

*The Mohawk
Watershed
Partnership
presents*



The Mohawk Watershed



Restoration Guide

The Mohawk Watershed Restoration Guide

Presented by the Mohawk Watershed Partnership

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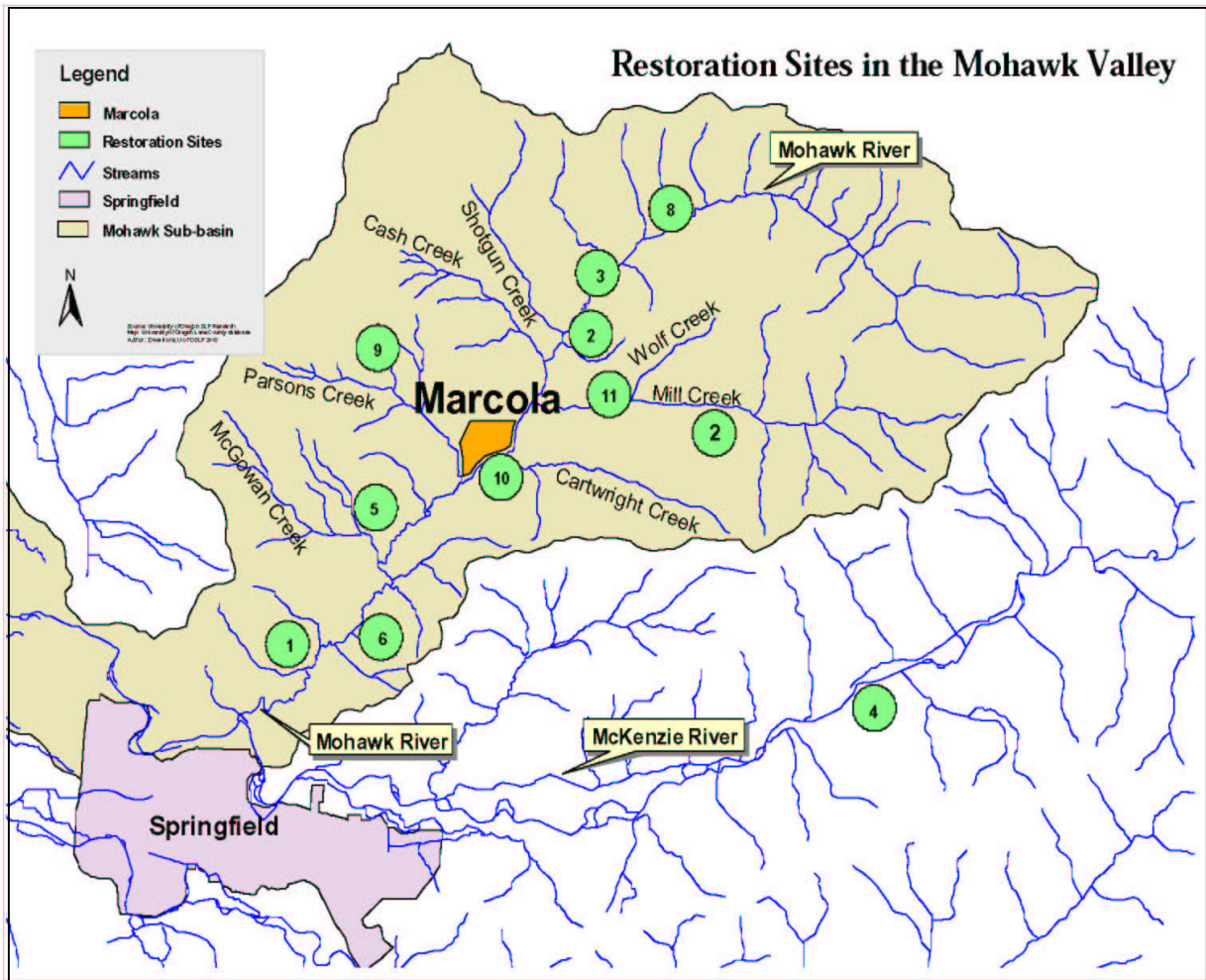
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Restoration & Funding in the Mohawk Valley

There are many opportunities through county, state, and federal governmental programs to receive funding for restoration and enhancement projects on your land. Lisa and Tim Miller have begun to take advantage of these opportunities by filling out their grant application. With a grant, the Millers will receive funding to do restoration on the stream running through their backyard.

The Millers own about five acres of land with about 250 feet of streambank. The stream starts up in the mountains behind their house and comes onto their property by a little waterfall that is within ten feet of their house. The stream continues down their property, meandering back and forth. The stream comes close to a pasture where they have a horse and then moves onto their neighbors property, continuing its journey downward where it eventually joins with another stream.

The Millers first began enhancing their land by landscaping their backyard and by placing rocks and boulders in their stream to

stop bank erosion, especially where the stream comes close to their house. They also started clearing out blackberries that had invaded the banks of the stream. According to Tim Miller, the blackberries were so bad that in some places you could not walk to the banks of the stream. Clearing blackberries was a long and arduous process but when it was finished they could walk to the banks of their stream and better enjoy their backyard.

After seeing the results of their labor, the Millers wanted to do more restoration work on their land and along their stream. Through word of mouth and by reading the Mohawk Watershed Partnership Newsletter, the Millers heard about grants that government organizations are willing to give to small acreage landowners to do restoration work on their property.

With the help of the Mohawk Watershed Partnership and a private company called Habitats, the Millers began looking for a grant that would fit with what they were trying to accomplish. They decided on a



THE MILLERS enjoy the stream that transects their land (left). Rocks were placed on the bend of their stream to reduce streambank erosion (right).

small acreage land enhancement grant from the Oregon Watershed Enhancement Board (OWEB). For this particular grant, OWEB will fund 75 percent of the project. The Millers will be responsible for the other 25 percent, which can be in the form of labor and materials.

After the grant gets approved, Habitats begins the process of designing a plan that will effectively control all these problems while creating a beautiful native landscape that the Millers will enjoy for years to come. Habitats implement their plan by supplying

labor and by providing native plant species for replanting.

Restoring a stream is a consuming process and continual maintenance is necessary, which takes a lot of resources but is essential for maintaining good water quality. The entire watershed benefits from local enhancement projects like this one. For more information on small acreage restoration projects, please contact the Mohawk Watershed Partnership, OWEB, or see the 'grants' section on page 25.

Leading by Example

Lee Downing is one of the original members of the Mohawk Watershed Partnership (MWP) board and one of the largest individual landowners in the Mohawk Valley. He was among the first private landowners in the valley to take advantage of government funding for streamside restoration projects. In 2000, his efforts earned him the East Lane Soil and Water Conservation District's "Conservation Man of Year" award. Downing's family has been cattle ranching and harvesting timber in the valley for generations. He and his wife Kathy can trace ancestors in the valley back to 1847. A lifetime on the land has generated strong feelings of stewardship and the desire to sustain his distinctly rural livelihood. He has taken a proactive approach to restoration because he understands the importance of protecting the watershed and prefers to be involved in the decision-making process rather than waiting for government solutions. As a MWP board

member, he also feels a responsibility to lead by example.

