2002 Field Evaluation Progress Report
Idaho Nonpoint Source Program

Summary

During summer and fall 2002 staff from the Department of Environmental Quality (DEQ) State Office of Technical Services staff evaluated 27 of 50 on-going nonpoint source (NPS) contracted projects. In order to properly conduct field evaluations, staff used DEQ's list of NPS field project requirements to generate an evaluation form to be used for all field evaluations. Field evaluators recorded a variety of best management practices (BMPs) related to the seven recognized NPS categories of logging, agriculture, historic mining, hydrologic habitat modification, ground water, transportation, and urban storm water runoff.

Three project areas -- the Succor Creek/Homedale School District Water Quality Project, the Jim Ford Creek Watershed Enhancement Project, and the Paradise Creek Total Maximum Daily Load (TMDL) Implementation Project -- are highlighted from the field this year because they exemplify outstanding coordination, design and implementation. Pictures of the three highlighted projects appear in this report. Evaluation reports including photographs of all 27 contracted projects are contained as an appendix in the back of this report or can be accessed electronically by link through Table 1 of this report.

Introduction

DEQ currently oversees approximately 50 NPS regional projects in Idaho. To assist in tracking, each project is assigned a contract number. If projects extend to several years and additional tasks and funding is granted, more than one contract number may be assigned to a project area (see Table 1). To assure that the projects are completed in a timely manner and achieve their overarching goal of cleaning up and preventing NPS water pollution, all projects are subject to field evaluation by DEQ staff. DEQ staff set a goal to field evaluate the progress of half of the current projects annually. Therefore, over a two-year cycle all of the on-going projects will receive a field evaluation. During the summer and fall of 2002 staff from the DEQ State Office of Technical Services exceeded that goal by evaluating 27 of 50 on-going NPS contracted projects.

History of the Nonpoint Source Program

Congress established the national NPS program in 1987 when it amended the Clean Water Act with section 319, "Nonpoint Source Management Programs." States were given the federally funded mandate to address NPS water pollution by 1) conducting statewide assessments of their waters, 2) developing NPS management programs to address those identified impaired or threatened waters, and 3) implementing EPA-approved, federally funded NPS management programs to clean up and prevent NPS pollution.

Initially, grants were awarded on a competitive basis to any state that wished to apply. In 1995 EPA recognized that all states had developed maturity in effectively working to clean up and prevent NPS pollution and invited all 50 states to apply for grants on a non-competitive basis. This new approach allowed federal funds to be more widely distributed among the states while still requiring that all projects meet certain strict standards. At that point the EPA and the states formed the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) which led to the current NPS framework. In Idaho NPS funding has resulted in over 100 contracts for on-ground projects designed to clean up and prevent NPS pollution. Of the 100 projects undertaken since the inception of the NPS program, Idaho currently oversees approximately 50 on-going projects that are described in detail through formal contracts established between DEQ and a variety of federal and state agencies, and nonprofit organizations.

Creation of the Field Evaluation Process

Before beginning the field evaluations DEQ staff determined that since many projects had tasks that require more than one year to complete, it may be necessary to divide the evaluations into three categories based on how close each project is to completion. DEQ's initial plan was to conduct *field reviews* on projects in their early stage of fieldwork. Projects further along should receive a more detailed *field inspection* and projects that are nearly complete or complete should receive the most detailed evaluation – a *field audit*.

DEQ used its list of NPS field project requirements to generate a detailed evaluation form for staff to use for field evaluations. Once DEQ staff began the evaluation process it became apparent that there was very little distinction between the detail of data gathered for projects in their early stages and those in their late stages. Therefore, it was decided to perform the same level of evaluation on all projects. For all projects the DEQ evaluator visiting the site carefully reviewed the project's subgrant agreement and made notes prior to going to the field. The evaluator routinely contacted the project manager to make arrangements to accompany the project manager, DEQ regional staff, and any other stakeholders to the field. In all cases the evaluation form was used as a guide to assure that all NPS requirements were being met in the field.

