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MES Analytical Essay

White River and Mud Mountain Dam Restoration: Past to Future

Located upstream from Seattle, the Green-White Water-shed consists of two different watersheds: the Duwamish-Green, which travels straight through Seattle, and then the Puyallup, of which the White River is a tributary. The two rivers in question, the White and Green, were once a homogenous river that went into the Duwamish River. Both rivers became home to a dam and diversion dam, but have historically greatly contributed to the salmon population in the Puget Sound, and have suffered greatly since the construction of the dams.

StAq River

Once going by the name of the StAq (Stuck) River, this small stream started as a distributary that flowed from the White River into the Puyallup River, which later would become its main course. Before colonization the White River flowed into the Duwamish River and right into the Puget Sound, near the StAq village which would later become part of the Muckleshoot Indian Tribe. The first settler homesteads appeared in the 1850s, and later used dynamite to divert or unblock the river so it would not flood, and ended up continually diverting its path, partially diverting it into the StAq stream in 1898 (Stein). Already known for the log jams which would naturally form—the name StAq meaning “logjam” in Lushootseed. Eventually the river was pushed to its breaking point in 1906 when a great flood ended up completely diverting the White River down the StAq river, becoming a tributary of the Puyallup River instead of the Duwamish (Stein).

Today the StAq River is more or less completely forgotten, and only exists on particularly old documents. Unfortunately the legacy left behind by the StAq River is far more

pronounced; as a significantly smaller stream than the previous river that flowed into the Duwamish, and it has been prone to consistent flooding throughout the decades since the diversion.

The Damming

In 1911, five years after the diversion of the White River, a small dam near present-day Buckley was developed and constructed. A simple affair, its primary purposes was to divert water into Lake Tapps (an artificial lake) in order to help deal with flooding, and to supplement Seattle's water supply. Unfortunately for the residents of the White (and now Puyallup) River, at that point in time there was no true necessity for fish passage facilities to help facilitate the crossing of fish over the dam. While not necessarily large in size or scope, this small diversion dam would go on to become an extremely renowned fish-killer, reported as killing more than 400,000 in one of its worst years (Mapes 2020b).

Unfortunately such a small dam proved to be insignificant in dealing with the severe issues of flooding that happened on the White River, and the Puyallup downstream. In order to deal with this crisis, the Mud Mountain Dam began construction after the Flood Control Act of 1936 was enacted, but was halted by World War II, and ultimately finished in 1948. Built to protect both the valleys from the heavy rains and snowmelts that would then be held in the reservoir, the dam would later go on to mitigate more than $300 million in possible flood damage. Mud Mountain was a truly incredible feat for its time, and was the highest rock and earth-filled dam in the world. Despite this accomplishment of engineering it posed a severe and immediate threat to the survival of salmon on the river. It was only in 1949 when a fish-trap facility was finally finished near Buckley, and put to use trapping fish and trucking them up river where they would be released. While this fish trap was for the most part a success and assuaged

the initial concern for the survival of the fish, it would later be met with uncertainty and criticism by fishermen and the Muckleshoot and Puyallup tribes as a threat to the salmon.

The Fish Trap

The fish trap for the White River, while significantly more beneficial than the previous lack of one, would still end up significantly affecting the population of salmon on the river and in the Puget Sound. The trap near Buckley proved to be a significant issue of contention for many individuals, organizations, and tribes.

This fish trap would go on to become one of the most deadly in Washington state, as it was originally only built to handle up to 20,000 fish in a year (USACE b), and ended up struggling with future larger runs. A particularly notorious example was the boom in the pink salmon population in 2009, when almost half a million were left untransported and died at the fishtrap. During these odd pink years the fish passage facility was forced to handle up to 22,000 a day, and the hauling trucks were forced to run around the clock (USACE 2021). Even when such prodigal booms in population do not occur, the fish trap struggled to handle the fish that ran through it, leading many to die trapped, or die by flinging themselves up and at the dam in a futile attempt to get over it, more often than not killing themselves.

Hopeful Prospects

The fish-trap facility near Buckley is being removed and replaced with something far better, shinier, and newer. The White River Fish Passage Facility (as it is now known) was constructed after much deliberation in response to the 2014 Biological Opinion (BiOp) report on the White River, proposing a change and restructuring of the fish trap (USACE 2021).

The most immediate changes had been interim repairs to the existing fish barrier, which finished in 2015. With the coordination of the Muckleshoot Indian Tribe, Puyallup Indian Tribe,

the Seattle District Army Corps of Engineers, and the Washington Department of Fish and Wildlife, planning and construction began in 2016 and finally finished in October 2020. The new fish passage is a model of its kind. It is the biggest and most advanced fish-trap facility in North America, designed to handle up to two million salmon a year, compared to the paltry 20,000 that the over 70-year-old Buckley fish-trap was designed for. Along with the sheer capacity it has to handle incoming fish, it is also capable of automatically sorting the fish. Over the course of 2021 It is moving from a trial period, where it will slowly move operations over from the old fish passage to the new one; full operation should begin in October 2021.

While a fish-and-trap facility might not be as beneficial for salmon as the original river was, it serves as a mid-way point between the incredibly expensive alternatives, or demolishing the dam and potentially bringing back devastating floods to one of the most populous areas in Washington. But a fish-and-trap facility brings other benefits to the table. Directly adjacent to the old (and the new) facility is the Muckleshoot tribal hatchery, and the new trap allows it to grab brooding stock for new runs (USACE 2021), helping facilitate the return of Chinook (by reducing Pinks if necessary) and allowing for the screening of invasive fish species, like Atlantic salmon.

The story of the White River did not culminate in a grand return to form like the destruction of the Elwha or Condit dams, but it is a sign for other dams that have not planned or implemented new fish-trap facilities at dams where removal or alternatives are not an option, such as Howard A. Hanson Dam, or many others in Washington State. This facility will serve as a beacon for others of its kind and will hopefully prove beneficial to the salmon population in the White River and Puget Sound.

Looking Toward The Future

The renovations of the fish passage system on the White River provide examples of what the restoration of a river can look like, as restoration is not limited to just dam removal alone.

Restoration can include riparian planting and artificial logjams, and on the White River, it includes the new White River Fish Passage Facility. The health of the watershed depends on many interconnected features. The health of the area is dependent on salmon, who support the birds and the soil, which in turn must remain healthy to contain the river and support the plant life. In return, the people must support the river, and dam removal and river restoration are imperative to watershed health and are just a step in the right direction.

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