## From the Archives

### Imnaha, Oregon

*compiled by Heather Hall, GRMW*

*Imnaha, Oregon, is a small town located 30 miles east of Joseph, Oregon. The word "Innahar" was used by William Clark in 1814 in the original Lewis and Clark journals and maps. The Imnaha River flows out of the Wallowa Mountains and into the Snake River. Captain Benjamin Bonneville visited the area in 1834. He is believed to be the first non-Native American to visit this area.*

*According to the 1900 census, Imnaha was a thriving community with about 182 residents. There were various businesses, including a blacksmith, a saloon, a hotel, a market, and a school. Imnaha still has a two-room schoolhouse where local elementary students matriculate as well as a market, a tavern, and a motel. The Imnaha Post Office was established in 1885 and is still in operation today, serving approximately 80 households.*

*Imnaha is at an elevation of 1,978 feet and is known for its mild winters. Imnaha is the starting point for the 24-mile drive south to Hat Point Lookout. Traveling north from Imnaha to Dug Bar, vehicles can access the Snake River and Hells Canyon scenic areas.*

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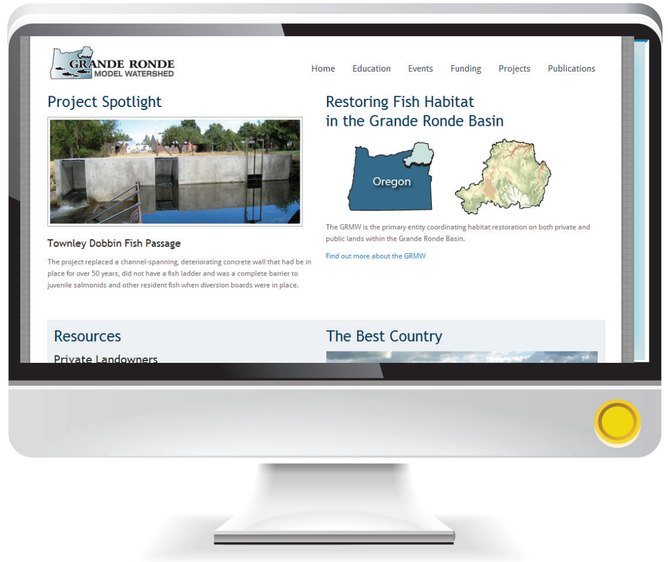
*Ripples* in the Grande Ronde

*Spring 2012*

RIVERS UNITING NEIGHBORS·QUARTERLY NEWS FROM THE GRANDE RONDE MODEL WATERSHED

# GRMW 2.0

*by Mason Bailie, GRMW*




The Grande Ronde Model Watershed (GRMW) has a new look. This March, the GRMW will unveil its new website, which allows visitors to have a more user-friendly experience when checking out our resources. When you direct your browser to grmw.org, you will be able to explore new features that provide information about our education programs, events, funding opportunities, ongoing projects, and more.

The GRMW's education program organizes many different activities each year. These activities include fish painting, building stream models, dissecting fish, and other fun events. The new "education" page will display pictures and information about all of the GRMW's educational programs. Now you can see what your children have been up to at these events! You can also download pictures of your children participating in these exciting educational activities.

The "events" page provides information about when the next meeting or upcoming event will take place. A calendar displays the date, time, location, and description of each event. Meeting minutes, agendas, and project proposals will also be available here, along with a map showing the location of the next meeting and an archive of previous GRMW board meeting documents.

Like the old website, the new website will provide an archive of *Ripples* articles. When you visit the *Ripples* section, you will notice that the most current edition is presented. On the left, you will find a filter bar that allows you to read articles from previous years' issues.

For organizations pursuing funding from the GRMW program, there is nothing more important to understand than the Stepwise Process. The new "funding" section of the website has all of the information that organizations and landowners need to know about the GRMW's Stepwise Process. This section features everything from example project prospectuses and proposals to budget templates and completion reports.