Results of the 2002 Field Evaluation

DEQ evaluators traveled to 21 geographical areas of Idaho and evaluated 27 contracted projects during the summer and fall of 2002. With the exception of two contracted projects covering Coeur d' Alene Tribal lands, and three contracted projects covering the historic Rex mill site near Coeur d' Alene, all of the other contracted projects demonstrated substantial progress toward completion of their designated tasks to reduce, eliminate or prevent NPS water pollution.

Although some of the work on the two Coeur d' Alene Tribal lands projects has been completed, most of the work has been repeatedly delayed due to two Tribal management changes, proposed project adjustments and bad weather. The U. S. Bureau of Land Management repeatedly delayed three mining related projects scheduled at Rex Mill resulting in the withdrawal of NPS funding by DEQ. However, important reclamation work at this historic gold and silver mill will be achieved through other private and state funding sources.

Fieldwork evaluated by DEQ staff on NPS projects included a variety of common BMPs related to the seven recognized NPS categories of logging, agriculture, historic mining, hydrologic habitat modification, ground water, transportation, and urban storm water runoff. Evaluators examined work on BMPs related to roadways that overlap into all seven categories. These BMPs included eradication of unneeded roadways, application of gravel to roadbeds, creation of logging truck friendly rolling water bars, and installation of fish friendly culverts. Other overlapping road-related BMPs observed included installation of properly sloped roadbeds, planting of drought resistant vegetation along road cuts and fills, and installation of check dams along borrow ditches.

Some agriculture-related BMPs evaluated required education and close cooperation among farmers, ranchers, and numerous federal, state, and nonprofit organizations for implementation. These BMPs included installing vegetative buffer strips between crops and water ways, implementing no-till farming techniques, installing an array of storm water runoff retention facilities, and planting suitable native vegetation in intermittent waterways that were formerly cultivated for crops. Evaluators also observed strategic placement of fencing to keep livestock out of streambeds, stream bank restoration, and relocating confined animal feeding operations (CAFOs) away from waterways.

In the historic mining category evaluators observed BMPs designed to reduce or eliminate acid rock drainage (ARD). In order for ARD (sulfuric acid) to form, three components (air, water and sulfitic mine waste rock) must all be combined. BMPs observed in the field were designed to separate storm water and surface water from waste rock. The most common method to achieve separation involved capping and sloping mine waste rock to eliminate infiltration of surface water.

In the urban storm water runoff category evaluators toured stream channel restoration projects along Paradise Creek within the City of Moscow. Where previously in the mid 1900s the stream channel had been straightened, deepened, and lined with rip rap to allow for development, a large and diverse group of stakeholders led by the Palouse-Clearwater Environmental Institute conducted a superb effort to recreate a meandering channel and flood plain. Other urban-related BMPs observed in Moscow and in Pocatello included creation of wetlands and an innovative use of paleo-oxbow geomorphology to allow infiltration and cleaning of storm water prior to discharge to streams.

Table 1 lists details of all 27 of the NPS contracted projects that were field evaluated during the summer and fall of 2002. These 27 different projects (contracts) occurred at 21 sites around

Idaho. Following Table 1, three project areas -- The Succor Creek/Homedale School District Water Quality Project, the Jim Ford Creek Watershed Enhancement Project and the Paradise Creek TMDL Implementation Project are highlighted because they exemplify outstanding coordination, design, and implementation. Evaluation reports of all 27 projects are contained as an appendix in the back of this report or can be accessed electronically through links in Table 1.

