



Helping Our Partners and Benefitting the Environment

Office of Ecosystems and Communities

FY2000 Grants



Cover:

Lower Wilson River and Blind Slough.

Inset:

Development along Highway 101, Tillamook, Oregon.

Office of Ecosystems and Communities

FY2000 Grants

Helping Our Partners and Benefitting the Environment

Introduction from the Office Director:

The goal of the Office of Ecosystems and Communities (ECO) is to restore and protect the environment for naturally functioning ecosystems and healthy human communities. This is of critical importance to people in Region 10, and indeed the world, but extremely difficult to accomplish. The primary tools ECO has to accomplish this goal are a talented staff and a diverse set of programs which we manage. Many of these programs offer financial assistance to partners to enable them to do much of the hard work needed to achieve our common goals.

We have a fiduciary responsibility to ensure that ECO's financial assistance awards achieve their intended environmental objectives in a cost-effective manner. Monitoring, evaluating and documenting how financial assistance awards are actually used are important parts of our management and oversight responsibilities. This report is a snapshot that represents a wide range of accomplishments from our financial assistance awards.

In FY2000, ECO provided over \$100 million in financial assistance through a total of 100 separate awards. The intent of this report is to summarize data from that year to convey the magnitude of impact of these financial assistance programs. It is organized in 3 parts:

- **ECO Programs and Dollars** are summarized (pp. 5-9)
- **Where the Money Goes** is portrayed in a series of graphics (pp. 10-15)
- Examples of the **"Money in Action"** are provided to demonstrate results (pp. 16-30)

We expect this report to be a template for the development of future annual reports on the use of financial assistance awards within ECO. We also expect to continue to improve the quality and content of our annual reports, with the goal of documenting environmental results and accomplishments from the funds we are charged with managing and overseeing.

Elbert Moore, Director
Office of Ecosystems and Communities
EPA Region 10

Where the Money Comes From *ECO Programs and Dollars*

The U.S. taxpayer, through Congressional appropriations, funds a wide range of EPA programs. Over \$100 million in financial assistance was awarded in FY2000 through programs managed by the Office of Ecosystems and Communities. These programs vary greatly in their funding and purposes as described in the following pages.

Total Grant Awards By Program

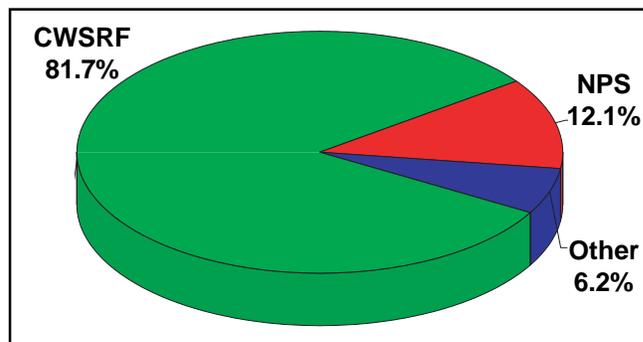
<u>Program</u>	<u>FY2000</u>	<u>See Page</u>
Clean Water State Revolving Fund	\$84,530,144	6
Nonpoint Source	\$12,568,527	6
Pesticides, State and Tribal Assistance Grants (STAG)	\$2,284,862	7
National Estuary Program	\$1,100,000	7
Wetlands, State and Tribal Assistance Grants (STAG)	\$1,071,922	7
Congressionally Directed	\$905,050	
Regional Geographic Initiative	\$309,000	8
NW Forest Plan	\$256,200	8
Miscellaneous	\$134,500	
Pesticides, Environmental Program Management (EPM)	\$124,250	7
Ocean Disposal	\$99,700	9
Wetlands, Environmental Program Management (EPM)	\$88,232	7
TOTAL	\$103,472,387	

Our biggest programs (in dollars) are State Loan Funds and Nonpoint Source Programs.

Clean Water State Revolving Fund (CWSRF)

(\$84.5 Million awarded in Region 10 in FY2000)