Since 1996, Lee has completed four primary projects. The first occurred during 1996-97, when he took advantage of Conservation Reserve Program (CRP) funds offered by the Natural Resource Conservation Service (NRCS) to put up a fence along a 1.5-mile stretch of Mohawk River from Bunker Hill Road north. This fencing project was designed to keep cattle from grazing in the riparian buffer and

Lee was among the first private landowners in the valley to take advantage of government funding for streamside restoration projects

getting down into the river to drink. Cattle disturbances along the riverbank can lead to poor bank stability, erosion, and reduced shading. Shading on a stream is especially important for salmon and trout because it helps maintain cool water temperatures, which is a vital habitat requirement for these fish. There are also concerns about high bacteria levels resulting from cattle manure in the stream.

During 2000-2002, he completed a more diverse project on a 19-acre parcel off Hileman Road, north of Marcola. This second project involved fencing, brush removal (mostly blackberries), tree planting, and installation of 2500 feet of water line to two watering tanks so his cattle would not have to drink out of the stream. He also fenced off a 0.5-mile section along the Mohawk River and a 0.3-mile section along both sides of Polly Creek. Again, this was done so keep cattle from drinking from the stream.

After clearing brush at this site, Lee used a tractor to prep the sub-soil (“shanking”), loosening it for easier tree planting. This site was re-planted with Willamette Valley pine and Douglas fir, creating a 180-foot buffer along the streams. Funding for this project came from Conservation Reserve Enhancement Program (CREP). CREP funds are only available when the lands border potential habitat for salmon and trout listed under the Federal Endangered Species Act. One benefit this program provides is lease payments for 10 years while the land is



CLOSE-UP of Lee’s Douglas fir plantings that were not damaged when cattle accidentally got into a closed area. Note how little competing vegetation surrounds the trees



ONE of Lee’s cross-fenced pastures designed for rotational cattle grazing

taken out of use. Total reimbursement for CREP funded projects can exceed 100% of the landowner’s costs.

For his third project, Lee again took advantage of CREP funding to complete work between Mill Creek and an unnamed creek on a 17-acre parcel off Wendling Road. Once more, the site required a fair amount of preparation that included clearing brush and shanking the soil prior to tree planting. Larch, cottonwood, Willamette Valley pine, and Douglas fir, all native species, were planted. Since this site does not have a well, Lee opted to create a fenced watering area where cattle can drink from the creek without creating erosion or damaging the bank. This area is flat and has been reinforced with heavy gravel so his cattle don’t create a muddy area. Several acres of pasture have been set aside and closed to grazing, one of the strict guidelines of CREP projects (USDA 1999). Ironically, this area was accidentally grazed after trees were planted in the spring of 2002. The cattle effectively removed competing weeds and grasses in hard-to-mow areas around the seedlings. Other similar-aged plantings on Lee’s property were hard hit by the drought of 2002. He lost approximately 64% of

trees less than two years old during this period. Losses in the grazed plot were only about 30%. Close inspections by Lee and Burt Smith (friend and retired forester) found no trees that had been trampled or otherwise damaged by the cattle.

The most recent project completed by Lee is along the Mohawk River off Hileman Road, south of Bunker Hill Road. Fencing and tree planting were the primary focus at this site. This area is used nearly year-round for grazing and required installation of three watering tanks plus 3000 feet of water line running from a well. The pasture was also cross-fenced to set up for rotational grazing. Rotational grazing involves subdividing large pastures into smaller parcels and allowing cattle to graze each parcel for 7-18 days and then moving them to a neighboring parcel before overgrazing and soil damage occurs. A complete rotation typically takes at least 30 days, allowing significant vegetation recovery before the cattle are returned. According to Lee, cattle that go unrestricted in a large parcel will find and eat the best quality grasses first and continue returning to such areas, often damaging them beyond the point of quick recovery. Over time, the pasture quality deteriorates. By restricting cattle to smaller grazing areas, they will graze in a more even pattern and can be moved before the parcel becomes damaged. This rotational system allows ranchers to leave cattle in the same area year-round where they otherwise might have to be moved to provide the pasture time to recover. The funding for this project came from the NRCS Environmental Quality Incentives Program. This program is targeted to livestock operations. Up to 75% of the landowner's costs are reimbursed, with additional incentive payments over three years.

Lee has learned a great deal through multiple projects. He cautions first-timers to

“take a close look at the costs. It is kind of like a honeymoon, there are a lot of ongoing maintenance costs after the initial excitement of a new project.” He echoes the concerns of his friend Burt Smith in wishing that the NRCS would re-evaluate some of the reimbursement policies and update the allowable rates for projects. He also thinks that some of the cost ceilings for different aspects of the work are unrealistic and don't match the 'real' cost of materials, labor, or equipment rental. “Not everyone is like me. I own all the equipment I need, but a small-acreage landowner may not have a tractor. Even I have to buy fuel, materials, and invest my time.”

The biggest problem Lee has faced is the large die-off of trees planted in 2001 and 2002. A regional drought in 2001-2002 caused reduced soil moisture particularly during the summer of 2002. Additionally, there was a very early freeze in the fall of 2002, before young trees “hardened off” and quit putting on new growth. These factors caused failures as high as 75% in some sections of Lee's plantings. On the positive side, he has seen great results from his cross-fencing and rotational grazing practices and plans to duplicate these efforts in other pastures.

Lee Downing cites a variety of factors that have motivated his restoration efforts. “I got involved because I think it is important that local people take ownership of the valley. As a member of the MWP board, I should be an example. I also wanted to get ahead of the game in terms of government regulations. If we work together to solve problems, that is a lot better than waiting on a solution we might not like.”

Wilkes-Beal Studios

The Transition Between Nature and the City

The connection between art and nature can transform entire communities or homes into places so enriched with both elements that it causes people to forget where they are. To “go out and live deliberately,” like Henry David Thoreau once wrote, can be achieved at the Wilkes-Beal studio. It is located just 25 miles from the University of Oregon and approximately 10 miles north of Marcola. For the past four years, David Wilkes has been immersing himself in these 16 acres to create an art community where sculptors, photographers, and artists can come and work while submersed in the purity of nature.

David is in the process of restoring the property back to its more natural wetland state. While much of the forest is still intact, over time the area has lost much of its wetlands. David decided he must change that element. The wetland area of the property currently has three abandoned bass ponds. David decided he wanted to sculpt the three ponds into one large pond.

In May of 2002, during the initial planning stages, David discovered what he thought

were tiny minnows in one of the ponds. After contacting government agencies, they came down to his land and said that the minnows were actually Oregon chub, an endangered species. Once they were discovered, David knew he had to alter his plans to better benefit and incorporate the fish into his restoration project.

David’s restoration plans had to change because of the discovery of Oregon chub, an endangered species

David’s altered plan includes the modification of the three small ponds into one large pond. There will also be islands created in the middle of the pond that will serve as a breeding area for birds. The pond will attract Canadian geese and wood ducks back to the area. This project will start in August of 2003 and be completed in August of 2005. Because the project is so large, outside contractors will be brought in to do the ‘heavy lifting’ and provide the machinery and expertise needed.