Table 1. ACTIVE NONPOINT SOURCE PROJECTS THAT WERE FIELD EVALUATED DURING SUMMER/FALL 2002

Grant Year	Contract Number*	Project Name	Hydrologic Unit Number	Tasks or BMPs Evaluated	Evaluator	DEQ Region
1999	Q525	Cascade Reservoir, Watershed and Roads	17050123	Sediment control BMPs for dirt roads	J.West	Boise
1998	Q444	Sheridan Creek Restoration	17040202	Stream bank stabilization, fencing, grazing plans, weed control	D. Reaney	Idaho Falls
1998,1999	Q529 and Q366	Coeur d' Alene Tribe Wetland Creation and Restoration/Lake Creek – Plummer	1701030423	Sediment control BMPs for dirt roads	J.West	Coeur d' Alene
1999	Q558	Cascade Reservoir Watershed Roads and Forested Lands	17050123	Sediment control BMPs for dirt roads	J.West	Boise
1999, 2000	Q605 and Q562	Paradise Creek TMDL Implementation #1and #2	17060108	Sediment control BMPs for dirt roads, grazing plans, relocation of CAFOs, fencing, crop management, stream channel rehab, wetlands	J.West	Lewiston
1999, 2000	Q564 and S009	Scriver Creek Watershed Roads and Forested Lands	17050112	Sediment control BMPs for dirt roads	J.West	Boise
2000	Q608	Ashton Groundwater Protection	17040203	Nutrient management of crops	D. Reaney	Idaho Falls
2000	Q609	Bear River Fencing and Riparian Enhancement	16010202	Stream bank stabilization, fencing, grazing plans, weed control	D. Reaney	Pocatello
2000, 2001	S011 and Q610	Winchester Lake Watershed NPS Implementation and Upper Lapwai Creek Watershed	17060306	Sediment control BMPs for dirt roads	J.West	Lewiston
2000	S008	Twentyfour Mile Creek TMDL Implementation	17040208	Stream bank stabilization, fencing, grazing plans, weed control	D. Reaney	Pocatello
1998, 1999 2000	Q557,Q336, and S012	Completion of Designed Water Management at Rex Mill Site, E. Fork Ninemile Creek	17010302	ARD Control, Project terminated by 319 and refunded through other sources	J.West	Coeur d' Alene
2001	S014	Trestle Creek Watershed Conservation	17010214	Sediment control BMPs for dirt roads, conservation easements	J.West	Coeur d' Alene
2001	S015	Jim Ford Creek Watershed Enhancement	17060306	Sediment control BMPs for dirt roads, grazing plans, relocation of CAFOs, fencing, crop management	J.West	Lewiston
2001	S016	Thomas Fork Stream Bank Protection	16010102	Sediment control BMPs for dirt roads	J.West	Pocatello

Grant Year	Contract Number*	Project Name	Hydrologic Unit Number	Tasks or BMPs Evaluated	Evaluator	DEQ Region
2001	S017	Phase 1 South Fork of Cottonwood Creek TMDL Implementation	17060305	Sediment control BMPs for dirt roads, grazing plans, relocation of AFOs, fencing, crop management	J.West	Lewiston
2001	S018	Porter Riparian Restoration Cub River	16010202	Stream bank stabilization, fencing, grazing plans	M. Shumar	Pocatello
2001	S019	Succor Creek / Homedale School District – Water Quality	17050103	Stream bank stabilization, agricultural irrigation water cleanup, fencing	D Abderhalden	Boise
2001	S022	North City Park Wetland	17040208	Storm water infiltration BMPs		Pocatello
2001	S024	Santa Creek Streambank Protection and Stability	17010304	Stream bank stabilization BMPs	J.West	Coeur d' Alene
2001	S025	Success Mill Site	17010302	ARD control, metal ion extraction from ground water	J.West	Coeur d' Alene
2001	S026	Rock Creek Rehabilitation	17040212	Variety of storm water infiltration BMPs	B. Clark	Twin Falls

* More than one contract number for a project indicates that additional funding was later granted for additional tasks.

