan. They've been in Campbell River working on the John Hart project for about a year.

Hobbies:

Barry and Gladys have a 33 ft. Beneteau which they like to sail up and down Lake Okanagan, enjoying the sunshine while holding the main sheet in one hand and a glass of red in the other.

Project Responsibility:

Barry is part of the commissioning team responsible for testing hydroelectric equipment to ensure it is capable of its intended function and is safe to operate.

"I work hard to be an example for younger persons aspiring to leadership rolls, and I am proud to be a part of "Building what Matters" with the SNC-Lavalin team."



Construction – Point Of Interest

Each month, BC Hydro and InPower BC will provide a construction fact, occurrence, or situation.

The project is planning to re-establish the section of Canyon View Trail through BC Hydro property back near the river by about September 2019.

The original trail will move through where the old generating station is located, which will be removed down to the ground level. From there, the trail will go up some stairs, either above ground (shown at bottom left) or embedded into the ground, to then link back into the Canyon View Trail and Millennium Trail.

The Station View Trail, intended to provide trail loop continuity during the construction stage from 2014 to 2018, will be closed off and decommissioned in 2019.

The re-established trail area is shown by the red circle. The overall trail is shown in orange. River access will also be re-established in this area by about September 2019.

Trail and river access

