Quinault Indian Nation

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June 22, 2023

Andrea McNamara Doyle, Director
Office of Chehalis Basin
Department of Ecology

By Email: andrea.doyle@ecy.wa.gov

RE: Quinault Indian Nation Comments on Skookumchuck Dam Options

Dear Ms. McNamara Doyle,

The Quinault Indian Nation ("Quinault" or "Nation") provides these comments to aid the Office of Chehalis Basin ("OCB") and the Chehalis Basin Board as options for the Skookumchuck Dam are considered and pursued.

Quinault respectfully requests the Board revisit this issue and confirm that the Dam Removal Only option remains an option to be considered for the following reasons.

The imminent shuttering of the TransAlta Corporation's ("TransAlta") coal-fired Centralia Steam Plant prompted the Chehalis Basin Board to consider options for what to do with the Skookumchuck dam once the plant ceases operations. TransAlta is the owner of the dam and has publicly stated it does not want to remove the dam. Despite that, however, in light of concerns about the status of spring Chinook and other salmon species in the River, the Chehalis Basin Board directed OCB staff to explore options for the dam relating to improve flood storage and fish passage.

The Phase 2 Analysis Skookumchuck Dam prepared by Anchor QEA (January 2023) for the Chehalis Basin Board considered the "four most promising action alternatives" to improve fish passage and flood storage:

1. **Fish Passage Only:** This alternative would create a new fish sluice that would discharge 65 cubic feet per second (cfs) year-round (migratory season of interest is from January 1 through mid-summer each year) and send fish (juvenile salmonids) to a new low-gradient flume that could either return all the way to the river downstream of the dam or end at a holding area for downstream transport of fish via tank truck.
2. **Flood Storage Only:** This alternative would install a new 2,000 cfs outlet for the dam to allow more rapid release of water from the dam to hold a flood

storage pocket of 20,000 acre-feet during the annual rainy season from November 1 to April 30.

3. **Combined Fish Passage-Flood Storage:** This alternative would combine the two previous storage alternatives but operate for flood storage from November 1 to early March, with a target refill of the reservoir by March 15 to provide fish passage (with 50% and 75% probability of complete refill by March 15). It would also include active management to lower the reservoir in advance of forecasted storm events.
4. **Dam Removal:** This alternative would either partially or fully remove the dam to restore unhindered fish passage to the river upstream.

These four options were discussed with the Chehalis Basin Board at its April 2023 meeting. OCB staff subsequently recommended at the May 2023 Board meeting to explore the following updated options moving forward:

1. **Fish Passage Only**

5. **Fish-Flood with Direct Piping:** Includes all the elements of Option 1, with the addition of approximately 2,000 cfs discharge capacity through the dam, which would make it possible to actively manage the reservoir water elevations to reduce downstream flood risk. Option 5 may also include directly piping water to rights holders, reducing or eliminating the need for augmented flow in the Skookumchuck River.

6. **Dam Removal with Off-Channel Storage:** Remove the dam, eliminating the need for fish passage (though increasing downstream flood risk), and construct a reservoir in the Skookumchuck basin off of the main channel to capture sufficient water to maintain the TransAlta water bank.

This new options proposal unilaterally eliminates the Dam Removal Only option despite little substantive discussion with the Board and no clear direction from the Board. By the June 2023 Board meeting, these three options were presented again with a budget of $295,000 to accomplish:

- Stakeholder engagement support
- Water rights accounting (seasonality/volume of use downstream of dam)
- Off-channel reservoir conceptual investigation
- Concept design of direct piping to major water users
- Conduct Upper Skookumchuck habitat/geomorphic survey
- Geotechnical data review and site reconnaissance
- Summary memorandum

Despite no informed decision being made by the Board, it is our understanding that OCB staff intend to pursue a contract with Anchor QEA for the above and move ahead without further consideration of dam removal as a stand-alone option.

EXECUTIVE SUMMARY

The Skookumchuck Dam was built between 1968 and 1971 and was placed in operation in 1971 to facilitate water withdrawals from the reservoir it created for energy production at the coal-fired Centralia Steam Plant. It is now owned by TransAlta Corporation, a Canadian-based electric power generator. TransAlta's Centralia operations include two 702.5 MW boiler units that are fueled by coal. A surface water right to withdraw up to 28,033 acre-feet per year from the Skookumchuck River supports power generation operations. Most of this water evaporates as part of the cooling process and a smaller portion returns to the river.

When the dam and reservoir were built, there was no fish passage included. To mitigate the impacts of the Steam Plant operations on salmon, the Washington Department of Fisheries (now Department of Fish and Wildlife ("WDFW")) entered an agreement with TransAlta's predecessor consortium of owners in 1974, which was updated in 1998. That Agreement imposed an instream flow regime through the spillway of the reservoir, as described in more detail in subsequent sections provided below.

In 1976, the State adopted minimum instream flow regulations for the Skookumchuck River measured at river mile 6.4 (WAC 173-522-020(2)). These minimum instream flow regulations, which are also described in more detail in subsequent sections, are arguably junior to the flows imposed through the Reservoir Water Right Certificate with a priority date of 1966 (attaching the 1974 Agreement with WDFW, updated in 1998).

The first coal-fired boiler unit was decommissioned in 2020 and the second unit is scheduled to be decommissioned by 2025. As the boiler units are shut down, TransAlta will no longer need a significant portion of its water right.

In advance of full decommissioning, TransAlta transferred its water right to the State's Trust Water Right Program, creating a water bank that will hold those rights until they are sold by TransAlta. The Department of Ecology ("Ecology") issued a certificated water right to TransAlta authorizing future withdrawals from the water bank of up to 51.6 cubic feet per second and 28,033 annual acre feet between the point of the historic diversion (approximately river mile 7.4) to the confluence of Hanaford Creek and the Skookumchuck River.

The water right includes maximum monthly quantities available for withdrawal, not to exceed an annual total of 28,033 acre feet, that were developed "to ensure that existing users are not impaired by future exercise of the trust water right outside of the historic band of impacts that previously occurred." Subsequently, TransAlta transferred 27.5 cubic feet per second and 12,000 acre feet a year out of the Trust Water Right Program for its use until 2029.

The QIN understands consideration of Option 6, dam removal with off channel storage, as a way to maintain some level of future water withdrawals currently maintained by the dam. Given the uncertainty about whether Option 6 is viable and the dire condition of spring Chinook and other salmon species in the Skookumchuck River, however, it is imperative that the stand-alone dam removal option remain as part of the Chehalis Basin Strategy's exploration of options for the future of the dam.

Analysis to follow will detail the far-reaching impacts of the dam on spring Chinook and other salmon species in the Skookumchuck River. Those impacts include:

- The lack of upstream fish passage blocks access to spawning grounds for Chinook (primarily spring Chinook), Coho and Steelhead.
- The reservoir covers and renders unusable most of the best historic spawning habitat for spring Chinook.
- The unnatural flow regime created by the dam continues to force the mixing of spawning adult spring Chinook and fall Chinook to the detriment of spring Chinook in the Skookumchuck River below the dam.
- The unnatural flow regime may also be negatively affecting spring Chinook in the Chehalis River and its other tributaries. The pulse of water typically released from the reservoir in late August flows all the way down to the mouth of the Chehalis River in Grays Harbor and may trigger fall Chinook to begin their upstream migration earlier than they would under a natural flow regime. That early entry of fall Chinook into the Chehalis may facilitate mixing of adult migrating spring Chinook and fall Chinook throughout the Chehalis Basin, to the detriment of spring Chinook.
- Since dam construction there has been an increase in turbidity in the lower Skookumchuck River below the dam. Although turbidity in the lower river occurs, the water entering the reservoir is clear, demonstrating the cause is related to the dam and reservoir. The turbidity negatively impacts fish feeding efficiency, including for spring Chinook and other salmon species in the river.
- The dam cuts off upstream sediment and wood supply to the lower river, both of which are essential fluvial processes needed to sustain aquatic habitat.