One of the more exciting features of the new website is the GRMW's online project database. In previous years, the project database had been located on the GRMW's local system and was not easily accessible to the public. Now, all that you need to access the GRMW's database is a computer and the Internet! Projects are sorted by the fiscal year in which they were completed, and filters are provided to view projects by year, sponsor, or watershed location. Data such as descriptions, comments, photos, documents, contacts and roles, GPS points, and grant/funding information will be available for each individual project. Additional features of the project database that will be released throughout the year include the ability to print out a spreadsheet of data for selected projects, export project points to shape files, and filter projects by land usage and county lines.

The brand-new "assessment" page displays information about the Catherine Creek Assessment that is currently being conducted by the Bureau of Reclamation. This page will explain the Assessment and supply information about upcoming meetings as well as previous meeting agendas and documents. The "assessment" page also provides geospatial data that is being used in current studies. Data are arranged in tables by theme and geographic extent, and each data set includes metadata and a ZIP file. GIS software is required to use this data.

Please take a moment to explore our updated website, and don't hesitate to let us know what you think and what else you would like to see posted there!

# Restoration along the Imnaha River

*by Coby Menton, GRMW*

*ABOVE: Taken on January 20, 2012, this photo shows the project area looking from upstream to downstream. The log feature in the foreground is an engineered logjam that will help keep the main flow of the Imnaha River in the main channel to the right of the photo. This will help keep erosive forces off of the restored riverbank and keep the project intact. While deflecting water, the logjam is also porous and will allow the side channel to be watered during high flows.*

The Marr property is located six miles below the town of Imnaha on the Imnaha River. This property has been in the Marr family since 1982, when Gene Marr purchased the place for use as a livestock winter-feeding area. Gene spent his life in Wallowa County as a cattleman, farmer, and noted horseman. The property remains in the Marr family under the management of Gary Marr and his son, Todd. Although the Marrs do not own livestock, they lease the property to a local cattle rancher.

In addition to serving as a working landscape that supports the livestock industry in Wallowa County, this area along and adjacent to the Imnaha River provides ample recreation opportunities, not the least of which is fishing. The Imnaha is home to both steelhead and Chinook and is a big draw for steelhead fishermen. When fish numbers are high, a Chinook fishery is allowed.

The Marr family approached the GRMW in fall 2010 to ask for ideas about how to remedy a severe bank erosion problem on their property. After the 1997 floods on the Imnaha River, a large meadow adjacent to the river began to erode. Since 1997, more than 100 feet of riverbank and meadow have been lost during spring high flows. In addition to property loss, an access road to an adjacent property owner was in danger of washing out.

During the next several months, the GRMW, in cooperation with the Marr family and with help from the engineering firm Anderson•Perry & Associates, designed a project that would not only stop the erosion but also enhance fish habitat. Oftentimes, the only way to stop the erosion of riverbanks is to use large rock riprap, which offers very little benefit to fish. In this case, it was possible to combine the landowner's desire to stop erosion of the meadow with the improvement of fish habitat conditions. The design team's solution was to shore up the riverbanks with wood instead of rock riprap, encourage the side channel to stay open and thereby provide slow water refuge for fish during high river flows, and install riparian vegetation that will reoccupy the area.

*LEFT: Taken on September 10, 2010, this photo shows the amount of erosion on the Marr Property. Prior to erosion, this meadow stretched to the other side of the gravel bar prominent in the photo. During times of high flow, the small side channel fills with water and further erodes the meadow.*

Methods employed during construction included reshaping the riverbank, installing logs at the toe of the bank along the 340-foot project length, building five large wood structures in the bank and one on the gravel bar, and seeding and planting the whole project area. Following construction, the entire area was fenced to keep livestock out of the project area. During the next 10 years of non-use by livestock, the riparian area will have a chance to recover through the reestablishment of near-stream vegetation. The vegetation component is a critical part of any river restoration project because it provides the structure necessary to hold everything together.