In the process of re-creating the wetland habitat, David realized that the pond and other aspects of his property would be a great area for young school children to visit and learn about the environment. He wanted to create an environment where local school



Two of the three ponds at Wilkes-Beal Studios that will be joined into one



children could go on nature walks around the pond and the entire property. Students can be engaged with artwork while also learning about science and a variety of other school subjects. He wanted to bring the students into nature to actively learn about different types of plant and tree species, perform scientific observations, and realize how much one can learn while taking a walk in nature.

The land at Wilkes-Beal Studios will continue to serve as a private area for artists as well as an area to enrich school children with all the different facets of nature. David's daughter described the area as, "A transition between nature and city space. It is the future." For many of the school children that visit Wilkes-Beal Studios it may be the first time they have gone on a nature walk and seen different species of bugs, birds, and an endangered species. They will get to see Oregon chub and learn how important it is to preserve the fish. It will enable children to be consciously aware of the environment and see its beauty.

David was able to fund this project through a wetland grant from the federal government and from private donations. David is lucky to have such a large area of land to create an environment that can offer so much to the

community. If a smaller land owner discovers wildlife species living within his or her property or wants to restore his or her land back to its more natural state, it is possible to do so in a way that will not hinder one's economic livelihood. David believes that a space or one's land should not revolve around money. Giving back to nature what has been taken from it only increases the property's value. It is possible to start with small restoration projects and then evaluate the best way to do more projects.

Wilkes-Beal Studio may be the future experience in how one interacts with nature. In many areas around Oregon, private landowners can restore and protect their natural land through grants provided by the government and other agencies. Being at Wilkes-Beal Studios even for an hour causes one to feel so in-tune with the environment that it is hard to understand why someone wouldn't want to help restore natural ecosystems. Progress is often defined as advancement, but progress should also be valued in the aspect of going backwards, going back to how an environment once was.

(Photos courtesy of
<http://www.wickesbealstudios.org/>)

Blackberry Removal and Restoration

The invasive blackberry bushes on Lyndsey Reeves' property were thick, unsightly, and obstructing. They grew on the banks on her stream, up to ten feet high and so dense that it eliminated native plants. Wildlife suffered too. The blackberry bushes excluded many plants that native animals and insects use for food and habitat.

Aquatic species that depend on a healthy riparian zone can also be affected by dense stands of blackberries. Changes in streamside vegetation, like a loss of tall shade-bearing trees, can change variables in a stream's ecology, like temperature. This in turn can harm fish like salmon that require cold water. The land on Lyndsey Reeves' property is home to many of these aquatic

species including salamanders, frogs, and even steelhead trout at times.

Lyndsey was also having problems with yellow flag iris on her property. This plant grows in the stream, choking it by blocking waterflow and promoting silt buildup.

When not running her business, Garden Artscapes, Lyndsey works on her land. She has been working hard now for ten years, improving her two acres of property bit-by-bit. Her latest project was to remove these blackberry bushes and irises, but the task was large and potentially expensive. Fortunately for Lyndsey, she got help from Habitats, a Eugene-based company that specializes in restoration planning. With their help, Lyndsey received a grant from the Oregon Watershed Enhancement Board (OWEB). This grant was co-share, with OWEB contributing 75% of the projected costs (not to exceed \$10,000) and Lyndsey and her husband contributing 25% of the projected costs. The landowner's share could be paid in cash or with labor. Lyndsey and her husband chose a combination of the two.

With funding in place, Habitats planned the removal of invasive Himalayan blackberry bushes (also known as Armenian blackberry) and yellow-flag irises from 280

feet of streambank. The project was divided into three categories: removal, replanting, and control.

Blackberry removal was done by hand and manual labor. Habitats subcontracted to the Northwest Youth Corps to provide this service. With a crew of about eight, they removed the whole plants, including the roots. "The removal was very successful", adds Lyndsey.

With the removal area bare and void of vegetation, Habitats was quick to lay down Geojute, a biodegradable fabric used to prevent soil erosion. The planners at Habitats prefer Geojute to plastic because plastic can end up in the stream and hurt wildlife. Laying Geojute was only a temporary solution until replanting could be done.

When replanting did occur, it was done using exclusively native plants. Habitats picked a

diverse array of plants, a strategy intended to mimic natural conditions. Among the plants used were swordfern, snowberry, red alder, Oregon ash, thimbleberry, and Oregon crabapple. Replanting is crucial, not only for ecological restoration, but to prevent reestablishment of the removed species.



YELLOW-FLAG iris grows instream and chokes waterways (top). Below, a stretch of streamside on Lyndsey's property is striped bare of invasive blackberries



The removal of the yellow flag iris was left up to Lyndsey and her husband. Fortunately for them, the irises were not as widespread and difficult to remove as the blackberry bushes. Since yellow flag iris grows in the stream, no replanting was needed.

The last phase of the restoration project is control. This is an ongoing process and requires diligence on the part of the landowner. Luckily, Lyndsey is dedicated to maintaining her land. The task before her now is to make sure that neither species, Himalayan blackberry or yellow flag iris, have a chance to reestablish and spread. This is especially important during the first year or two after replanting.

Overall, Lyndsey is happy with the work done on her property. She was very pleased with the work that Habitats provided and grateful for the grant she received from



A truckload of pulled blackberry bushes is ready to be hauled away for recycling

OWEB. Lyndsey admits that a project like this takes a lot of work and continued maintenance. She advises others who may do similar projects to be dedicated and become informed. She notes, “Doing it correctly the first time is better than having to do it again. Don’t be afraid to ask for help!”

Allison Creek Farm: A Restoration Case Study

In 1991, Judith McClain and Jim Fink bought 15 acres in the Mohawk Valley. There, Jim and Judith created Allison Creek Farm, which is named after the creek running through their property. The property is now mostly pasture with a few wooded areas and their organic gardens. There is a pond behind their house, which could be ideal for western pond turtles if the conditions were right.

After buying their property, Judith and Jim decided that there were a lot of places where they wanted to plant

trees and create animal habitat. They began purchasing trees and planting them in different places throughout their property but were not sure which species would



A newly planted conifer tree with protective netting

thrive in which conditions. Jim and Judith then sought outside assistance. . Because of this planting, Jim and Judith received approximately 2,000 plants and the labor to plant them. The tree-planting project at Judith and Jim’s property was the largest of three that

the MWP assisted with in 2002.

Jim and Judith originally found out about the planting projects at a meeting held by the MWP. Polly Kohl, the former coordinator for the MWP, held a community meeting to discuss the tree-plantings. Jim said, "Right away we were jazzed." Initially, there was some hesitation by many community members because of the involvement of the MWP. Polly reassured everyone that the MWP has no regulatory authority and that there was no need to be nervous. There would be volunteers and professional tree planters to help, and the MWP would be able to direct them in picking good trees for their property.

With the help of the Mohawk Watershed Partnership, Jim and Judith were able to host a restoration planting project on their property in 2002

Judith and Jim feel that the project was an overall success but that the survival of the plants is a challenge during times of low rainfall. During the first year after planting, they hand watered many of the plants. The initial success rate seems high. While walking around their property, it appeared that most of the trees were doing well and only a few didn't make it through the summer. The conifers were definitely a success, even with the dry season, and they are waiting to see what happens with the other plants.