All of the above stated impacts of the dam could ultimately lead to extinction of spring Chinook and continued decline of other salmon species in the Skookumchuck River.

I. QUINAULT INDIAN NATION TREATY RIGHTS AND INTERESTS.

Quinault is a signatory to the Treaty of Olympia (1856) by which it reserved, among other things, the right of "taking fish, at all usual and accustomed fishing grounds and stations," among other rights, in exchange for ceding lands it historically roamed freely.

In a landmark court case known as the "Boldt decision," a federal court confirmed Quinault's treaty fishing rights and established the Nation and other plaintiff tribes as co-managers of off-Reservation fisheries resources entitled to half of the harvestable number of fish returning to Washington waters. *United States v. Washington*, 384 F. Supp. 312 (W.D. Wn. 1974), *aff'd* 520 F.2d 676 (9th Cir. 1975), *cert. denied*, 423 U.S. 1086 (1976). Based on the evidence provided, the court determined the usual and accustomed areas of the Quinault Nation include "the waters adjacent to their territory" and "Grays Harbor and those streams which empty into Grays Harbor." *Id.* at 374-75. Throughout these terrestrial, riverine and marine usual and accustomed fishing areas—including the entire Chehalis River Basin—Quinault is either a full manager or co-manager of Treaty resources and the habitats that support them.

Treaty rights have substantial legal weight. The treaties signed with Washington tribes in the 1850s do not grant rights to Indians, but rather serve as a "grant of right from them—a reservation of those not granted." *United States v. Winans*, 198 U.S. 371, 381 (1905). Thus, the Quinault Nation's treaty rights are rights reserved by, and not granted to, it. Treaties are the supreme law of the land. *Worcester v. Georgia*, 31 U.S. 515, 531 (1832). These rights cannot be abrogated or diminished except by "plain and unambiguous" explicit congressional authorization. *United States v. Santa Fe Pac. R.R. Co.*, 314 U.S. 339, 346, 354 (1941).

The Nation's reserved treaty fishing right includes an implied right to sufficient quality and quantity of water to maintain harvestable levels of fish in the rivers, with a priority date senior to all others—time immemorial. See, *Wash. Dep't of Ecology v. Yakima Reservation Irrigation Dist.*, 850 P.2d 1306, 1310 (Wash. 1993).

Treaties take precedence over state laws by reason of the Supremacy Clause of the U.S. Constitution, Art. VI, Sect. 2, which binds the State of Washington and its agencies, as well as counties and cities, to honor the treaties signed between Washington Indian tribes and the United States Government in the 1850s and to ensure agency actions do not harm them. This was affirmed by the Ninth Circuit Court of Appeals holding that, "The State of Washington is bound by the treaty. If the State acts for the primary purpose or object of affecting or regulating the fish supply or catch in noncompliance with the treaty as interpreted by past decisions, it will be subject to immediate correction and remedial action by the courts." *United States v. State of Washington*, 759 F.2d 1353, 1357 (9th Cir. 1985) (*en banc*).

The Nation's federally-protected treaty fishing right guarantees each enrolled Quinault tribal member—now and in perpetuity—the right to harvest any and all fish species anywhere within the Quinault Nation's usual and accustomed fishing areas in perpetuity.

Fish are a source of social, economic and cultural values. Salmon have particular historic significance as a vital cultural and economic resource of the Quinault people, for current, past and future generations.

Our elders teach that what we consider archaeological sites like middens and salmon weirs/fish traps are vestiges of how past generations of our people feasted and how the land kept the story of the lives of our people upon the landscape. The abundance of Indian fisheries is attributed to our partnership ethic, which allowed the Indians and the fish to co-evolve over thousands of years. It is said that the tribal people appreciate the relationship with all things in the world, thus ceremonies were created to thank the other beings for sharing themselves with humans so that they may have sustenance. There were times of famine and shortages, which helped the people to always be thankful for the bounty from the land, oceans and rivers.

Salmon is a critical food source for the Quinault people, providing protein, vitamins, and oils that are vital to their dietary health and community well-being. Due to the size of the Chinook salmon, it produces many more eggs than other salmonids. The Quinault people love fish egg soup and baked eggs are considered a delicacy. Traditionally, no edible part of the fish was wasted, including the head, eyes and eggs. Due to the high fat content, it is considered the most flavorful of the salmon species. The Chinook belly meat is cherished as the best part of the fish.

The nutrition from salmon reduces susceptibility to debilitating diseases like diabetes and provides food for sharing in ceremonial and cultural events. It also protects the community by providing food security during times of scarcity or crisis. Often, salmon and other fish are shared with family members, elders and others in the community who do not, or can no longer, fish.

Salmon were central to the culture and the primary food for coastal tribes for thousands of years comprising 80 to 94% of the animal food source at some researched sites (Lichatowich 1999). Even after the arrival of European descendants in the Pacific Northwest, salmon remained central to the livelihoods of Quinault people with fishing continuing to support traditional lifestyles, with salmon fishing becoming an economic mainstay for the tribes. For generations, fishing was the mainstay of tribal economic activity and, even today, many tribal fishers derive their entire economic livelihood from fishing, including from the Chehalis River system. Salmon represent a means for employment in fishing, guiding and processing jobs. Fish are often used in trade between tribal members for other foods or goods. Salmon are communally served at social and community events such as celebrations, weddings and funerals.

While Quinault utilizes all available salmon species, spring Chinook is highly prized as it is often the first salmon species to return at the end of the winter when stored fish from the previous fall may be in short supply, and it was the first fresh fish available. In addition, due to their prolonged freshwater residence, spring Chinook have higher oil content in their flesh, thus tasting better and providing more nutrition at a crucial time of the year.

Fishing is also a way to educate younger generations in life lessons, both as a means to pass on traditional knowledge and the importance of stewardship of natural resources for future generations. Parents bond with and teach these life lessons to their children while catching, gathering, preserving, and preparing foods.

Quinault participated with the Chehalis Basin Partnership ("Partnership") to update the Chehalis Watershed Management Plan under the Streamflow Restoration Act (Ch. 90.94 RCW) through an Addendum approved November 17, 2020. The Addendum identified acquisition of TransAlta trust water right as "largest and highest certainty" to offset the impact of future exempt well consumptive use through 2040 of 504.8 acre feet of water per year. Because of its interest to protect its Treaty-reserved fishing rights in the Chehalis Basin, the Nation obtained a grant from Ecology to conduct a feasibility study and due diligence to consider acquiring a portion of TransAlta's water right to benefit fish. As part of that analysis, we conducted an extent and validity analysis of the TransAlta water right and concluded, among other things, that future withdrawals from the Skookumchuck and Chehalis Rivers downstream of the TransAlta facility during the period June through October may be 30% higher than the maximum historical withdrawals and 80% higher than the average historical withdrawals. Our analysis of instream flow considerations is due January 31, 2024.

It is these Treaty-reserved rights and interests that provide the basis for our comments.