Outstanding Projects for 2002

Succor Creek/ Homedale School District Water Quality

The Succor Creek/Homedale School District Water Quality Project is highlighted this year because the project involves simple straightforward methods to clean up water that has for many years been subject to agriculturally related pollution. The project is removing sediment and nutrients from the return water with bioretention and biofiltration wetlands before it reaches Succor Creek. Succor Creek, a 303(b) listed stream for sediment, will now meet TMDL targeted loads easier with this treatment. This site will also provide an example to area producers who face similar water quality issues.

This project is a good example of joint efforts between multiple land owners, local officials, the local school district, DEQ, the Owyhee SCD, the NRCS, the Department of Agriculture, a local consultant engineering company and ordinary citizens. Mr. Bill Moore of the Owyhee SCD has been involved in the project from the beginning. He has facilitated the planning meetings for the last three years and has helped to develop the grant including tasks, outputs, and milestones.

The school's staff and students as a continuing science project will monitor the wetland. No future funding will be required, as any additional equipment will be purchased through the school's general funds. Samples will be taken at regular points and intervals on the site with assistance from the Department of Agriculture. Subsequently, the students and staff will continue the monitoring as part of the school's curriculum.

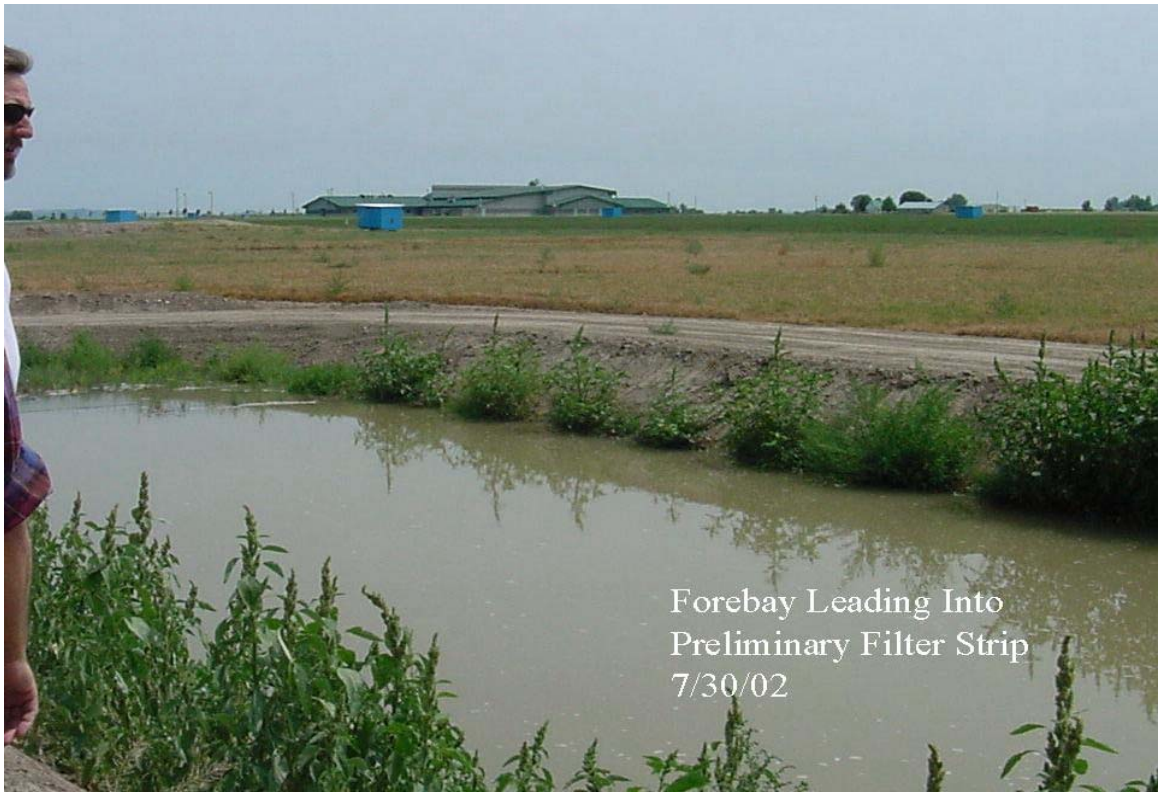
During the field evaluation DEQ determined that the project has been constructed in a satisfactory manner. All excavations for the forebay, filterstrip and water impoundment areas are complete. The weir and outfall structure for water level control is installed and functioning. The appropriate wetland plants were installed approximately two months prior to the evaluation and appeared to be flourishing. While there was no irrigation taking place at the time of our evaluation, water was diverted into the complex to demonstrate that the appropriate grades were achieved during construction. The flow rate and patterns match what had been anticipated in earlier planning stages.