If the project was to be repeated, Judith and Jim said that they would use mulch around the plants instead of newspaper and cardboard. Mulch was not available at the time of their planting project and they had to use different methods. Without the mulch, it has been a challenge identifying all of the plants and occasionally they are mowed over. The mulch would have been a great

help in keeping the planted areas well defined, as well as serving as a better weed suppressant.

Judith and Jim learned a lot from the restoration project *about the ecological functions of their property. They already had a basic understanding of their land and were conscious of the importance of shading creek areas, but they were unsure which plants to choose and how far apart they needed to be planted. With the help of the MWP, they were able identify native species appropriate for each planting site and were instructed on suitable spacing.



A volunteer plants willows

Jim and Judith were greatly involved with this project and received a high sense of gratification. Their high level of participation was rooted in the fact that this restoration was an initial goal of theirs. They have a great desire to restore their land to a more natural state and in turn promote wildlife habitat. Judith and Jim have a dream that their land will one day become a learning center where people can come to study Pacific Northwest flora and fauna.



JUDITH and Jim check out the success rate of the trees they planted

Making Restoration Work For You

There are very few remaining Mohawk Valley residents whose livelihood depends solely on livestock or agriculture. Currently, only three families run such operations, making Kevin Smith part of a vanishing breed. Smith and his family live on Marcola Road a few miles south of the town of Marcola. On their property and another recently purchased parcel near the Mohawk Grange, they raise cattle and grow hay. In addition to their own land, they lease other pastures for cattle grazing. Kevin is also a member of the Mohawk Watershed Partnership (MWP) board. Like other MWP board members, he feels an obligation to lead watershed restoration efforts by his own example.

Much of Kevin's education regarding Natural Resource Conservation Service (NRCS) grants and contracts came following the recent acquisition near the Mohawk Grange. The previous owner had received NRCS funding for a fencing and tree-planting project. Since several years remained on the contract (generally at least 10 years in length), it was a liability on the land. The planted area had not been maintained and was so overgrown that Kevin didn't know the area had been replanted prior to being contacted by NRCS administrators. He was faced with two options, either begin maintaining the planting or begin repaying project reimbursements received by the previous owner. He elected to continue the program and began clearing brush from the neglected planting. The brush that he cleared was primarily invasive weeds and grasses, plants that were hurting the survivability of the native species that were previously planted.

The primary lesson learned was that ongoing maintenance is a big factor with any NRCS-funded restoration project

For his efforts, Kevin received maintenance incentive payments on this acreage. . "Maintenance is always there and there are stipulations with the contracts that you need to consider," says Kevin.

Since 2000, Kevin has undertaken other projects on his properties. The most significant of these involved installation of a "barb" in the Mohawk River that is designed to divert flow energy away from the bank, reducing erosion. The barb is like an underwater jetty that runs perpendicular to the bank. It functions to divert flow away from the bank and slow the speed of water on the outside bend of the stream. Prior to installation of the barb in September 2002, Kevin estimates that between 30-40 feet of riverbank had already been lost to erosion. The

actual work to put in the barb took only three days. Obviously, such projects come with a heavy price tag. The total cost of the first barb installation was about \$38,000. Reimbursements for project costs were supposed to be 75%. However, final payments received by Kevin were closer to 50% due to under-projection of costs for the materials and contractors who did the work. Reimbursements were made through an Environmental Quality Incentives Program (EQIP) grant. NRCS administrators coordinated the project planning and permit process, so Smith only had to secure a Lane County building permit. He knows of plans for another barb at a site where more than **two acres** have been lost to erosion. Projects of this type require that licensed and bonded contractors to do the work. Private landowners cannot engage in work involving flow modification to streams.

Even before he began applying for NRCS grants, Kevin says that fencing off the river from cattle and planting trees have always been “common practice” on his family’s land. More recently, he has been very happy with the results of cross-fencing projects funded through another EQIP grant. During the winter of 2000 and early spring of 2001, he modified a 50-acre pasture off of Conley Road by installing cross-fences and subdividing it into three grazing parcels. Since then he has set up a rotational grazing plan where cattle are moved about every 12 days. During the growing season, Kevin says during the 30-day absence of cattle between grazing cycles, grasses (mostly rye, fescue and orchard grass) will grow to 18 inches in height. Using this rotational grazing plan, he is now able to keep 35 head of cattle on this pasture year-round. Prior to the project he had to move cattle out of this parcel for several months a year. Maintaining the cattle on a smaller parcel of land has benefits to the watershed because there is less land impacted by the cattle and overgrazing is minimized. Kevin also realizes benefits to his bottom line since he saves the time and money needed to truck cattle to other pastures. In addition to the fencing, Kevin had to set up a watering

station in each sub-pasture. This required installing three watering tanks and 3800 feet of water lines. His total costs for the project were \$8200, 75% of which was reimbursed.

Streamside buffers help keep water temperatures low enough to support salmon and trout

According to Kevin, one of the biggest problems with grazing in the valley is that “many people put too many cattle in their pastures.” There are numerous “hobby farmers” in the valley who own small acreage and hope to realize a little extra income raising cattle, sheep or goats. Most don’t own enough acreage to set up the necessary rotation in grazing that prevents overgrazing. After a couple seasons of poor management practices, there is usually complete vegetation loss and the ground is turned to mud. At this point most landowners get rid of their livestock and pasture becomes overgrown with blackberries and other invasive brush species. The MWP is committed to educating those owning small acreage about proper strategies for managing their pastures.



THIS recently completed barb is similar to the one constructed on Kevin Smith’s property. Barbs direct streamflow energy away from the banks

The Conley Road site includes approximately 800 feet of river frontage that Kevin fenced to keep his cattle from drinking from the stream. He also planted a streamside buffer with Willamette Valley pine, Douglas fir, western red cedar and some Oregon grape. On another 75-acre parcel near milepost 7 on Marcola Road, Kevin has done additional fencing and tree planting to create streamside buffers. Through his participation with the MWP, he understands that these buffers serve several important watershed functions. t, as well as stabilizing banks, filtering out pollutants from surface runoff, and they provide travel

corridors and protective cover for many species of wildlife.

Kevin Smith has positive feelings about most of his experiences with the NRCS grant process. His one frustration was the unexpected costs he incurred on the barb installation. He recommends closely reading contracts and asking lots of questions about the long-term maintenance responsibilities that are required with most projects. He admits to being pleasantly surprised at the results of some of the projects, particularly

the cross-fencing and rotational grazing. Like others in the community, Kevin feels it is important that local citizens participate in the management decisions that affect the Mohawk watershed. He hopes that other valley residents can benefit from his experiences and will be inspired to work on their properties.