II. INSTREAM FLOWS AND THE NATURAL FLOW REGIME

The hydrograph measured in a river at a particular location depicts the seasonal flow runoff pattern in the watershed. A representative hydrograph for the lower Skookumchuck River prior to dam construction is seen in Figure 1 for calendar year 1969. The flow pattern is typical of a rainfall dominated stream in Western Washington with flow peaks following precipitation events in the fall and winter. Flow typically begins to increase in September, then steadily increases with periodic significant spikes in flow coinciding with heavy rainfall during late fall and winter. Flows then generally decline in late winter and spring, continuing to decrease through summer. The lowest flows of the calendar year usually occur in late summer and early fall.

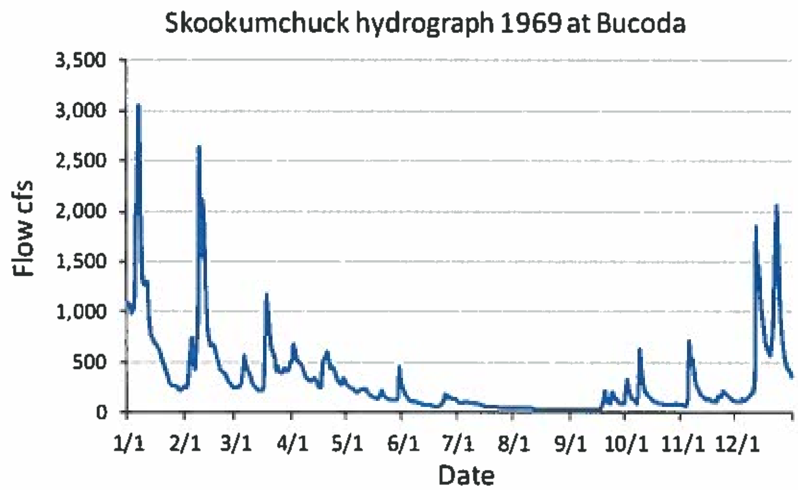


Figure 1. The Skookumchuck River hydrograph in 1969 at the USGS Bucoda gauging station.

The flow pattern in a river's natural state prior to alteration from land use or regulation by dams is called the natural flow regime (Poff et al. 1997). The natural flow regime shaped the riverine ecosystem in a watershed over millennia (Bunn and Arthington 2002; Annear et al. 2004). It functioned as the major driver of important natural processes that influenced both physical and biological features of the historical riverine ecosystem (Figure 2). Dams and regulated flow regimes interrupt the passage of sediment and wood, which are also critical to creating and sustaining salmonid habitat.

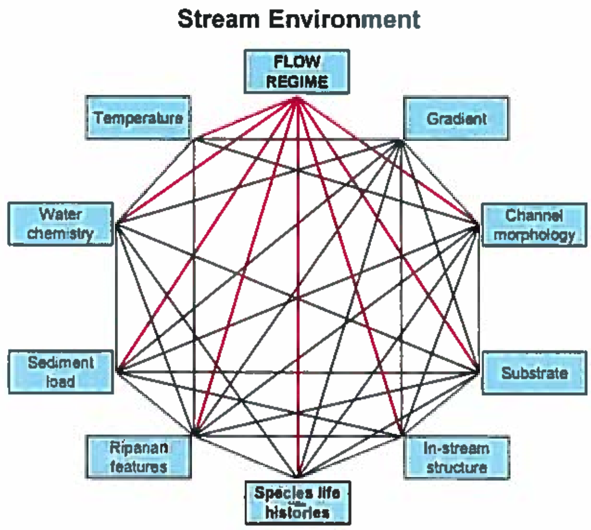
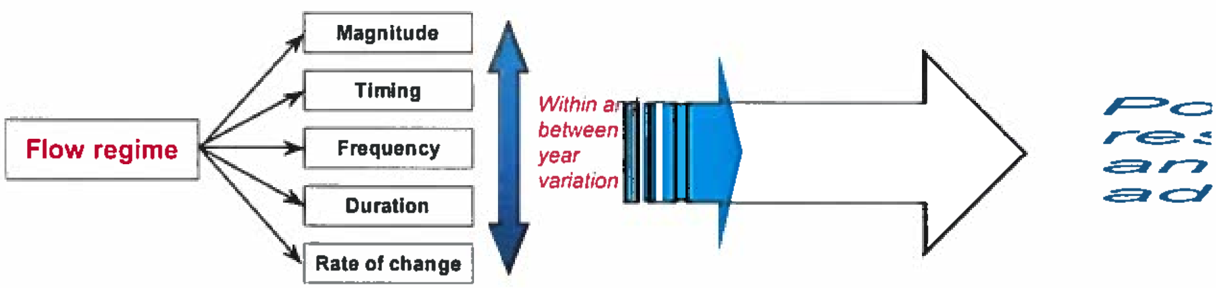


Figure 2. Factors affecting habitat and biological processes and functions within the stream environment, showing the important role of the flow regime. Adapted from Giger (1973). Taken from SIT and WDFW (2010).

The natural flow regime is defined by five characteristics in flow: magnitude, timing, frequency, duration, and rate of change (Poff et al. 1997) (Figure 3). Over some period of years, these characteristics vary within a range determined by prevailing climate patterns and various watershed features, such as its size, location, topography, configuration, geology, and land cover.

River flow regimes are also a major driver of life history evolution within aquatic systems (Bunn and Arthington 2002), including life history patterns of salmon species (Waples et al. 2008) (Figure 3). The natural flow regime is the regime that salmonid species adapted to in the centuries prior to the rapid alterations that have occurred in many watersheds over about the past 100 years. Salmonid population structure and related life histories (such as timing and movement patterns) in a river system adapted to the characteristics of the natural flow regime.



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1997). Taken from SIT and
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from a natural flow regime are indicators of stream degradation and can have potentially adverse effects on the riverine ecosystem.

The Skookumchuck River, with its rainfall dominated hydrograph, would often have flows less than 35 cfs in late summer near Bucoda prior to dam construction. Figure 4 illustrates the median daily flow estimated for the Bucoda gage (12026400 at RM 6.4) during summer months prior to dam construction. The estimates are for a 41-year data record based on statistical analysis between empirical data from USGS gauge 12026000 (RM 22.2) and the Bucoda gauge from the late 1960s (Joel Massmann, Keta Waters, personal communications).[1] The median flow means that there is a 50% probability that the actual flow on a given day would have been either lower or higher than the value shown. The lowest median flow level for the summer was approximately 34 cfs prior to dam construction.

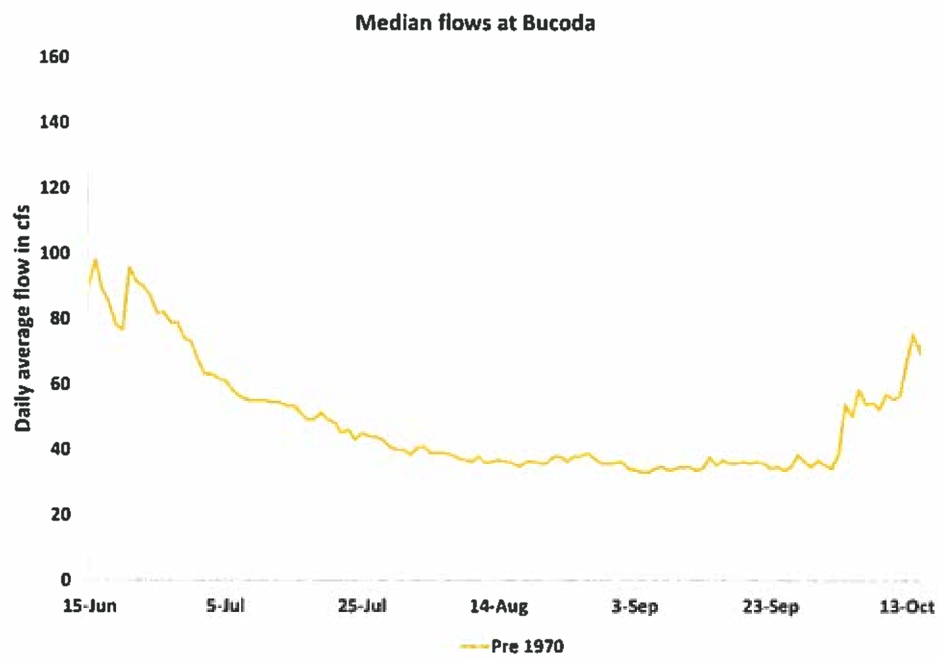

Figure 4. Estimated median daily flow between June 15 to October 15 at the Bucoda USGS gauge (RM 6.4) prior to dam operation in 1971 (Joel Massmann, Keta Waters, personal communications).