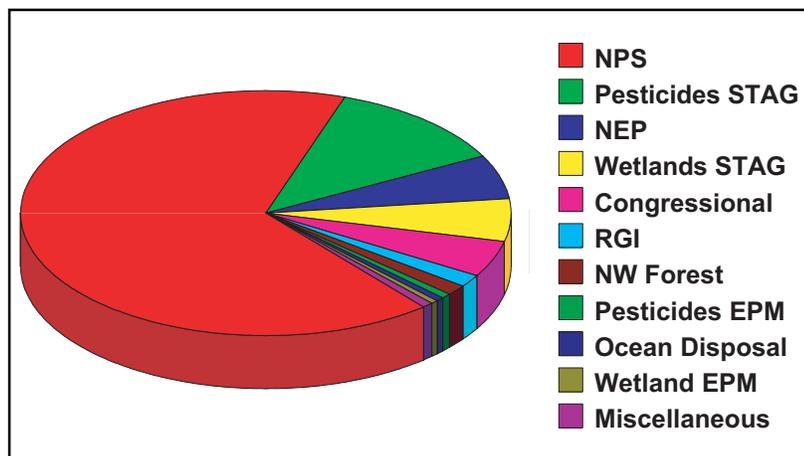
The State Revolving Loan Fund is by far the largest of our programs in dollar terms. With the passage of the Amendments to the Clean Water Act (CWA) in 1987, the U.S. Congress ushered in a new era in clean water funding. The new CWA calls for the replacement of the long-running federal Construction Grants program with an innovative State Revolving Fund (SRF Program). Under the SRF program, each state (and Puerto Rico) created revolving loan funds to provide independent and permanent sources of low-cost financing for a range of water quality infrastructure projects. Funds to establish or capitalize the SRF programs are provided by the federal (83%) and state (17%) governments. Currently, all fifty states and Puerto Rico are operating successful SRF Programs. Capitalization began in 1988; today total assets of the SRF program stand at more than \$34 billion. As payments are made on loans, funds are recycled to fund additional water protection projects. If capitalized as planned, the SRF will be available to play a key role in funding water quality infrastructure far into the future.



The Clean Water State Revolving Loan Fund (CWSRF) provides the vast majority of financial assistance available through ECO.

The Nonpoint Source Program (CWA Section 319)

(\$12.6 Million awarded in Region 10 in FY2000)



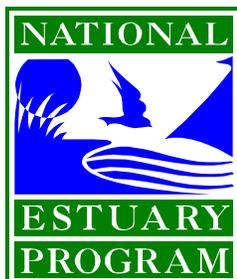
Nonpoint Source Program grants account for 66.4% of the \$18,942,243 in non-CWSRF funding available in FY2000.

The 319 program provides grants to the states and tribes to implement nonpoint source projects and programs in accordance with Section 319 of the Clean Water Act (CWA). Nonpoint source pollution reduction projects can be used to protect source water areas and the general quality of water resources in a watershed. Examples of previously funded projects include installation of best management practices (BMPs) for animal waste; design and implementation of BMP systems for stream, lake and estuary watersheds; basinwide landowner education programs; and lake projects previously funded under the CWA Section 314 Clean Lakes Program.

Other programs provide important assistance.

National Estuary Program (NEP)

(\$1.1 Million awarded in Region 10 in FY2000)



The National Estuary Program is a non-regulatory program (Clean Water Act Section 320) that seeks to identify, restore and protect nationally significant estuaries. It encourages and provides financial support to local community efforts to manage their own estuaries

by protecting the integrity of the whole system — its chemical, physical and biological properties, as well as its economic, recreational and aesthetic values.

This program is different from most EPA programs in that it represents a long term commitment to support stakeholders in selected geographic areas to (1) identify and understand priority problems in the estuary, (2) develop specific actions to address those problems, and (3) create and implement a formal management plan to restore and protect the estuary.

Three of 28 designated “estuaries of national significance” are in Region 10:

- Puget Sound (management plan approved in 1991)
- Tillamook Bay (management plan approved in 1999)
- Lower Columbia River (management plan approved in 1999).

Pesticide Program

(Pesticides STAG \$2,284,862 awarded in Region 10 in FY2000)

(Pesticides EPM \$124,250 awarded in Region 10 in FY2000)

The Pesticides Unit awards the following grants relating to pesticides. State and Tribal Assistance Grants (STAG) funds constitute the majority of the dollars available and provide basic support for the implementation and enforcement of pesticides programs by states and tribes. Smaller amounts of STAG funds are available for the Pesticides Environmental Stewardship Program (PESP). One or two of these grants are funded each year to promote integrated pest management and other pesticide risk reduction initiatives.

The region also receives varying amounts of Environmental Program Management (EPM) funds for Food Quality Protection Act (FQPA) grants and a variety of other special projects. FQPA grants help develop pest management alternatives for those pesticides likely to be lost as a result of the stricter risk requirements of the Act.

