Walla Walla County Conservation District

Garrison Creek Fish Screen

Project Implementation Report

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Final Report

Garrison Creek
Fish Screen Project

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Garrison Creek Fish Screen
Project Results

SCOPE OF PROJECT

Garrison Creek is a distributary of Mill Creek that flows in a westerly direction through the cities of Walla Walla and College Place. Water is diverted from Mill Creek at the Yellowhawk Diversion Dam near the Mill Creek Flood Control Project Office. After passing through the culverts under Reservoir Road, the diverted waters enter a division box that splits the Yellowhawk Creek water and the Garrison Creek water. In general terms, approximately 19 cfs is sent down Yellowhawk Creek compared to 4-6 cfs that is diverted into Garrison Creek.

As a distributary, these streams have very different functions. An over-riding purpose of both streams is to handle a portion of flood waters during high water events with the majority of the diverted water going through Yellowhawk Creek. A major difference, however, is that anadromous fish use Yellowhawk as a passage alternative to coming up the Mill Creek Flood Control Channel while passage is blocked through the Garrison Creek system.

Given that there are passage barriers in Garrison Creek that prevent upstream fish migration of returning adults, the situation is even more critical for downstream migrants. The fact was that Garrison Creek was completely unscreened which allowed juvenile salmonid out migrants to pass into the creek and become stranded within the system resulting in high levels of mortality.

The scope of the Garrison Creek project was to design and construct a site-specific state-of-the-art self cleaning fish screen using the newest technology available to meet NOAA Fisheries screening requirements. This would prevent out migrants from entering the Garrison system thereby eliminating the "take" that was historically occurring.

Garrison Creek unscreened headgate downstream of diversion

Garrison Creek unscreened headgate Upstream of diversion

Yellowhawk-Garrison diversion structure premodification

Garrison Creek headworks premodification

TARGET SPECIES

Historically, spring Chinook, fall Chinook, chum and Coho salmon (Swindell 1942), steelhead and bull trout were present in the Walla Walla watershed. Of the indigenous salmonids, only three relict populations are present today; bull trout, steelhead trout and mountain whitefish. Steelhead trout and bull trout are listed as "threatened" and as such are provided protection under the Endangered Species Act. The Walla Walla watershed (WRIA 32) is part of the mid-Columbia ESU as defined by NOAA Fisheries. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) are working in cooperation with state and federal agencies to re-establish self-sustaining populations of spring Chinook in the basin. In 2000, the CTUIR started planting pre-spawning adult Spring Chinook in the Walla Walla Basin. Adults returned to Mill Creek in 2004 with 25 being observed by underwater video camera at the Bennington diversion and several were seen downstream of the Yellowhawk diversion suggesting that they passed through the Mill Creek Flood Control Channel.

THE ROAD TO IMPLEMENTATION

The Walla Walla County Conservation District has employed a vigorous screening program to address the hundreds of irrigation diversions with fish screens that did not meet Federal standards as required by law. As part of the Cooperative Compliance Review Program, the WWCCD has partnered with Washington Department of Fish & Wildlife (WDFW), Washington Department of Ecology (WA-DOE), and others to help local irrigators voluntarily install approved fish screens and protect them from actions by regulatory agencies. Earlier efforts focused on the easier simple projects; however, more difficult projects have been the focus for the past two years.

The Garrison Creek Fish Screen Project is a shining example of one of the more difficult screening projects because:

- The project was on land controlled by the U. S. Army Corps of Engineers (USACE)
- The diversion structure included both Yellowhawk Creek and Garrison Creek of which Garrison required a screen
- A standard screening approach would not work for Garrison Creek due to the site and channel configuration; therefore, a site-specific screen design would be required
- There were large quantities of water that had to be screened in order to meet USACE flood control requirements i.e. 10 cfs.

Construction began on the project on September 30th, 2008. The project was targeted for completion in 30-days. The photographs below were taken during various phases of construction.

A lot of things had to come together in order for the Garrison Creek Fish Screen Project to become a reality.

1. A very short constraining time schedule provided many unique challenges and impetus to complete the project in a timely manner.

2. A unique conservation partnership was formed including WWCCD, WDFW, the WDFW Screen Shop, WA-DOE, Washington Salmon Recovery Funding Board (WA-SRFB), the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the USACE.

3. For the first time, the USACE allowed an outside entity to do work on a Corps project site.

4. There was excellent support and assistance from WDFW and CTUIR on the project.

5. The WA-SRFB allowed a time extension of the funding grant that financed the project.

6. The design team from HDR/FishPro did an outstanding job in assessing the site specific needs and providing a design in near record time.

7. The WDFW Yakima Screen Shop was able to fabricate and install a screen of project of this magnitude in record time.

Preliminary estimates for construction of the project were approximately $250,000.

Newly completed Garrison Creek Screen

Yellowhawk-Garrison Division Structure with Garrison self-cleaning screen on the right

Garrison Creek fish screen bubbler In operation

Yellowhawk Creek fish passage

New Garrison Creek headgate downstream of the new screen

The final cost of the completed project was approximately $190,137 and eliminates the "take" problem on Garrison Creek. $5,304 of the funding came from Bonneville Power Administration (BPA) through the CTUIR and was used for engineering and construction. WDFW provided $13,000 in technical assistance and materials.

The self-cleaning screen works automatically when the downstream transducer senses a different water pressure-depth than the upstream transducer. When the difference occurs due to debris blocking the screen, the wiper is activated and travels across the screen and returns to remove the blockage. This automated feature will prolong the life of the wiper blade. The installation also features a "bubbler" which creates some slight turbulence in front of the screen to reduce icing problems in the winter. This turbulence also reduces the trash buildup on the screen as well.