III. THE DAM AND TRANSALTA WATER RIGHT

The Skookumchuck Dam, built between 1968 and 1971 and placed in operation in 1971 (Ecology, 1975), resulted in immediate, dramatic changes to the flow regime in the Skookumchuck River downstream of the dam and in the Chehalis River downstream of the Skookumchuck confluence. The dam and altered flow regime affected numerous physical, thermal, chemical, and biological attributes

[1] USGS gauge 12026000 (RM 22.2), which was upstream of the dam site, ceased operation upon completion of the dam.

of the river (Stanford et al. 1996); our comments here focus on how the flow regime was altered during summer and early fall.

The dam and its reservoir were built to provide sufficient water storage to supplement flows in the Skookumchuck River to facilitate year-round water withdrawals from the river for operations of the Centralia Steam Generation Plant. The dam, located at RM 22, releases flow year-round below the dam, which provides for the needed water withdrawals at a diversion at RM 7.2, approximately 15 miles downstream of the dam.

Water Right Permit No. 14966 authorized TransAlta and its predecessor to withdraw 54 cfs and 39,100 AF/year from the Skookumchuck River for "industrial use and generation of steam for electric power purposes," with a priority date of November 28, 1966. However, the full amount authorized was not used and thus, on September 1, 2009, Ecology issued Water Right Certificate S2-14966C for 51.6 cfs and 28,033 AF/year at the point of diversion (RM 7.2). Ecology also issued reservoir certificate R11862 on April 2, 1999, with a priority date November 28, 1966, which included an Agreement between the Washington Department of Fisheries and the original dam owners, a consortium of power companies, dated January 9, 1974, that established a flow regime based on releases from the reservoir as follows (with a few caveats not included) below:

The flows for September 10 to November 1 and from November 1 to April 1 are minimum flows. The flows from April 1 to September 10 are not minimum flows, but rather are specified flows.

DATES	FLOW CRITERIA AT BLOODY RUN GAUGE
April 1 to September 10	The lesser of 95 cfs or the natural river flow determined by reservoir inflow plus 50 cfs from reservoir storage
September 10 – November 1 or end of spawning	At least 140 cfs
November 1 or end of spawning – April 1	At least 95 cfs

This flow regime was modified slightly as part of another agreement with the original dam owners in 1998 as follows:

DATES	FLOW CRITERIA AT BLOODY RUN GAUGE
April 1 to September 1	The lesser of (i) 95 cfs, or (ii) the natural river flow determined by reservoir inflow plus 50 cfs from reservoir storage
September 1 – October 20	At least 140 cfs, depending on reservoir elevations
End of spawning – April 1	At least 95 cfs, depending on reservoir inflows

The Skookumchuck reservoir has generally been managed over the last 50 years in a manner that has resulted in an artificially high median flow, as depicted in Figure 5 below. It is important to recognize that the amount of flow between the diversion and the dam—a distance of about 15 miles—was, therefore, increased substantially during summer months over the pre-dam natural flow amount.

In 1979, Ecology adopted base flows for the Skookumchuck River downstream of the water diversion point (using flows measured at the Bucoda gage RM 6.4) (WAC 173-522-020) as follows:

DATE		CFS
Jan.	1	160
	15	160
Feb.	1	160
	15	160
Mar.	1	160
	15	160
Apr.	1	160
	15	160
May	1	160
	15	130
June	1	103
	15	83
July	1	67
	15	54
Aug.	1	43
	15	35
Sep.	1	35
	15	35
Oct.	1	35
	15	35
Nov.	1	59
	15	96
Dec.	1	160
	15	160

Because these regulatory base flows were adopted in 1976, after the flow regime established under the Reservoir Water Right Certificate with a priority date of 1966, adopting the 1974 Agreement with Washington Department of Fisheries and associated flow regime, TransAlta has not managed its reservoir operations to ensure these base flows occurred in the Skookumchuck at the Bucoda gauge.[2]

[2] Neither the regulatory base flows adopted in WAC 173-522-020 or the flow regime established by the 1974 or 1998 Agreements between WDF and TransAlta's predecessor are accurately reflected in the "Skookumchuck Dam

Of particular concern to Quinault is that the amount released from the dam—to meet the needs of the power generation facility and other water needs—was much greater than what was needed to align with the natural flow downstream of the diversion site prior to dam construction (Figure 5). To our knowledge, no reason for such a departure has ever been documented.

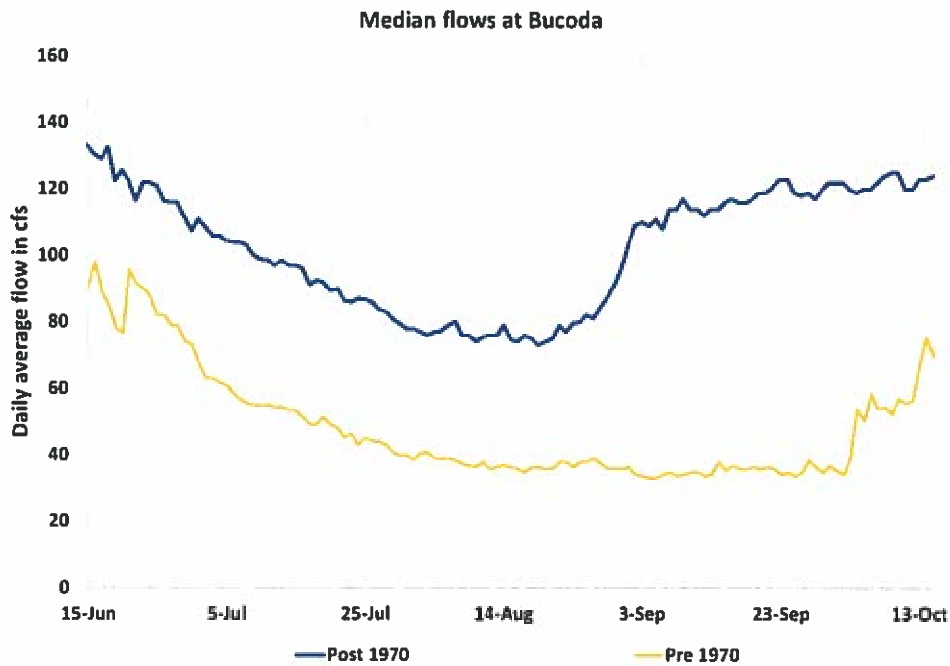

Figure 5. Estimated median daily flow between June 15 to October 15 at the Bucoda USGS gauge (RM 6.4) prior to and after dam construction in 1970 (Joel Massmann, Keta Waters, personal communications).