Irrigation at this site is not a constant. While there will be enough water to support the plant community, the levels will seldom be at the design capacity. We therefore discussed the possibility of diverting some of the flow of a nearby stream into the complex to help drive the hydrology and to utilize the filtering capacity of the wetlands to improve water quality in this similarly impacted stream. Mr. Moore will investigate this possibility further.

Although chemical sampling will be part of the future monitoring regiment, a visual inspection of the water leaving this site showed that it was indeed cleaner than water coming into the wetlands.

Staff anticipates that as the vegetative community matures in the constructed wetland this project will provide the duel functions of cleaning up NPS contamination while providing an outstanding educational tool for the school and the community. There are plans to add a pavilion structure to aid in the education of students and the community.

Following are photographs taken during the project evaluation.


Forebay Leading Into
Preliminary Filter Strip
7/30/02

Flow Regulation In
Preliminary Filter Strip
7/30/02

Stone Check Dam At End Of
Preliminary Filter Strip
7/30/02

Open Water Cell On Left,
Flowthrough Channel Center,
Deep Water Cell In Background
7/30/02

Deep Water Cell
Note: Recently Planted Rushes
Doing Well. 7/30/02

Outlet Structure In
Deep Water Cell 7/30/02

Restored Bank; Succor Creek
Left View 7/30/02

Rapidly Establishing
Wildlife Community 7/30/02

The Clearwater Soil and Water Conservation District Jim Ford Creek Watershed Enhancement Project

The Jim Ford Creek Watershed Enhancement Project is highlighted this year because the project involves multiple effective methods to clean up water that has for many years been subject to agriculturally related pollution. The goal of the Clearwater Soil and Water Conservation District and sub-project agencies is to reduce nutrients, sediment, and bacteria loading to Jim Ford Creek. This is being achieved through the capture of fine sediment with riparian vegetation in the restored stream section. Stream bank stability improvements decrease sediment and absorb phosphorus. Filtering runoff by streamside vegetation reduces bacterial contamination, reduces soil erosion, conserves soil resources and decreases sediment delivery within the watershed.

Partners in this project include numerous farmers and ranchers, the Clearwater Highway District, the Natural Resources Conservation Service (NRCS), Idaho Soil Conservation Commission (ISCC) Ducks Unlimited, Idaho Department of Fish and Game (IDFG) and DEQ.

Water quality projects include riparian plantings that serve as a source of shade to cool the stream and a filtration zone for nutrients and bacteria as well as offering stream bank stabilization. The installation of many miles of fencing in key areas not only keeps livestock away from the stream banks, but also helps protect young seedlings from browsing by deer and elk. Other stream bank restoration measures include willow and shrub plantings and repaired meanders.

This project included installation of cattle guards and application of crushed aggregate to stretches of dirt roads that were previously contributing sediment to Jim Ford Creek. Installation of 34 culverts, installation of rock lining and armoring and hydroseeding are all BMPs that are slowing and controlling runoff eliminating gully washing, bank erosion, and storm water flow over the roadways.