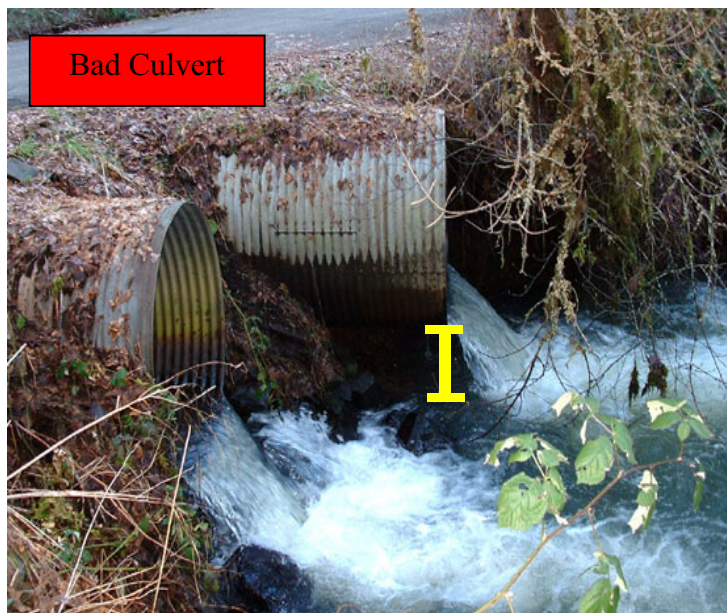
*Photo courtesy of <http://gisweb.co.tillamook.or.us/tcwrc/swcd/strmbrb.htm>

For Fishes' Sake: Culvert Replacement in the Mohawk Valley

Weyerhaeuser owns approximately 50,000 acres of land in the Mohawk Valley. This makes them the largest private landowner in the Mohawk watershed. Within this area, Weyerhaeuser has installed over 2,000 miles of paved and gravel roads that meander up mountainous terrain and cross streams on their way up to secluded logging areas.

In order to cross a stream, culverts or bridges are used. Since bridges are very expensive to build and maintain, most streams are diverted through culverts and underneath roadbeds. Unlike bridges, culverts are cheap to create, easy to maintain, and efficiently

move water underneath a road. The average Weyerhaeuser road has ten culverts per mile of roadway. Their culverts range in size from small plastic 18-inch diameter culverts to large corrugated steel 14-feet high by 9-foot wide culverts.

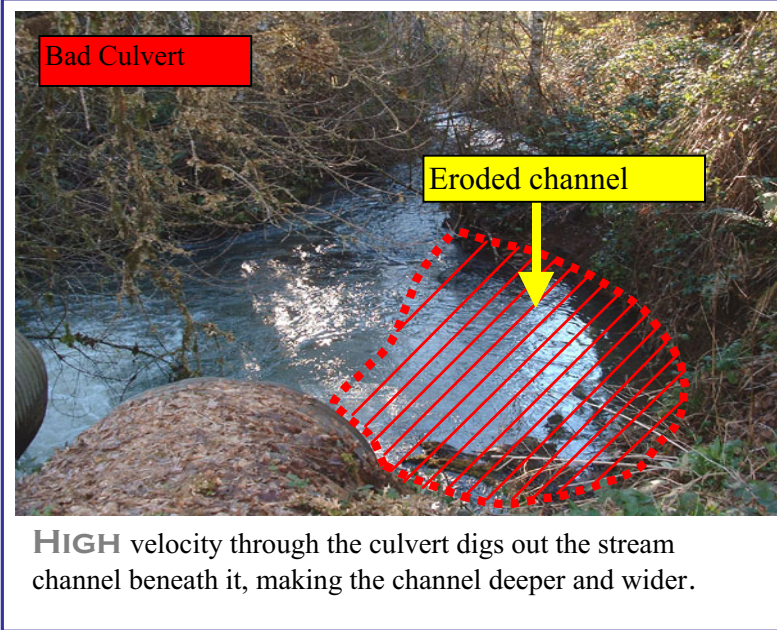


THIS culvert is high above the stream preventing fish from passing through.

At the turn of the century, when most of the area was first logged and a majority of the logging roads were first built, little thought was given to designing culverts so fish could easily get through. As a result, culverts often had their out-falls perched high above

streams, making it impossible for migrating fish to jump up into the culvert and swim through. If a fish could jump to the mouth of

the out-flow, they are often flushed back out because of high water velocities. Culverts can have a higher than normal water velocity because they create a narrow stream channel. This in turn speeds up the water as it moves through the culvert.



HIGH velocity through the culvert digs out the stream channel beneath it, making the channel deeper and wider.

the same height as the stream. So far, Weyerhaeuser has completed roughly 80 culvert-replacement projects. According to Chuck Volz, a road engineer for Weyerhaeuser and a Mohawk Watershed Partnership board member,

About six years ago, Weyerhaeuser began replacing old, poorly designed culverts that did not allow fish passage with newly designed culverts that reduced water velocity and lowered the culvert's out-fall to

90 percent of the costs for these restoration projects have come directly out of Weyerhaeuser's budget.

Replacing an old culvert is an expensive job that relies on large machines and takes about



THIS culvert is level with the rest of stream and has lots of rocks and boulders, keeping the velocity of the stream consistent and allowing fish to easily pass through.

2-3 days to complete. The first step is removal of the old culvert. Large earthmovers then dig away the roadway, dirt, and rocks that cover the culvert. Water is pumped out around the area so that it does not interfere with digging. Once the earth is removed around the culvert, the culvert is picked up, loaded onto a truck, and hauled away.

After a new, more properly designed culvert is placed and secure, different sizes of rocks are placed in the culvert. These rocks create an artificial stream channel that slow down the velocity of the water and create pools for fish to relax in. After everything is accomplished, the pumps that divert the stream are turned off and the stream is

allowed to flow underneath the roadway and through the newly designed culvert.

Because of Weyerhaeuser's efforts, fish can now swim directly to the mouth of the out-fall of a culvert, rest in pools within the culvert, and swim upstream, finding a place to lay their eggs.

Weyerhaeuser is trying to do their part by replacing culverts, but it is hard. Many poorly functioning culverts downstream still prevent fish from migrating upstream. It is up to everyone living in the watershed to help fix the ladder of streams that flow down to the Mohawk River, making the watershed a healthier and more beautiful place to live.

Funding Your Own Restoration Projects

Bob Holmes' family has lived in the Mohawk Valley for three generations. Needless to say, Bob is a lifetime resident. He owns over 1,000 acres and contributes a great deal of time and energy into restoration projects on his property. Bob, along with his brother Quinton, try to restore their land and make changes to it in order to bring the land back to its natural state. They often do this work without financial assistance that is available from grants programs. To help fund his restoration projects, Bob tries to contribute 10% of his gross income every year. He is dedicated to his various projects because he recognizes the importance of restoring the land to a better quality. He also feels a kinship with

the land. Because his family history here is so long, Bob tries to keep it pristine.

After some thought, Bob decided that the fish culverts on his property should be replaced. Throughout Bob's property, there are a variety of fish culverts. These culverts were originally constructed during the 1950s. During this time it was believed that culverts could easily be placed into streams without having to take into consideration its potential impact on wildlife. We now know that poorly designed culverts can be bad for wildlife, particularly migrating fish. The culverts placed in the 1950s were often placed high above the stream and were relatively narrow, which sped up the flow of

Three of the major projects he has worked on include upgrading fish culverts, creating a streamside buffer zone along the upper Mohawk River, and creating a pond on South Creek



THE photos on the left and right represent culverts that Bob has replaced on his land

water. This made it increasingly difficult for fish to swim upstream. Within the past few decades, however, there has been a great deal of change in culvert design and placement, making it easier on wildlife.