Figure 5 compares the daily median flow levels at the Bucoda USGS gauge after Skookumchuck Dam construction to the median flows prior to the dam (Joel Massmann, Keta Waters, personal communications). Summer flows downstream of the diversion point in the Skookumchuck River were increased very significantly compared to those prior to dam construction. In mid to late summer, flows were usually about double the median natural flow levels. Then, on approximately September 1 each year, flows were increased significantly more—to nearly triple the median natural flow level.

These changes to the flow quantities from pre-dam conditions created a very unnatural flow regime in the entirety of the Skookumchuck River below the dam, both upstream and downstream of the water diversion at RM 7.2. From early June to September 1, the pattern is more characteristic of a snowmelt dominated regime than a rainfall dominated one. Beginning about September 1 the flows were then artificially increased even further and sustained at that higher level through October. There can be little

Initial Data Compilation and Analysis" (September 2021, Pub. No. 22-13-002). In particular, it is unclear what information was used to generate the table on p. 13.

doubt that these changes to the natural flow regime disrupted the natural patterns of Chinook migration and spawning timing (discussed below).

We note that no documentation is apparently available of how the designated flows were derived in the two Agreements with TransAlta's predecessors (1974 and 1998), or the amount to be released from the dam, other than what is given in Finn (1973), which provides no analysis or rationale.

The rationale for the departure from the natural flow regime downstream of the water diversion site can only be surmised. The flow releases specified by WDF were developed prior to the work of Stanford et al. (1996) and Poff et al. (1997), which identified the emerging science for restoring natural processes in regulated rivers. Larry Lestelle (Biostream Environmental, personal communications), having begun his career at the time of the Finn (1973) report, speculates that biologists then generally believed that "more was better" when considering how much flow should be released below dams in summer. Water regulators across the Pacific Northwest and California were pushing to reduce flows to especially low levels, such as where diversions for irrigation existed at dams. Hence, if asked "how much flow should be released to the natural stream," "more is better" would have been a common answer by many biologists based on the best available science at that time.[3]

The rationale for increasing the flow still further in September was that this was needed by Chinook spawning occurring in the Skookumchuck River at that time (Finn 1973), presumably by spring Chinook that would be spawning in September and early October. But oddly, the rationale for the increase in September ignored the fact that the river between the diversion and the dam, a distance of 15 miles, was being used to convey an already greater flow to supply the diversion.

Moreover, this pattern of increasing flows to levels greater than the natural flow level downstream of the diversion also resulted in flows in the mainstem Chehalis River downstream of the Skookumchuck being increased substantially. There, flows could be as low as 120 cfs or less prior to dam construction. The result was that flows downstream of the Chehalis-Skookumchuck confluence were typically increased by at least 30%, sometimes much more than that, in late summer and early fall.

It bears noting that one reason why the flows downstream of the water diversion (RM 7.2) have been so much higher than the natural flow regime appears to be due to TransAlta and the former dam owner not using all of its water right during summer (Joel Massmann, Keta Waters, personal communications). Water excess to operational needs has been routinely passed downstream, increasing flows over the natural flow regime both in the lower Skookumchuck River and downstream in the Chehalis River. No consideration was ever given to how the altered flow regime might be affecting salmon populations in the river until very recently as part of the work of the joint scientific team investigating Skookumchuck Dam issues (e.g., Ferguson and Lestelle 2022).

If the reservoir releases had followed the 1974 and 1998 agreements and if TransAlta had removed their full water right of approximately 50 cubic feet per second, the flows below the TransAlta diversion would have been relatively close to pre-dam levels between April 1 and September 1.

[3] Mr. Lestelle was confronted with that question on several occasions in his career where irrigation issues existed. In many streams, irrigation diversion often reduced flows to extremely low levels, even to the point of complete dewatering. The "more is better" answer was a natural response in these situations.

However, the reservoir releases did not fully follow the agreements and TransAlta removed significantly less than 50 cubic feet per second during this period. These two factors contributed to the substantial increases in flows at Bucoda during summer months, as compared to pre-dam flow levels.

Figure 6 illustrates the combined effects of reservoir releases and TransAlta withdrawals on flows at the Bucoda USGS gauge. The lower graph in Figure 6 shows the estimated median flows at Bucoda prior to dam operations in 1971. The median TransAlta withdrawal between 1972 and 2020 for the period April 1 through September 1 is estimated to be approximately 23 cubic feet per second (Joel Massmann, Keta Waters, personal communications). If the releases from the dam had been limited to the pre-1970 flows plus approximately 23 cubic feet per second, then the median flows at Bucoda would have mimicked pre-1970 flows.

The graph in Figure 6 labeled "Post 1970" shows the median flows observed at Bucoda after dam operations began. Much more water was released than was necessary to satisfy the TransAlta withdrawals, as previously discussed. In the future, flows at Bucoda will be even larger if there are no withdrawals at the TransAlta diversion and if the reservoir releases continue as they have in the past. Such a scenario will further exacerbate impacts to Chinook, discussed below. This situation is shown with graph in Figure 6 labeled "Post-1970 releases with no TA withdrawals."

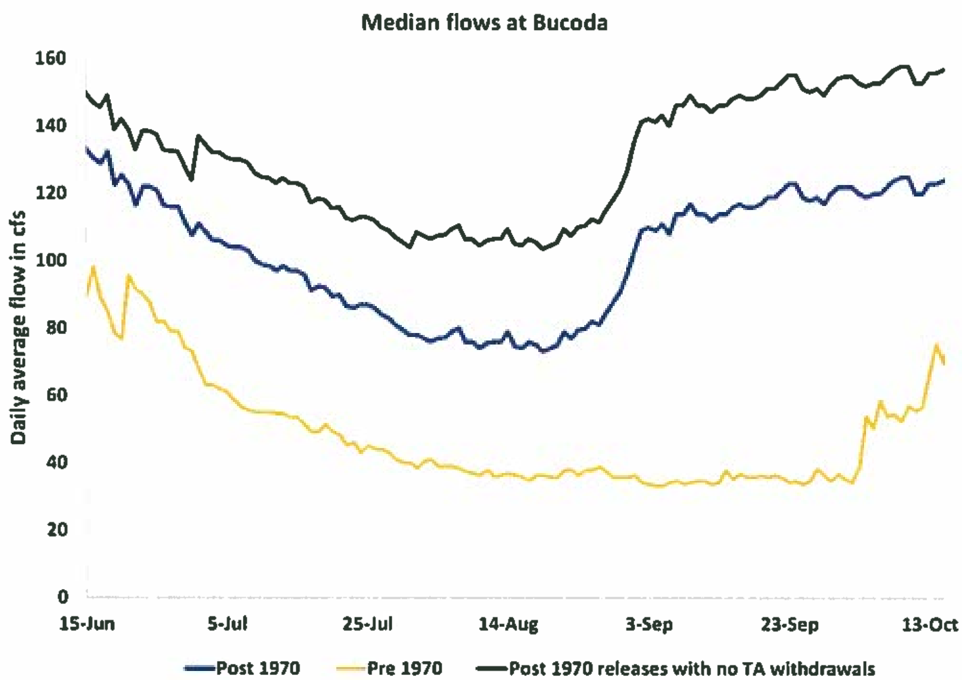

Figure 6. Estimated median daily flow between June 15 to October 15 at the Bucoda USGS gauge (RM 6.4) prior to and after dam operation in 1971 if withdrawals occur below RM 6.4 (Joel Massmann, Keta Waters, personal communications).

TransAlta has now converted approximately half of its power generation water right into a water bank with Ecology. The water bank provides 24.1 cfs and 16,033 AF/year for instream flow augmentation and other purposes until 2025 (Ferguson et al. 2021). After 2025 there would be 51.6 cfs and 28,033 AF/year available for withdrawal, assuming the TransAlta's second turbine ceases operation at that point.