The elimination of grazing within certain key areas, the relocation of a corral away from Jim Ford Creek and construction of an off-site watering pond are all examples of private land owner cooperation. Other cooperative major water quality protection measures include the relocation and construction of state-of-the-art confined animal feeding operations (CAFOs).

One of the Private landowner CAFO projects constructed during 2002 consists of two buildings with sidewalls. The purpose of this project is to retain all waste generated by 120 animals for the total calculated confinement period (October – May). This facility includes a concrete floor spanning the full length of both the feeding area as well as the solid waste stacking area. The full length of this facility has a raised border of no less than six inches. This facility is now being maintained by the rancher to ensure that all animal waste is contained within the facility and not allowed to enter surface or ground water.

A fence and a corral system were constructed within the CAFO complex to effectively manage the rotation and movement of the animals to reduce the impact of soil distribution and potential water quality problems. A pipeline now conveys water from the creek to a watering trough located within the feedlot as opposed to the previous arrangement of simply allowing livestock to enter the creek.

A series of bermed and fenced ditches created an effective roof runoff system. This system collects and transfers all clean, uncontaminated roof runoff from the feedlot site to a suitable infiltration area offsite. Some ditches consist of 6-inch perforated drain tile covered with filter cloth and drain rock. Open ditches are now fenced on both sides to prevent livestock access.

The total CAFO project cost was $131,482.53, including $58,515.11 paid by the landowner; $14,593.49 paid by the Department of Agriculture; and $58,373.93 paid through NPS grant funding.

A second similar but smaller CAFO consisting two buildings with sidewalls to properly manage the storage for a 30 cow/calf operation for the total confinement period from October through May is currently 90% complete. The facility is scheduled to be completed next summer, will also be managed to ensure the adjacent stream water quality will not be impaired.

The following photographs were taken during the summer of 2002.

Clearwater Highway District, instillation of culverts on the Mussellshell Road.

Private Landowner confined animal feeding operation (CAFO)

Private Landowner CAFO

Private land owner CAFO being modified to greatly reduce sediment and other contaminant runoff

Some of the wildlife on a tributary to Jim Ford Creek benefiting from NPS work accomplished over the past several years

Paradise Creek Urban Riparian Restoration and Rural Farmland BMPs

The Palouse-Clearwater Environmental Institute of Moscow, Idaho is overseeing this multi-tasked project. Four of the urban sub-projects are highlighted here.

White Avenue Streambank Stabilization and Revegetation:
This project area is owned by the City of Moscow and involves a joint effort by the city, the Palouse-Clearwater Environmental Institute and community volunteers. Previous conditions along this stream segment included near vertical, slumping, eroding stream banks that were contributing to the sediment load in the creek. There was a lack of native woody vegetation close to the creek to help in shading. Paradise Creek had been dredged within the city limits many times in the past, which added to its degraded state. Historically, the city dumped asphalt on to the sides of the stream for bank stabilization. After the asphalt was removed, 258 feet of stream bank was resloped and planted with several hundred native plants. Approximately 2,280 square feet of floodplain was then hydroseeded with a native seed mix and covered with biodegradable erosion control fabric.

East Mountain View Restoration Project:
Work on this city-owned stretch of stream involved a joint effort by TerraGraphics Environmental Engineers, AmeriCorps, the City of Moscow, Washington State University environmental science students, Moscow elementary school students, Synthetic Industries, and community volunteers.

Prior to this work, this urban reach of Paradise Creek had near vertical, slumping, eroding stream banks that were straightened due to dredging activities. The majority of the stream bank soil was exposed resulting in sediment infill due to stream bank undercutting and erosion. There was very little diversity in vegetation at this site and no native woody vegetation present to shade the creek. Paradise Creek is on the 303 (d) list and is listed for sediment and temperature as pollutants in its TMDL.