The culverts that Bob replaced were on Chittum Creek. Chittum Creek is a medium fish-bearing stream. He replaced small culverts with much larger 60-inch diameter culverts. He also lowered the culverts into the stream so that when the fish swim through it they do not even notice it is there. The project was expensive, costing a few thousand dollars, but if it was not done, migrating fish would not be able to make it upstream.

Another project Bob worked on was creating a streamside buffer zone along the upper Mohawk River. By doing this, Bob has re-created the natural setting. He used an excavator to remove dense brush patches that had previously near the stream. However, he left a 10-foot strip along the stream of the brush. Next, he planted Douglas fir seedlings from the streamside area up to the adjacent hillside. The trees

will grow approximately 25 feet in height within the next 15 years. These trees will provide shade for the Mohawk River that helps regulate stream temperatures and creates favorable conditions for fish. Also, when these trees eventually fall or are blown down, they will provide woody debris into the river that will help create fish and wildlife habitat.

To do this project, Bob had to get a variety of permits and coordinate his efforts with the East Lane Forestry Department. Without a permit, Oregon law prohibits cutting down trees that lie next to a river.

Bob's third project was creating a 1-acre pond. To do this project, he had to wait approximately 6 months to receive permits. The pond, which is now completed, holds water all year round (which is also helpful as a fire suppression tool a fire ever broke out). When the pond was first created, Bob stocked it with 100 cutthroat trout. During the first two years, Bob fed the fish everyday. As time progressed, the natural vegetation developed and now provides all the food the trout need. However, wild

animals and birds have eaten about three-quarters of the fish. Despite this, the pond has greatly increased the abundance of wildlife seen in the area. Wood ducks, raccoons, hawks, bobcats, deer, and elk all frequent the pond.

One of the greatest difficulties that Bob notices in working with science and nature is that the rules and regulations are constantly changing. Thus, when doing restoration projects it is best to take that extra step, meaning research, thought, and planning; to ensure the projects will still be viable 20 years later.

Bob and Quinton do all the work for their projects. They invest a great deal of time and energy into them. They do this so their children can enjoy the valley just as they have. Regardless of the price of these projects, Bob and Quinton feel that if you say you are going to do a restoration project, you should follow through with it. Bob has

noticed that some landowners lack commitment to restoration projects, especially if they have to pay for the project. If you cannot get funding (grants) for the projects, Bob feels that it is still vital to continue on with them.



THIS photo shows conifers that Bob planted on his property near the upper Mohawk River. He has planted these trees to bring back the natural vegetation and canopy covering over the river

How Two Homeowners Did it on Their Own

Karren Lansky and Kay C. Allen moved to the Mohawk Valley from Cleveland, Ohio in 1998 and purchased 5 acres of land along Parsons Creek. The majority of their land is forested with second-growth trees while the land immediately around their house is landscaped. Over the past five years, there have been a number of restoration issues that Karren and Kay have sought to address. They have identified three major problems that

include the invasion of English ivy and Himalayan blackberry, and bank restoration at Parsons Creek. Karren and Kay have happily done a lot of the work themselves and have also paid for all of the restoration work.



English ivy

English ivy *(Hedera helix)*

This invasive species is ground cover that suffocates trees and overpowers native plant species important for

native wildlife. It threatens the biological diversity of an area, which is important for maintaining a healthy ecosystem.

English ivy grows along Parsons Creek bank on Karren's and Kay's property. They have been working over the past few years to remove the ivy from trees along the creek's edge. Karren notes, "When the ivy was first planted, it covered the raw creek-side and held the earth and planted trees in place, but now it has overgrown several of those trees and is in the process of strangling them."



ENGLISH ivy along Parsons Creek at Karren and Kay's land

Karren has been aggressively cutting down the ivy from around the base of trees and pulling it off of trees for a few years, but she knows that it is an ongoing process and requires constant maintenance.

Himalayan blackberry also known as **Armenian blackberry** (*Rubus discolor*)

Karren and Kay have been working to eradicate the blackberries growing on the hill behind their home. They hired several young men from the Parsons Creek area to cut down the blackberry shrubs and pull out their roots. During the first spring after removal, Karren and Kay plan to use an organic spray called Blackberry and Brush Blocker made by Greenergy. It is a highly concentrated wine vinegar solution that alters the pH of the soil. When properly applied, it kills blackberry plants by changing the pH of the soil to 3, which is

too low (acidic) for the roots to survive. The March 2003 Mohawk Watershed Partnership

Newsletter published an article called "Speaking Organically" that addressed the use of this spray. It said, "Blackberry and Brush Blocker migrates very little, only spreading about four inches further than the spray areas in most soils." The article did point out that the spray would move through different soil types at different rates. Wet clay soils will hold the spray more

securely than light sandy soils. Karren says, "In the spring, I will cut the blackberry stems back down, spray with the Blocker, cover the hill with several plastic sheets and secure them with large aluminum stakes. Next spring I'll pull up the plastic sheets and see what has occurred. The plastic sheets Karren and Kay have put down help kill the blackberry bushes and minimize soil loss from surface runoff on the bare ground beneath.



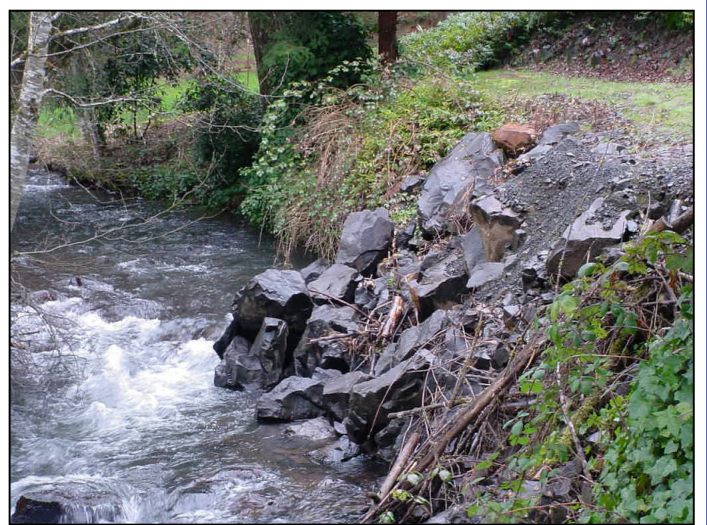
Himalayan (aka Armenian) blackberry

Karren and Kay hope that their efforts are rewarded with a bare hillside in the spring of 2004, when they will treat the soil with an application of lime. This will return the soil to a pH level comparable to before. Once this has been achieved, Karren and Kay will re-plant the hill with native plant species to restore it to its natural health.

Parsons Creek Bank Restoration

In 1996, Parsons Creek flooded and damaged property and homes along its bank. During the flood, Parsons Creek left its bed at a curve and significantly damaged the property and home of a landowner upstream from Karren and Kay. After the flood receded, the landowner attempted to remedy the situation by using his front-end mover to straighten out the creek's path, thus eliminating the curve. This provided a direct course for the water to gain velocity down the creek bed toward the next curve located at Karren and Kay's property. With the stream flowing this quickly into their bank, it quickly eroded away the hill. Karren purchased about a dozen truckloads of large rocks and several loads of smaller rocks. They were brought in, dumped down the hill, and then placed up against the bank in such a way as to prevent further erosion.