Steve Lindley Construction, Inc., was awarded the construction contract. Through Steve's expert methods and attention to detail, the GRMW expects this project to produce its intended benefits. We expect to see improved water quality through the reduction of sedimentation in the river, enhanced side channel habitat conditions, and the recovery of valuable near-stream vegetation. The use of wood structures is a proven way to reduce erosion while providing cover under which fish can hide.

*Continued on page 3*



# Chas Hutchins

## Professional Engineer
## Anderson•Perry & Associates, Inc.

*Profile by Jeff Oveson, GRMW*

*To introduce Chas Hutchins, P.E., it helps to understand the meaning of the letters "P.E." that follow his name. Standing for "Professional Engineer," the letters "P.E." signify that Chas has not only acquired a Bachelor of Science degree in civil engineering from Brigham Young University (BYU) but also taken and passed the very arduous "P.E. Exam," which is administered only to successful graduates who have also worked and studied with another P.E.*

*Chas is approaching six years of service to Anderson•Perry & Associates (AP). AP has been the "engineer of record" for the GRMW since 2007, and Chas has been the primary engineer on a variety of GRMW projects since then, often working with Brett Moore, P.E., as well as a number of biologists, surveyors, drafters, and other specialists at AP.*

*Chas and his wife Teija first saw La Grande in January of 2006 when they came from Provo, Utah, for a job interview at AP. Chas said that La Grande's scenic surroundings and small-town atmosphere were similar to Vanderhoof, British Columbia, where both he and Teija had graduated from high school. "We have no regrets about moving here, and we don't plan to leave," said Chas as he talked about their upcoming move from "in town" to a small amount of acreage on the edge of town where they can have animals, fruit trees, and a garden as well as "teach our kids some responsibility, some work ethic."*

*A strong work ethic is a "must-have" at AP, according to Chas, but another value of the 120-person firm is that "family comes first," which is of the utmost importance to Chas and Teija as they raise Brooklyn, age 10; Brady, age 7; Emree, age 5; and Beckett, age 3. "They expect me to perform," Chas said of AP, "but they show me respect and give me plenty of support."*

*Although it seems like they were destined to be in La Grande, their route was circuitous. Chas was born in Colorado while his parents were on vacation from their hometown of Bella Coola, British Columbia, but he was then raised in New Mexico until his family moved to Vanderhoof before his senior year in high school. From that spot 10 hours north of the Canada/U.S. border, he travelled to Colombia for his Mormon mission before returning to Vanderhoof, where he and Teija were married before they headed off to Orem, Utah, and Utah Valley State University. He acquired an associate's degree there before enrolling at BYU in Provo for his bachelor's degree in civil engineering. He went straight from BYU to AP, but he had spent time with two separate construction and consulting firms while he was still in school.*

*Chas continues to learn. Since his graduation, he has taken additional courses in stream morphology from Dave Rosgen, Ph.D., a noted industry leader and developer of the "Rosgen Method" of evaluation and design. Chas has also pursued courses of study in the U.S. Army Corps of Engineers Hydrologic Engineering Centers River Analysis System (HEC- RAS), which will allow Chas to perform one-dimensional steady flow, unsteady flow, sediment transport/mobile bed computations, and water temperature modeling.*

*Along with colleague Brett Moore, Chas is looking forward to the chance to collaborate with Sean Welch to develop, design, and build more habitat restoration projects with the GRMW and our partners. Chas believes that part of the value of habitat restoration is the potential to return great runs of fish to the Grande Ronde system. He has enjoyed hiking and fishing in the western U.S. and hopes his kids someday have the chance to enjoy a viable steelhead and salmon fishery closer to home.*

*Chas said he sees himself as "a partner in relationship-building, relationships about cooperation, compromise and mutually beneficial outcomes." He added, "If we just respect people and listen to their viewpoints, good things can usually be achieved."*

# Fish Online!

## www.grmw.org

- Adult salmon counts at the dams
- Snake River Basin stream flows
- Snow and precipitation reports
- Habitat enhancement projects
- Meetings, activities, and events
- Past issues of *Ripples* and more!