The project involved the reconstruction of 1,720 feet of meandering stream channel with floodplains on both sides of the channel. Two new wetlands were constructed as well. Volunteers installed over 1,500 woody plants and 1,100 herbaceous plants. The reconstructed channel was stabilized with a number of different bank stabilization BMPs including buried log cribbing, root wad revetments, and soil wraps. Bank revetments were placed in scour susceptible zones along outer bend banks. Extensive revetments were required because of heavy springtime flows and downstream sediment concerns. Bank revetments are restricting the movement of the channel without compromising its natural appearance. Stream channel stabilization is also important due to nearby development in this urban environment.

Woody streambank vegetation was planted along all revetments. Native riparian hardwoods such as shrub willow, aspen, and dogwood will eventually provide intertwining root networks for long-term bank stabilization in these areas.

The crown of the stream channel was rounded off to make a smooth transition to the floodplain surface. All outside bank slopes were then seeded with a native riparian grass mix and lined with a 100% biodegradable geotextile fabric. The fabric was carried over the top of the slope crown onto the level edge of the floodplain surface.

Open weave straw matting was used in lower energy areas; tighter weave coir matting was used in higher energy areas. The coir fabric will retain its structural integrity for at least five years, the straw matting for two to three years. This will allow time for the establishment of a dense herbaceous ground cover on all bank surfaces.

The two newly constructed wetland areas in this project are approximately one to one and one half feet in depth with a 5:1 slope on each side. An existing wetland at the site was extended to enhance its animal habitat. Native woody vegetation was planted in the area and will continue to be enhanced over a period of years. Species were selected from a comprehensive list of riparian and upland trees and shrubs native to this environment.

In October of 2002, once all of the hardscape BMPs were in place and final grading had been completed, the Palouse-Clearwater Environmental Institute sponsored an all day workshop for the local elementary school district. At the workshop over 200 kids participated in planting a variety of native riparian plants and learning about environmental stewardship.

Streets Wetland and Lefors Wetland:
These two similar projects are located on private, urban land along separate tributaries to Paradise Creek. The purpose of both projects is to create wetlands that offer the benefits of flood control, native habitat for wildlife, filtration of pollutants, recreational and educational opportunities, and improved water quality for Paradise Creek.

Both project areas are inundated for a significant portion of the year and are therefore suitable locations for wetlands. Reed canary grass is the dominant vegetation along the stream segments. Few trees or other woody plants were present on either site and both have significant contaminant sources such as horse barns and horse pastures. One landowner visualizes a “pick your own” produce farm adjacent to the wetlands and the other would like to establish native habitat including an area for environmental educational events.

Both wetlands are about 100 feet wide and 275 feet long. Both wetlands fluctuate in depth from 1to 1.5 feet as the season dictates. The wetland designs allow the waters of the adjacent streams to enter into the areas while providing defined channels for water movement in low flow situations. Herbaceous wetland plants will be planted to help improve water quality by reducing nutrient loading through filtering. Native willow and Red-Osier dogwood cuttings will be planted along the banks of each stream to secure the banks and introduce shade to the system. This will create a woody riparian buffer. Woody riparian buffers offer many benefits, including filtration of runoff, wildlife habitat, and flood water retention. All plantings are protected from vole damage with plastic tubes.

The following photographs depict some of the work accomplished along the urban portion of Paradise Creek during 2002.

Installation of biodegradable straw/coconut fiber logs for stream bank stabilization at White Avenue sub-project. This is one of many BMPs used on Paradise Creek

White Avenue bank stabilization and restoration completed

Lefor's Wetland Prior to Planting

Volunteers at work planting native plants at Lefor's Wetland

Initial Grading at Streets Wetland

Streets Wetland shortly after completion

Hundreds of local school kids participated in the all-day workshop at East Mountain Project

They learned about microorganisms, biodivirsity and the need for riparian environments

They learned about riparian wildlife, the need for undeveloped floodplains

They learned how stream channels are reconstructed

They learned how to plant hundreds of plants

They learned how to take better care of the environment