The work began in the spring of 1999 and is a continuous process. It has slowed the erosion but not stopped it. Although this method hasn't been a complete success, Karren and Kay were not aware of any apparent alternatives. The rocks are continuously being pulled down into the creek by the swift water and more work is always needed. Rebuilding this bank initially cost Karren and Kay approximately \$3,000 dollars out-of-pocket expense. Costs may rise because more work is still to be done.



KARREN and Kay used large rocks to prevent erosion on a stretch of streamside

Creating a Streamside Buffer and Managing Cattle

During a 39-year career as a management forester for Weyerhaeuser, Burt Smith spent lots of time monitoring water quality, directing harvest planting projects, and doing timber inventories on forestlands all over western Oregon. Despite retirement from professional forestry, he is regularly called upon for free consultations about watershed restoration projects being conducted by his friends and neighbors in the Mohawk Valley. He is a 31-year

resident of the valley and since 1998, has served on the Mohawk Watershed Partnership (MWP) Board.

In addition to his many consultations, Smith has completed work on a 60-acre parcel of his own. The property, along Honeybee Lane near Mohawk High School, includes approximately 500 feet of streamside frontage on Cartwright Creek. He leases the land for cattle grazing and his primary

reason for the project was to keep cattle out of the stream. He also recognizes the importance of shading streams. Shading is critical to maintaining proper water temperatures (65 degrees Fahrenheit or less) for salmon and trout. As a MWP board member and a steward of the land, Burt feels a strong obligation to lead by example. He is hopeful other valley landowners will follow his lead and engage in efforts to improve the health of the Mohawk watershed.

Between spring 2000 and spring 2001, Burt completed the following work on his property: He fenced the entire 500-foot frontage along Cartwright Creek, creating a buffer that varies between 35 and 60 feet in width. Within the buffer he planted a variety of trees including Willamette valley pine, western red cedar and some willows right along the stream. He staked each of the trees and enclosed them with a 24-inch plastic mesh tube to protect them from deer. According to Burt, deer will eat almost any seedling, but they are particularly fond of young cedars. In addition to the streamside buffer, he also cross-fenced his pasture, creating two 30-acre parcels to facilitate

Burt took advantage of the Environmental Quality Incentives Program (EQIP), which reimburses landowners for 75% of their costs up to \$10,000 a year

rotational grazing. By alternating cattle back and forth between the two parcels, the vegetation is able to recover through re-growth while reducing soil loss and compacting during the wet winter months. Since the cattle can no longer use the stream for water, he also had to install a watering tank that is fed by water pumped from a well.

Virtually all the work he has done qualifies for reimbursements through grants from the Natural Resource Conservation Service (NRCS), a branch of the United States

Department of Agriculture (USDA). The NRCS offers a variety of programs depending on the nature of the project. The program also contains incentive payments for conservation management practices for up to three years.

With restoration projects, the positive results and improvements to the watershed are rarely obvious over the short-term. However, Burt has seen immediate benefits to his cross fencing project. By moving cattle between the two smaller parcels he has seen much quicker vegetation recovery



WATER tank and cross-fencing (left) and streamside buffer (right) along Cartwright Creek set up by Burt Smith to facilitate rotational grazing and to keep cattle from getting into the

and reduced mud and soil loss during rainy seasons. Although he has no scientific data to back it up, he does feel that projects like his are making some positive impacts. “There seems to be less mud coming down the river these days.”

According to Burt, the “risky” element to restoration projects is tree planting. “Timing is everything,” he says. While planting for his streamside buffer, Smith learned that to expect any success, one must plant young trees in the early spring when there is plenty of soil moisture and a long growing season ahead. “Even then, it takes five or six years before trees grow to a height where their survival is fairly secure,” he cautioned.

Among the trees he planted in 2000-2001, damage from deer and drought have taken a heavy toll. Burt went out of his way to make it clear that restoration is more than a plant and ignore affair. “Newly planted trees have to be maintained or they will fail,” he said. “Follow-up maintenance over several years is critical.” Plantings must be mowed regularly so small seedlings don’t get shaded out by fast growing grasses and weeds. Grasses must be cleared from around the base of the seedlings as well. Grasses send out dense, deep root systems just below the surface that will suck up all the soil moisture and ground water before it gets to the tree roots. He also highly recommends the extra investment in stakes and tubing (plastic mesh) to maximize survival rates.

By alternating cattle back and forth between the two parcels, the vegetation is able to recover through re-growth while reducing soil loss and compacting during the wet winter months

Projects supported by the NRCS are monitored through annual visits. Landowners are obligated under most contracts to replant in cases where too many of the young trees don’t survive. Reimbursement for re-planting is only 50%, so it makes sense to maintain the initial plantings properly. Failure to mow down grasses, weeds, and invasive shrubs can lead to forfeiture of grant funds. Burt believes that the NRCS offers a good opportunity for individual landowners to help the watershed. His main concern is that there should be more long-term support for landowners from NRCS. He would like to see more funding for the ongoing maintenance needed to insure success.

Burt knows that the final results of his efforts won’t be realized in his lifetime. However, he is optimistic that much can be accomplished through the efforts of individual landowners. He feels that “building trust” between private landowners and the government is important and will ultimately be the key to finding successful solutions to watershed issues

Planting with Native Species

Peter Graham lives on 5 _ acres of land in the Mohawk Valley near Marcola. After building his house, Peter shifted his attention to enhancing his property with

native plants. Peter knows that native plants are good for wildlife because it increases suitable habitat and provides food and shelter for animals and insects. Peter also

knows that it benefits the ecosystem as a whole.

After attending an urban landscape class at Lane Community College and gathering information about native landscaping, Peter began planting on his property. He has done work all over his property, including his 450 feet of riparian land. There, invasive Himalayan blackberry bushes largely dominate, plants that Peter would like to eliminate. In an effort to do so, Peter has planted 50-60 various native shrubs and trees including vine maples, Douglas firs, willows, and Pacific dogwoods in this area to push out the blackberry bushes. In one spot, Peter has removed blackberry bushes by hand, but this area represents only a fraction of his riparian zone. By planting native species and removing blackberry bushes, Peter hopes to restore riparian vegetation and health to its natural levels.

Around the property, Peter has also done extensive planting with native species. This includes red-twig dogwoods, bigleaf maples, oceansprays, wild strawberries, and cottonwoods. Peter likes to keep his property natural looking while adding a decorative sense of landscaping. He has several native planting arrangements that fulfill his sense of

ecological awareness while also giving his yard an attractive feel.

For his yard, Peter has also put in an eco-lawn, an alternative to traditional turf grass. This lawn uses grasses, some native and some not, that require less watering and cutting. Peter cuts his lawn only four times a year, saving him time and money.



PETER standing in his yard where he has done decorative landscaping with native plants (above). A stretch of streamside that has been cleared of invasive blackberry bushes (below).



Peter says that he is very satisfied with his native plants. He has noticed a more abundant and diverse array of wildlife including butterflies, quail, and other birds. He has also noticed a decline in the amount of herbicides he uses and the amount of watering he does.

When asked what advice he would give to others wanting to plant native species in their yard, he quickly replied, “be patient”, noting that you need to “put the right plant in the right space.” Peter also suggests becoming informed and doing some background

research before starting.