## Grande Ronde Model Watershed

### Upcoming Board Meetings and Events

- **Tuesday, April 24: 5:00 p.m.**
  Elgin Community Center
  260 N. 10th Street
  Elgin, Oregon
- **Tuesday, June 26: 5:00 p.m.**
  Wallowa Community Center
  204 East Second Street
  Wallowa, Oregon
- **20th Anniversary Celebration**
  **Tuesday, August 28: 4:00-7:00 p.m.**
  Riverside Park Pavilion
  La Grande, Oregon

*Meeting dates are subject to change. Please call 541-663-0570 to confirm. Thank you!*

*NEAR RIGHT: The old City of Union diversion could pass fish through the fish ladder on the left at this flow level but not at low levels. The concrete in the entire structure was in very poor condition. The streamside wall of the ladder collapsed between the time this picture was taken and construction.*

*FAR RIGHT: The replacement structure at the City of Union diversion is a five-bay concrete weir that allows fish passage at all flow levels. The structure on the left side is used to count all adult steelhead and salmon that migrate upstream.*

*ABOVE: The reconstructed Lower Davis Dam with the radial gate in the upright position. During the irrigation season, the radial gate is lowered to allow the fish ladder to pass stream flow. The trash rack keeps large debris from entering the fish ladder. A flow bypass (to the right of the radial gate) allows stream flow in excess of that needed for the ladder to pass downstream.*

*RIGHT: Vertical beams with horizontal boards were placed in the old Lower Davis Dam structure to check up water. The fish ladder on the right was not functional at this water level and only functioned marginally at higher water levels.*

Passage for juvenile fish is also important, particularly access to upstream areas during the warm summer months. Juvenile steelhead and salmon that rear in headwater streams often find themselves occupying stream reaches lower down in the system that become too warm as the summer progresses. To survive, these fish need to be able to move upstream to find cooler water in either the main channels or cooler spring-fed tributaries. Because juvenile fish can only negotiate a jump of about six inches, many were previously trapped below fish barriers.

Most artificial barriers to fish passage are the result of irrigation dams with inadequate fish ladders (or no ladders) or road crossings with impassable culverts. During the past 15 years, many culverts have been replaced with full channel-spanning bridges, bottomless arch structures, or concrete box culverts. By replacing culverts, fish restoration specialists can create near-natural channels that provide unrestricted fish passage and accommodate the full range of stream flows.

## Fish Passage Improvement Projects on Catherine Creek

In 1994, the GRMW, the Oregon Department of Fish and Wildlife (ODFW), and the National Marine Fisheries Service in cooperation with irrigators began a series of projects to improve fish passage at the permanent irrigation diversions along Catherine Creek. The first three diversions to be addressed by this effort were the Wright-Hempe-Hutchinson, Swackhammer, and the City of Union diversions.

The Wright-Hempe-Hutchinson diversion is located in Union about 800 feet upstream from 10th Street. The pre-construction diversion consisted of a channel-spanning concrete structure with a non-functional fish ladder on the north bank. ODFW frequently captured stranded adults in the reaches below the structure and released them at upstream sites, and juvenile fish could not pass upstream through the structure. The 1994 reconstruction involved the installation of a full channel-spanning concrete two-bay weir just below the existing structure. The fish ladder was modified to improve functionality, which partially alleviated the passage problem. In recent years, the fish ladder on the north bank has provided for adequate fish passage.

The Swackhammer diversion is located adjacent to Highway 203 just on the upstream side of Union. The existing structure was similar to the Wright-Hempe-Hutchinson structure, and the new structure was similar to the Wright-Hempe-Hutchinson replacement. The structure was modified in 2007 to reduce jump heights by adding two more walls within the existing two bays, cutting notches in the walls, lowering the fish screen, and cleaning the ditch to allow for both fish passage and the diversion of water into the ditch.