How the water bank is to be implemented remains unclear at this time other than pursuant to the water right certificate with the allowed monthly maximum withdrawals. Certainly, its establishment and how it might be operated significantly complicates whether and how the natural flow regime can be restored. This complication makes it difficult to analyze possible adverse effects to the salmonid populations that might occur in the future, as well as potential benefits to those populations by modifying dam operations.

Besides altering the flow regime, the dam was not built to accommodate effective upstream fish passage for returning adult salmonid species. Some minimal provisions were made for downstream juvenile salmon passage, but even those have never been consistently implemented (Hiss et al. 1982; Ferguson et al. 2021). The only species that has been provided some passage over the dam has been steelhead by a trap and haul approach. We note that these fish are the products of hatchery production in the hatchery facility built immediately downstream of the dam.

IV. HOW THE DAM AND ITS OPERATIONS HAVE AFFECTED FISH

The dam and its operations have had significant adverse effects on the natural salmon and steelhead populations in the Skookumchuck River, as well as on the habitats that support them. Hiss et al. (1982), in their assessment for the U.S. Fish and Wildlife Service (USFWS), concluded the following with respect to estimating losses due to the dam:

> Before construction, the area above the dam provided holding, spawning, and rearing area for spring chinook, fall chinook, coho and steelhead. Salmon and steelhead had access to 14 miles above the dam to RM 36. Half the potential coho rearing area (Finn, 1973) and 90% of the potential steelhead spawning grounds on the Skookumchuck (PP&L, 1979) were above the dam. The dam completely blocked migration upstream, resulting in an estimated loss of 500 spring chinook, 311 fall chinook, 1,800 coho (Finn, 1973) and about 700 steelhead (WDG, 1970) spawners.

Besides blocking fish passage, the dam adversely affected the population structure of the two Chinook run types in the river, inundated important spawning and rearing areas under the reservoir, and altered habitat characteristics downstream of the dam, including, as described earlier, the flow regime. These issues are described below.

<u>Effects on Chinook Population Structure and Spring Chinook</u>

The dam had a major adverse effect on the population structure of Chinook salmon in the Skookumchuck River, which has never been mitigated in any way. The effect was most pronounced on spring Chinook. Two run types of Chinook are produced in the Chehalis Basin, classified as spring-run or fall-run depending on timing of river entry from the ocean and spawning. Spring Chinook, as their name implies, return to their natal river from the ocean in spring or early summer. Fall Chinook return in late summer or fall. Recent research indicates these differences in the run types each have a unique genetic basis that is highly unlikely to reoccur should the genotype be lost (Waples et al. 2022). Both run types were produced historically in the Skookumchuck River.

Individuals of the two run types can interbreed, producing hybrids (heterozygotes), which have an intermediate river entry and spawning timing between the two pure run types. Interbreeding of the two run types is considered to be a potential major threat to spring Chinook salmon in the Chehalis Basin (Thompson et al. 2019a and b). Over time, where interbreeding of the two run types is significant, the spring-run type will lose out and be replaced by fall Chinook as a result of spring Chinook generally being less productive (e.g., smaller body size with fewer eggs) (Thompson et al. 2019a).

For the two run-types to co-exist in a river some type of separation in their spawning needs to occur. In some rivers, separation is provided by waterfalls or steep cascades (Waples et al. 2022). Spring Chinook are able to ascend the steep stream reaches in the springtime in snowmelt dominated streams due to the higher flows at that time that enables the fish to move upstream. But, in late summer or early fall, when streamflows have dropped to their lowest levels, fall Chinook are unable to pass upstream. In these streams, spring Chinook typically spawn upstream of the waterfall or steep cascades, while fall Chinook spawn downstream, such as (historically) in the Skokomish River (SIT and WDFW 2010) located just north of the Chehalis Basin.

In rivers with a rainfall dominated flow regime, such as the Chehalis and Skookumchuck rivers—where few waterfalls exist to separate the run types, spawning separation can occur due to low flows and temperature conditions in mid to late summer that impede migration of fall Chinook into the upper river at times that would threaten the spring-run type. This is the situation that is believed to have existed historically in the Chehalis Basin, enabling the two run types to co-exist without significant adverse effects from interbreeding (Ferguson and Lestelle 2022).

In the Chehalis River, historical flow conditions in late summer were very low, accompanied by warm water temperatures. These conditions were generally unfavorable to adult salmon migration into the river at that time; consequently, few, if any, adult Chinook migrated through the lower river and into the upper river regions in mid to late summer (Lestelle et al. 2019). With the advent of the first fall rains and cooler water temperatures, typically in early September, fall Chinook would begin to move into the lower river and start their upstream migration to the spawning grounds. This pattern is seen in all of the Washington coastal rivers.

The timing of the adult Chinook migrations, combined with the natural flow and temperature patterns in the Chehalis River, created spatial and temporal patterns in spawning of the two run types that minimized interbreeding and allowed both run types to exist in the Chehalis and Skookumchuck Rivers. Spring Chinook generally spawned higher in the river system than fall Chinook (Phinney and Bucknell 1975; Finn 1973; Hiss et al. 1982) and earlier (Lestelle et al. 2019), thereby minimizing adverse interactions on the spawning grounds. Finn (1973) reported that most spring Chinook in the Skookumchuck River spawned upstream of where the dam was to be built in 1970; most fall Chinook spawned downstream.

The history of what happened to the Skookumchuck Chinook populations after the dam was built shows that WDF, together with the dam owner, gave inadequate attention to the effects of the project on spring Chinook. Adverse interactions of the two run types were expected to occur downstream of the dam since it was clear that both run types would be forced to spawn in the same reaches once the dam was built. No fish passage of any kind was being provided at the dam for salmon species that spawned upstream prior to the dam.

The USFWS provided technical services in the early 1980s to the Bureau of Indian Affairs (BIA) to evaluate the status of salmon and steelhead in the Chehalis Basin as it might affect the fisheries of the Chehalis Tribe (Hiss et al. 1982, 1985). In its evaluation, USFWS gave particular attention to what it called the "depleted spring Chinook run." Regarding the effects of the Skookumchuck dam on spring Chinook, Hiss et al. (1982) stated:

> The dam was designed to mitigate spring chinook by providing cool outlet water. Outlets at various elevations allow outlet water temperature to be controlled and kept below 60 F all year. Also, an area immediately downstream of the dam was set aside for spring chinook spawning. To keep fall chinook from digging up spring chinook redds, a weir was built several miles below the dam and only spring chinook were allowed upstream. After five years the weir was removed because it was assumed that the two runs had established separate spawning grounds (R. Palmer, PP&L, personal communication).

As indicated above, some type of weir was built some distance downstream of the dam, presumably through joint involvement of WDF and the dam owner (Pacific Power and Light Company, PP&L). The purpose was to provide physical separation of spring and fall Chinook spawners. The weir was apparently built in the early 1970s and operated for five years. After five years, PP&L, and presumably WDF, "assumed that the two runs had established separate spawning grounds" and the weir was removed. No rationale or evidence was given for assuming the two runs had in fact established separate spawning grounds; to our knowledge no documentation exists to support the assumption.

The dynamics of salmon populations, as well as their adaptations to the Skookumchuck and Chehalis rivers for centuries, suggest it was highly unlikely that a new population structure was established after just five years of operating a weir below a dam recently built without fish passage. Such an claim defies sound scientific reasoning.