If you are interested in contacting Peter about his experiences with native landscaping you may write to him at: PO Box 865, Marcola, OR 97454.

NRCS FUNDING PROGRAMS

The Natural Resources Conservation Service (NRCS) is a branch of the United States Department of Agriculture (USDA) and administers several funding programs designed to conserve streamside areas and wetlands. They offer seven different programs designed to meet specific conservation goals. These programs target individual private landowners, offering both reimbursement for project costs and in some cases management incentive and rental payments for owners who take their land out of “production.”

Participants in NRCS programs must have owned their property for at least one year. They must enter into a contractual agreement that ranges in length from 5-15 years and are required to follow specific management plans and guidelines set forth by NRCS administrators. There are site criteria for each project type. Each project is evaluated annually over the length of the contract to insure that management plans are being followed. Failure to follow guidelines and management plans can result in termination of contracts and repayment of previous reimbursements. Below is a short summary of each program outlining goals, landowner requirements, incentives and guidelines.

CONSERVATION RESERVE PROGRAM (CRP) – This is the oldest of the NRCS programs and was originally designed to help farmers reduce soil erosion on agricultural lands. Other goals include improving water quality and enhancing wildlife habitat, forest and wetland resources. The program requires landowners to convert croplands to permanent vegetation cover (often referred to as “set asides”). Also, it is designed to protect environmentally sensitive areas and to reduce erosion. Up to 50% cost-share for planting vegetation cover is reimbursed. The landowner also receives annual rental payments based on lost agricultural value of the land. Small acreage owners can sign up any time. Larger acreage owner are limited to announced sign-ups and their applications are ranked competitively. There are no farm income requirements

CONSERVATION RESERVE ENHANCEMENT PROGRAM (CREP) – This program is specifically designed for the protection and enhancement of streams offering potential habitat for salmon and trout species listed under the Federal Endangered Species Act (ESA). The Mohawk River and several of its tributaries are designated as potential salmon bearing waters. More specifically, this program’s goals include, retirement of environmentally sensitive lands. It also aims to reduce in stream water temperatures, reduce sedimentation (silt from erosion that covers gravel spawning areas and contributes to higher water temps) and nutrient pollution (algae blooms caused by fertilizers etc.).

Participants are required to remove lands from agricultural production (including livestock grazing). The term “agricultural production” requires that lands must have been cropped in the last 2-5 years and are physically and legally capable of being cropped. Pasturelands can be replanted with trees (no harvest). Contracts run 10-15 years. A joint cost share (federal 50% and state 25%) reimburses 75% of installation cost. Installation includes, but is not limited to, fencing, tree planting (trees, labor, materials), and watering systems for livestock. There is a \$5

per acre maintenance incentive plus annual rental payments on the value of the “retired” land. Total reimbursement under this program can exceed 100% of the landowner’s investment due to special incentives paid through Oregon Watershed Enhancement Board (OWEB) grants. Lands already under a CRP contract cannot be converted to this program. Project area must border waterways subject to protection under the ESA. Existing tree canopy cannot exceed 70%. The application process is open year-round.

ENVIRONMENTAL QUALITY INCENTIVES PROGRAM (EQIP) – Funding priority for EQIP projects is given based on “maximum sustainable environmental benefit per cost.” The goals of this program include improving and maintaining the health of natural resources, protecting locally identified priority areas, improving watershed quality, and salmon recovery. Half of available funding is earmarked for livestock-related concerns. Projects that can be reimbursed include livestock enclosure fencing, cross-fencing for rotational grazing, and setting up watering systems. Livestock operations cannot exceed 1000 “animal units.” Contracts range from 5-10 years with 75% of installation costs reimbursed and up to three years of incentive payments. The maximum contract payout is \$50,000 with an annual ceiling of \$10,000. Participants must be agricultural producers. Several Mohawk Valley residents have already received EQIP funding.

Note: The three programs listed above are the most frequently used by Mohawk Valley residents working on streamside restoration projects.

FORESTRY INCENTIVES PROGRAM (FIP) – This program is designed to foster better forest management practices in privately owned, non-industrial forestlands. Projects require a minimum of 10 acres and no more than 1000. Available in all U.S. Forest Service “designated” counties. Grants cover up to 65% of landowner’s total cost up to \$10,000 annually. Activities that can be reimbursed are tree planting, stand improvement and site preparation for natural regeneration. Sign-up periods are announced.

STEWARDSHIP INCENTIVE PROGRAM (SIP) – The goal of this program is to assist landowners in the active management of forestland and its associated timber, soil, water, and wildlife resources. Funded grants must have an approved Forest Stewardship Plan. The land must have existing tree cover and be suitable for growing trees and can be up to 1000 acres. Cost sharing covers 75% of stewardship planning and 50% of implementation. The maximum payout is \$5000 per landowner annually. Reimbursable activities include tree and shrub planting, pruning, thinning, erosion control, windbreaks, and the enhancement of wildlife habitat in riparian, wetland, and in-stream areas.

WETLAND RESERVE PROGRAM (WRP) – The goal is to expand existing wetlands, restore and protect wetlands on private land, and to set aside marginal agricultural lands to enhance wetland functions. Landowners are required to provide a permanent easement, 30-year easement or 10-year restoration agreement (with no easement). Land must be suitable for wetland restoration. If a permanent easement is granted, the landowner receives 100% of agricultural value of the land. A 30-year easement results in payment of 75% of the agricultural value, plus 75% of restoration costs. Under the 10-year agreement, 75% of the restoration costs are

reimbursed. Wetlands converted after 1985 and CRP lands with timber stands (tree plantings) are not eligible for this program.

WILDLIFE HABITAT INCENTIVES PROGRAM (WHIP) – This program is a broad-based effort to enhance all forms of fish and wildlife habitat, with a focus on enhancing native plant communities, species diversity and improving habitats of threatened or endangered species. A “Wildlife Habitat Development Plan” is required as is administrative monitoring by NRCS personnel. A 5-10 year agreement is also required. Up to 75% of implementation costs can be reimbursed with a yearly maximum of \$10,000. Lands already contracted under other NRCS and Water Bank programs are not eligible.

For further information about any of these programs contact the **NRCS** or the **East Lane Soil and Water Conservation District** at their joint offices at **1600 Valley River Way Ste 230, Eugene, OR 97401 Ph. 541-465-6436**, or visit the **NRCS website** at **www.nrcs.usda.gov**.

ADDITIONAL FUNDING

OREGON WATERSHED ENHANCEMENT BOARD’S SMALL GRANT PROGRAM – This program is aimed at helping landowners complete on-the-ground restoration projects for forest, agricultural, range, and urban and rural residential lands. Grant funding has an upper ceiling of \$10,000 and requires a 25% share by the party in question. For more information you may contact the Oregon Watershed Enhancement Board at **775 Summer Street NE, Suite 360, Salem, OR 97301-1290 Ph. 503-968-0178**, or visit their **website** at **www.oweb.state.or.us/index.shtml**.

**For More Information on restoration projects or funding
you may contact the Mohawk Watershed Partnership!**

E-mail: mwp@epud.net

Website: www.mckenziewatershedcouncil.org/mohawkWSP.html