*Continued on page 5*



At the time of its reconstruction, the City of Union diversion, located two miles above the Swackhammer diversion, was used for irrigation rather than for domestic water supply. The existing structure had an approximately six-foot drop with a partially functional, deteriorating fish ladder on the north bank. The old concrete structure was totally replaced by a five-bay concrete channel-spanning weir that provided fish passage as well as the ability to check water to a level adequate for irrigation diversion. A later modification of the structure enabled the Confederated Tribes of the Umatilla Indian Reservation in coordination with ODFW to collect adult Chinook for the hatchery program and take accurate counts of all adult steelhead and Chinook migrants. The site is known as the Catherine Creek Adult Collection Facility (CCACF).

Located about a quarter-mile below the CCACF, the State diversion was the next Catherine Creek passage project. The existing diversion consisted of a concrete channel-spanning weir with an approximately two-foot drop that blocked juvenile upstream passage. When check boards were placed for irrigation withdrawal, the structure blocked adult Chinook passage. In 2006, the GRMW and ODFW decided to reconstruct the structure by leaving the concrete and board system in place and adding a fish ladder. In late summer 2008, a concrete vertical-slot fish ladder was constructed adjacent to the south streambank, which allows for fish passage at a full range of flows through the ladder.

The Townley Dobbin diversion is located 800 feet below Main Street in Union. The diversion structure consisted of a deteriorating concrete wall with boards installed on top and no fish ladder. Due to the condition of the concrete wall, a significant amount of water leaked through the boards, causing small fish to be impinged in the cracks. The concrete wall was removed in 2010 and replaced with rectangular concrete cells embedded into the stream bottom and filled with rock. A step-pool fish ladder was constructed on the north bank.

The Godley Ditch diversion is located just below Main Street in Union. The diversion consisted of a channel-spanning concrete wall with check boards placed on the sill that blocked juvenile fish passage and had no fish ladder. Modifications to the diversion in 2011 included placing a steel plate on top of the concrete to provide a good seal for the check boards, cutting a fish passage notch in the concrete wall, and installing a step-pool fish ladder adjacent to the irrigation ditch headgate on the south streambank.

The Davis Dam complex is located below Highway 203 between La Grande and Union. The two concrete dams were near-total barriers to juvenile fish during the irrigation season. The 2011 reconstruction of the dams involved beefing up the concrete diversion structure itself, installing an electric, cable-operated radial gate to check up water, constructing a flow bypass system, and constructing a vertical-slot fish ladder. The vertical-slot ladders provide fish passage when the radial gates are lowered.

## Preserving the Future of Catherine Creek Fish

The replacement, reconstruction, and modification of the permanent irrigation diversion structures on Catherine Creek have taken 17 years to complete. The majority of the funding has come from the Bonneville Power Administration's Fish & Wildlife Program with support from the Oregon Watershed Enhancement Board, the ODFW, and the National Marine Fisheries Service. The objective of all of the projects has been to facilitate the best possible conditions for the year-round passage of anadromous as well as resident fish while maintaining legally mandated irrigation water supplies for agriculture.

Although it is not the only "fix" for threatened andromous fish populations, fish passage improvement is certainly important to the recovery of steelhead and Chinook populations in Catherine Creek. The anticipated Chinook run in 2012 is expected to be about 1,000 wild fish, with an equal number of hatchery fish. In combination with the many habitat improvement projects that also have been completed in the Catherine Creek watershed, the fish passage improvement efforts of the GRMW and its partners will ensure that fish always begin their life in the headwaters, migrate to the ocean, and return to their place of birth.

*ABOVE: The step-pool fish ladder at the reconstructed Townley Dobbin diversion passes most of the streamflow during the late summer. Fish are attracted to the entrance on the left and exit the structure just above the check boards.*

*ABOVE: The vertical-slot fish ladder at the reconstructed State diversion passes fish through one-foot-wide openings in the walls between the pools. During the irrigation season, boards are placed on top of the concrete sill across the channel blocking fish passage in the main channel. When boards are not in place, fish can pass through the main channel or the fish ladder.*