Regardless, the weir was removed sometime in the mid-1970s and was never used again, despite evidence that spring Chinook were being adversely impacted by fall Chinook spawners in the early 1980s. Hiss et al. (1985) stated:

> In spite of the general underescapement, fall chinook appeared to be superimposing redds on those of spring chinook between Miles 6.4 and 22.0 of the Skookumchuck River. Superimposition was greatest in a two-and-a-half-mile reach below the Skookumchuck dam. We recommend reconsideration of a weir below this area to protect the spring run spawners.

Thus, the USFWS biologists believed that both spring and fall-run spawners were spawning throughout the river upstream of RM 6.4 to the dam, but particularly closer to the dam—and that spring Chinook redds were being adversely impacted by fall Chinook spawning. This indicates that the population structure of the two runs, suddenly forced to co-exist together on the spawning grounds downstream of the dam, was being disrupted by the dam and its operations. Neither WDF nor PP&L took any action to mitigate such effects following the report of the USFWS.

Confirming evidence of disruption to the Chinook population structure in the Skookumchuck River has been produced by sampling newly emerged Chinook fry in the river over the fry emergence periods in 2020 and 2021 (Gilbertson et al. 2021; Gilbertson 2022). Study results show that the combined Chinook spawner population currently in the river is largely composed of pure fall Chinook, a substantial number of the hybrid (heterozygote) run type, and relatively few pure spring Chinook (<5%). It is clear that interbreeding of the run types has been significant in recent decades.

The disruption to the population structure, first by superimposition of redds and then by interbreeding of run types, was the result of two issues occurring concurrently. The initial disruption, which continues to the present time, was the construction of the dam that blocked upstream passage, thereby squeezing the two run types together unnaturally into the lower river. The second issue was the alteration of the flow regime by artificially releasing significantly more water into the very lower reaches of the Skookumchuck River (downstream of the water diversion), and then into the Chehalis River.

The effect of this alteration of the flow regime very likely facilitated an earlier migration of some fall Chinook into the upper Chehalis River, including into the Skookumchuck River. The upstream migration of adult wild fall Chinook into Washington coastal rivers typically begins near the end of August or in early September with the first rainfall events of the season (SIT and WDFW 2010; Lestelle et al. 2019). Upstream migration by large-bodied adult salmon over shallow riffles prior to increased flows imposes physical stress thereby discouraging early migration of fall Chinook. Therefore it is reasonable to assume that the elevated flows as a result of flow regulation in the Skookumchuck River would have triggered an earlier migration of some fall Chinook through the lower Chehalis River and into the Skookumchuck River.[4] Moreover, an advanced arrival timing of some fall Chinook to the mouth of the Skookumchuck River likely also resulted in an advanced arrival to the Newaukum River, as well as to the upper Chehalis River. Migration to all of these areas would likely have been affected by the unnaturally elevated flows downstream of the Skookumchuck River that followed dam construction.

While there is uncertainty about the exact progression of events associated with how adult Chinook migration changed following dam construction, two outcomes appear to be linked to that event. Based on genetic sampling of emergent fry in the Skookumchuck River, it is clear that significant hybridization of the run types is occurring in that river (Gilbertson et al. 2021; Gilbertson 2022). The fry sampling also shows that hybridization is occurring in the Newaukum and upper Chehalis rivers. It is reasonable to conclude that the interbreeding occurring between run types in all of these areas has

[4] Larry Lestelle, based on many years of observing the arrival timing patterns of fall Chinook into Washington coastal rivers, believes that the flow increases that occurred after the Skookumchuck Dam began operations would have resulted in some advance in migration timing of fall Chinook.

been influenced by the unnaturally elevated flows in the Skookumchuck River during late summer and early fall.

The second outcome is that Chinook spawning timing has changed substantially in the Skookumchuck River, as well as in areas upstream, since the 1980s. Zimmerman (2017) graphed the timing of Chinook redd construction since the early 1980s in the Skookumchuck, Newaukum, and upper Chehalis River. Spawning by fish classified by WDFW as spring Chinook is now much later than it was in the early 1980s with peak spawning occurring essentially at the same time as fall Chinook spawning. This clearly means that the two run types are spawning together and producing hybrids.

The change in spawning timing that has been observed also indicates that hybrids are returning to the spawning areas. Hybrids have an intermediate river entry timing between pure spring and fall run Chinook (Thompson et al.2019a; Waples et al. 2022), as well as intermediate spawning timing. The result of these timing changes and associated hybridization indicates that population structure has broken down. The historical population structure would have impeded hybridization and maintained long-term stability in the run types.

The altered flow regime is likely to continue to facilitate an advance in run timing and mixing of run types – until a new population structure equilibrates. At that point, it is expected spring Chinook will have been extirpated; only a pure fall run population will inhabit the river then (Thompson et al. 2019a; Dr. Michael Miller, UC-Davis, personal communications). The time period for that to happen is uncertain but climate change effects are likely to hasten it.

Restoration of habitats suited to spring Chinook and re-creation of some form of separation between spring and fall-run Chinook in spawning will be required to avoid the demise of spring Chinook in the upper Chehalis Basin. This would need to include restoration of a natural flow regime in the Skookumchuck River.

Fish Passage and Reservoir Inundation

The construction of the Skookumchuck Dam at RM 22 brought an immediate end to essentially all upstream migration of salmonid species at the dam. As noted earlier, some minimal provision has been given over the years to steelhead passage but this has been inconsistently implemented—and never evaluated (described further below).

All passage for salmon species to the upper Skookumchuck River ceased upon completion of the dam. Species blocked were spring and fall Chinook and coho. A form of mitigation was provided through the agreement between the dam owner (PP&L) and WDF to produce hatchery coho and steelhead smolts and to release them downstream of the dam and in other locations in the upper Chehalis River. It is important to note, however, that this program has never been evaluated; its purpose and success remain uncertain.

No mitigation for lost Chinook production was ever given, though the release of cool water, and more of it than with the natural flow regime, was ostensibly to serve as mitigation. And, as noted above, a temporary attempt was made to provide spring Chinook a spawning area downstream of the dam, segregated with a weir to maintain separation from fall Chinook—but this was only for a brief period and it was never evaluated. The legacy of that haphazard effort, in conjunction with a dam that blocks passage, continues to have adverse effects as described earlier.

The facilities that were incorporated into the dam when it was built to provide some form of fish passage were never evaluated until very recently. The facilities for adult passage consist of a means of trapping returning hatchery-produced adult steelhead near the base of the dam and trucking them upstream of the dam for release. Provision for passage of smolts that would be produced from spawners released upstream of the dam is given through a fish sluice (a slot in the dam spillway structure) and by spill over the spillway when reservoir levels are sufficiently high. Anchor QEA (draft, 2022) described the state of the existing downstream passage facilities as follows:

> The existing fish sluice (and spillway, if any fish pass over the spillway during high flows) creates several hazardous flow and debris conditions for fish passage. These include excessive velocities and turbulence, insufficient flow depths, abrupt changes in flow direction, a lack of smooth flow transitions, and a likelihood that collisions will occur between fish and structural components of the spillway and chute. Fish could be ejected out of the main flow in the 4-foot-wide chute channel and onto the surrounding concrete of the chute where flow velocities are high, and depths are shallow due to the steep gradient of the chute. The raised channel walls likely prevent these fish from returning to the channel. In addition, the flow path for fish through the existing fish sluice is not straight and is turbulent because of the upstream topography that does not provide uniform flow towards the fish sluice and creates pockets and eddies within the fish sluice flow passageway and angled gate opening. Also, substantial debris can accumulate on the trash rack and through the small opening in the control gate that plugs up the fish sluice or causes very narrow openings of flow through the debris that can result in injury.

Anchor QEA concluded that "The existing fish sluice and chute return to the river were evaluated to not be a desirable downstream fish passage facility." As part of the Phase 2 analysis of the dam, Anchor QEA has developed a conceptual design for upgraded downstream passage facilities.

We note that the findings of Anchor QEA indicate that past efforts to transport adult steelhead to the upper Skookumchuck River with the objective of producing natural smolts from that area were likely severely hindered by the inadequate passage facilities.

The new passage concept developed as part of the Phase 2 analysis consists of a new fish sluice that would discharge 65 cfs from January 1 through mid-summer each year and send downstream migrating juvenile fish to a new low-gradient flume that could either return all the way to the river downstream of the dam or end at a holding area for downstream transport of fish via tank truck.

A key aspect of how well downstream passage would work for juvenile Chinook that might be produced from adult fish transported to that area would depend on how long adequate water could be released through the dam. Anchor QEA (draft 2022) concluded that in an average year there would be sufficient water at the fish sluice until mid-September, which would fully encompass the migration period for steelhead, coho salmon, and Chinook salmon juveniles. During drier years, the reservoir would drop too low for fish passage by early August, which would encompass the migration period for steelhead and coho salmon juveniles but would not fully encompass the Chinook salmon juvenile migration period.

Anchor QEA's Phase 2 analysis shows that in concept fish passage facilities could likely be designed to significantly improve on passage effectiveness compared to existing facilities. Improvements would be beneficial mostly to steelhead and to a lesser degree for coho. Improvements would have very little benefit to Chinook. The reason for these differences is mainly due to the effects of the reservoir and its inundation of spawning reaches that were historically used by coho and Chinook. A greater amount of spawning habitat is believed to be present and accessible for steelhead upstream of the reservoir. Spawning habitat upstream of the reservoir for both coho and Chinook is more limited.

It is important to recognize in considering alternatives for potential modifications to the dam and its operations that the most important spawning grounds historically for spring Chinook in the Skookumchuck River were located under the current reservoir (Finn 1973). Fish passage options at the dam will not address that situation.

Effects on Salmonid Habitats Resulting from the Dam and Operations

Dams like the Skookumchuck Dam usually have profound and varying impacts on aquatic habitats of native species, both upstream and downstream of the dam (FISRWG 1998). The Skookumchuck dam has caused such impacts. Finn (1973), in assessing the impacts of the dam and its operations, projected that the project would adversely alter over one-half of the existing salmon spawning habitat in the mainstem Skookumchuck River. He also projected that over one-half of the potential coho rearing habitat, based on both quality and quantity of rearing area, would be altered.

A substantial amount of these changes were due to the inundation of habitats by the reservoir and loss of access to the upper river past the dam. Finn (1973) projected losses in salmon production to differ among the species; his comments bear noting:

> It is concluded that, based on observed distribution of spawners, fall chinook will not be as adversely affected by the project as spring chinook and coho. It is also concluded that the minimum project flow will be greater than natural flow below the dam during spring chinook spawning which should provide the increased spawning habitat in the first few miles below the dam necessary to replace that lost in the reservoir. This is contingent on the behavior of the adult spring chinook, and that fall chinook and coho can be prevented from spawning on top of spring chinook redds.

It is now clear that those assumptions made by WDF in projecting losses to both habitats and fish production were wrong—higher flows than the natural flow regime were not beneficial to spring Chinook and negative effects of forcing both fall and spring Chinook to spawn together below the dam would not be prevented.

Besides habitat losses upstream of the dam and altering the flow regime below it, habitats downstream of the dam have also been adversely affected. In considering the downstream effects, it is necessary to recognize that salmon habitats in the Skookumchuck River were already severely degraded before the dam was built. Major changes to the river had occurred due to extensive logging, operation of splash dams, land clearing, farming and road building (Finn 1973; Phinney and Bucknell 1975). Three logging-related dams were built in the early 20th century between the river mouth and RM 23.8; these were partial barriers to salmon migration until they were completely removed by mid century (Finn 1973).

These activities caused changes to the river channel at various locations, including channel incision and simplification, and losses in side channels, riparian vegetation, instream large wood, and deep pools. There would have also been a coarsening of substrate and an increase in fine sediment within the spawning beds (Smith and Wenger 2001; Mobrand Biometrics 2003).

While it is important to recognize the changes that occurred prior to building the dam, it is virtually certain that the dam worsened those conditions. Habitat conditions downstream of dams typically cause channel incision, channel simplification, substrate coarsening, and losses of side channels, large wood, and deep pools (Stanford et al. 1996; Hauer et al. 2003). Alterations in the flow and sediment regimes and disconnection of the lower river to the upper river led to these changes.

Besides worsening habitat conditions in the lower Skookumchuck River, the dam and its operations have essentially, and largely, locked into place these degraded conditions. Without dam removal, restoration of the lower river has been made much more difficult. This is certainly the case as it pertains to recovery of spring Chinook.

To end our remarks on how habitat conditions have been altered, we draw attention to one other factor: turbidity levels in the lower Skookumchuck River. Since dam construction, there has been a significant increase in turbidity in the lower river. This has been observed by WDFW spawning ground surveyors for several decades and it is linked to conditions within the reservoir (Curt Holt, WDFW, personal communications). The turbidity is apparently created somewhere in the reservoir since the inflow just upstream of the reservoir shows no sign of turbidity during lower flow conditions. But turbidity levels in the lower end of the reservoir are always high, year-round. The river downstream of the dam remains turbid for many miles with a very gradual reduction occurring in the very lower end of the river. Turbidity levels are typically high during spawning ground surveys, affecting the ability of surveyors to count spawners and redds (Curt Holt, WDFW, personal communications).

The cause of the turbidity is unknown. No investigation by either WDFW or Ecology has occurred to learn the nature of the suspended particles despite questions that have been repeatedly raised by agency staff conducting spawner surveys.

We note that Finn (1973), based on studies conducted in the late 1960s prior to dam construction, reported that water quality in the Skookumchuck River downstream of the dam site was "generally excellent for salmonid production." We conclude that the high turbidity occurring in recent decades is tied to the reservoir and dam operations, otherwise Finn would not have commented on the excellent water quality. Aerial photos show that when turbid water is being released below the dam, there is clear water entering the reservoir, direct evidence that the reservoir is the source of turbidity. High turbidity loads can affect trophic productivity in lakes and rivers, as well as affecting fish feeding efficiency (Waters 1995; Newcombe and Jensen 1996); therefore, it is important to learn the nature and cause of the high turbidity.

CONCLUSION

The status of spring Chinook in the Skookumchuck River—a treaty resource, a cultural treasure, and a critical food source for listed Orca—is dire. TransAlta's dam, reservoir and associated water right, provide a significant opportunity to improve habitat for spring Chinook and other salmon species and address historic harm caused by past state agency decisions.

The recent petition to list coastal spring Chinook under the Endangered Species Act is a recognition of the urgency of their plight. Therefore, it is imperative that any decision moving forward considers the likelihood of an ESA listing, the dire state of spring Chinook in the Chehalis River Basin, and the Nation's treaty rights.

The only option that supports recovery of spring Chinook and other salmon species in the Skookumchuck River and is consistent with the Nation's treaty rights is to continue studying the feasibility of removing the Skookumchuck Dam (i.e., Option 4).

Thank you for your consideration of these comments.

Sincerely,

Guy Capoeman, President
Quinault Indian Nation

cc: Nat Kale, OCB
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