# Partners in Design, by Design


## *Sean Welch*

Bonneville Power Administration
Fish & Wildlife Program Project Manager

*Profile by Jeff Oveson, GRMW*

*Even though terms like geomorphology, hydraulics, and fish habitat are not part of most families' typical dinner table conversations, these concepts are the lifeblood of Sean Welch's professional career. Sean, who lives in Hood River with his wife Jeanne and two sons (6-year-old Thorsen and 4-year-old Lars), recently joined the ranks of the Bonneville Power Administration's (BPA) Fish & Wildlife Program as Project Manager/Program Engineer. Sean's position is a completely new one that involves providing technical assistance in the fields of engineering, geomorphology, and hydrology throughout the Columbia River Basin.*

*Although the job description is as broad as the territory he covers, Sean is perfectly suited to the task thanks to his education, his experience, and his innate ability to see things from a variety of perspectives. His education in the field seems to have been a part of the natural course of events, following his father's career in both federal and private engineering and consulting in the Pacific Northwest. He honed his skills working on a region-wide geomorphology and river hydraulics study with his undergraduate advisor at Northern Arizona University (NAU), where he reached the conclusion that "engineering includes so much of what we see and what we don't see, so the field work and analysis involved with the effort, along with a great mentoring relationship set the stage for my educational specialization in water resources engineering for both my undergraduate and master's degrees." Sean earned both a bachelor's and a master's degree in civil engineering at NAU before joining the research faculty and co-managing a research group that secured funding and provided technical assistance to rural Arizona communities with water resource projects.*

*After a few years, Sean decided it was time to return to the northwest and took the position of State Hydraulic Engineer for the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS). He described his time at the NRCS as "an incredible experience working throughout Oregon, including several restoration projects in the La Grande area as the lead project designer or in supporting design efforts with hydraulic modeling." Sean followed his time at the NRCS with a short stint as Senior Hydraulic Engineer with the River Design Group, a consulting firm that offers project planning, design, hydraulic modeling, and other consultative services.*

*Sean says that one of the most rewarding aspects of working in habitat restoration is the multidisciplinary components that are integrated into projects. Putting it as only a fluvial geomorphologist could, he said, "The challenge often rests with correct interpretation of the habitat potential and how the project design will successfully meet the identified limiting factors for the species and life stage of concern. When a fisheries biologist points out a deep, low velocity pool on the outside of a meander bend and the benefits to Chinook adult holding-resting habitat, I see the same feature as a hydraulic energy dissipation zone. It's the engineer's responsibility to enable the biologist's vision while incorporating due diligence for the public."*

*Having worked with private landowners all over the state, Sean recognizes the value of working with the agricultural sector on shared restoration strategies, noting that the fundamental position in building a relationship to provide mutual benefit is the establishment of trust. By establishing a clear understanding of goals and objectives, Sean feels that "meeting biological, engineering and land management objectives while providing reach scale habitat benefits are not mutually exclusive goals. A well planned and executed project will successfully address all of the stakeholder's needs and requirements."*

*Those of us here at GRMW are very excited to have Sean aboard. We know that his expertise and experience coupled with his great attitude and optimism will lead to many more successful habitat restoration projects that meet the needs of the people and natural resources of the basin.*

In this issue of the *Ripples*, we feature two partners with tremendous experience and expertise in their respective fields: Chas Hutchins of Anderson•Perry & Associates and Sean Welch of the Bonneville Power Administration's Fish & Wildlife Program.

We chose to feature these two gentlemen in the same issue because they represent what the GRMW needs from our partners: they are both personable, and they have the technical skills to serve us well without ruling out the perspectives of others with whom they might not always agree. Chas and Sean are simply two of those people you immediately come to like when you meet them. They are honest, diligent, creative, and a joy to work with. We expect many good things to come from the collaborations between them, our team, and our other partners. A couple of quotes from their profiles tell a lot about who they are and why we enjoy working with them:

**"In my experience, the fundamental position in developing a relationship that will provide mutual benefits is the establishment of trust."**

*-- Sean Welch*

**"I see myself as a partner in relationship-building, relationships about cooperation, compromise, and mutually beneficial outcomes."**

*-- Chas Hutchins*

*Continued from page 2*

The Bonneville Power Administration (BPA) funded the majority of this project through its Environment Fish and Wildlife Program. Other partners include the Marr family and the Oregon Department of Fish and Wildlife, which provided technical support.

"This project is a prime example of how working lands and fish habitat are not mutually exclusive objectives," said Timmie Mandish, BPA fish biologist and project manager. "BPA is pleased to be partnering with GRMW finding solutions for fish and landowners." ■

*LEFT: Taken on October 6, 2011, this photo shows the completed project. The side channel remains open, erosion control fabric has been installed to hold the soil in place until vegetation can stabilize, live tree cuttings have been planted, and logs have been used instead of large boulders to deflect energy.*

# Fish Passage through Catherine Creek

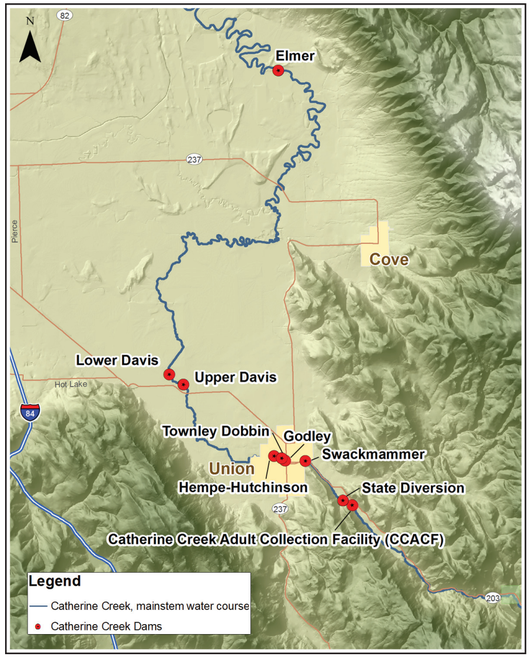
*by Lyle Kuchenbecker, GRMW*

Fish at all life stages can now move freely throughout Catherine Creek! This monumental accomplishment was achieved at the end of 2011 thanks to the work of the multiple partners who invest time, money, and expertise into habitat restoration within the Grande Ronde Basin. There are nine permanent concrete diversion structures on Catherine Creek between its confluence with the Grande Ronde River and about two miles above Union (see map at right). Of the nine structures, eight previously created barriers to fish passage at some point during the year.

## Why Did Catherine Creek Need Improved Fish Passage?

Catherine Creek Chinook and steelhead populations have been listed under the Endangered Species Act since the 1990s, and Catherine Creek and the Upper Grande Ronde River have been priority areas for fish habitat restoration activities in northeast Oregon for nearly two decades. The reasons for declining wild steelhead and Chinook populations are many, including the Columbia and Snake River dams, habitat degradation, and harvest. The GRMW focuses on the issue that can be addressed locally in the Grande Ronde Basin: fish habitat quality.

Habitat degradation is caused by the loss of riparian vegetation, in-channel diversity (primarily large wood), and wetlands; increased stream temperatures and sediment; reduced stream flows; and restricted fish passage. Fish habitat restoration in the watershed can involve many activities that address the causes of habitat degradation, such as enhancing streamside vegetation, treating sediment sources, increasing habitat diversity within the stream channel by adding large wood and structures, improving wetlands adjacent to the stream, increasing late season stream flow, and improving fish passage.




*ABOVE: A map of Catherine Creek diversion improvement project sites.*

Unrestricted fish passage throughout the watershed is especially critical for all life stages of anadromous fish (like Chinook and steelhead) because they spend part of their life cycles out of the watershed and migrate to the upper reaches of the watershed to spawn. Adults migrating from the ocean already have to negotiate eight dams and several hundred miles on the Columbia and Snake Rivers before arriving at the Grande Ronde Basin, so it is crucial that once they make it to the basin, they have the easiest possible access to headwater spawning habitats.

*Continued on page 4*