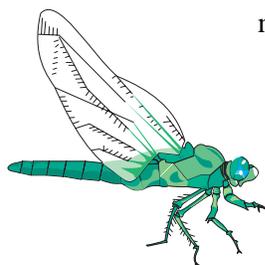


Wetlands Program

(Wetland STAG \$1,071,922 awarded in Region 10 in FY2000)

(Wetland EPM \$88,232 awarded in Region 10 in FY2000)

The Wetlands Program Development Grants provide financial assistance to states, federally-recognized Indian tribes, and local governments to support development of new, or augmentation and enhancement of existing wetland programs. Projects



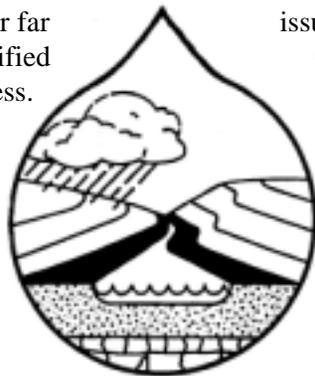
must clearly demonstrate a direct link to an increase in the state’s, tribe’s or local government’s ability to protect its wetland resource. Small amounts of Environmental Program Management (EPM) funding are available for special projects related to wetland protection.

The Regional Geographic Initiative (RGI)

(\$309,000 awarded in Region 10 in FY2000)

The Regional Geographic Initiative (RGI) is designed to fund community based efforts in geographic areas that have been identified as high priority by the region. Geographic areas facing difficult or far reaching environmental problems are identified through a formal selection or ranking process. RGI is able to fund one or two major projects a year for three to four year periods. Because RGI funding is discretionary, it can be used to support innovative work that falls outside of traditional EPA programmatic funding.

Initiatives are generally cross-program in nature and are focused on engaging many partners at the local level. For example, the Columbia Plateau Agricultural Initiative (CPAI) involved EPA staff from Air, Water, Pesticides and Ecosystems. The project was funded for four years with the goal of generating sustained community support for innovative and



improved agricultural practices on the plateau. It also had the effect of influencing cross-program coordination and understanding of agricultural issues within EPA. When funding for CPAI had been exhausted, EPA's local partners continued many of the efforts initiated or encouraged by the initiative.

Currently, Region 10 receives about \$400,000 for the RGI program. With that we are able to fund one major initiative annually in addition to providing funding for a number of specific geographically defined regional efforts. RGI is not a source of continuing funding; rather it is intended as "seed money" which will result in sustained community support after the initial EPA funding is no longer available. The program has existed since 1995.

The Northwest Forest Plan

(\$256,000 awarded in Region 10 in FY2000)

Adopted in 1994, this plan provides a framework for managing 24 million acres of federal forest lands within the range of the northern spotted owl. The plan focuses on restoring and protecting the health of old growth habitat and aquatic ecosystems (especially for salmon) and provides a backbone for Endangered Species Act and Clean Water Act compliance and drinking water protection in federally managed forests of Oregon, Washington and northern California. Office participation in Regional and Provincial Interagency Executive Committees offers a unique opportunity for EPA to influence forestry practices and restoration activities by federal land management agencies. EPA provides limited financial support to its partners in implementing the plan.



Ocean Disposal Program

(\$99,700 awarded in Region 10 in FY2000)

The sediment management program largely deals with regulatory decisions about disposal of dredged material pursuant to Section 404 of the Clean Water Act (CWA) and Sections 102 and 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA). Both laws share a common theme to prevent significant degradation of the waters of the U.S. or the ocean. The principle focus traditionally has been on contaminated sediment: the assessment of sediment/dredged material for chemical contamination and associated toxicity, identification and design of appropriate disposal sites for this material, and monitoring and management of the sites and material.

In addition to the concern with contaminated sediments, sediment management also addresses geo-



hydrologic processes (*e.g.*, nonpoint source sedimentation), pollution prevention efforts, mining activities (including non-processed sand and gravel extraction), and beneficial uses of sediments or dredged material. The beneficial use component, which can cover creation or restoration of habitat, or containment (capping) of contaminated sediments, is gaining increasing use to mitigate for unacceptable adverse effects of projects, to restore degraded habitats and resources, and to remediate contamination.

Technical Assistance Grants (TAG)

(No new awards made in FY2000)

Recognizing the importance of community involvement and the need for citizens living near sites seriously contaminated with hazardous wastes to be well informed, Congress included provisions in the Superfund Reauthorization Act of 1986 to establish the TAG program. The TAG program is intended to promote involvement in decisions on site-specific cleanup strategies under Superfund. A Technical Assistance Grant (TAG) provides money for activities that help a community participate in decision making at eligible Superfund sites. An initial grant of up to \$50,000 is available for any Superfund site that is on the EPA's National Priorities List (NPL), or proposed for listing on the NPL and a response action has begun. EPA's NPL is a list of the most hazardous waste sites nationwide. Four communities in Region 10 are TAG recipients.



During FY2000, the Marine View Drive community in Tacoma, Washington used a TAG to hire a technical advisor for recommendations and solutions to an in-water disposal facility. As a direct result of this community involvement, the contaminated sediments that would have gone into the in-water disposal facility will now be sent to a regulated landfill away from water.

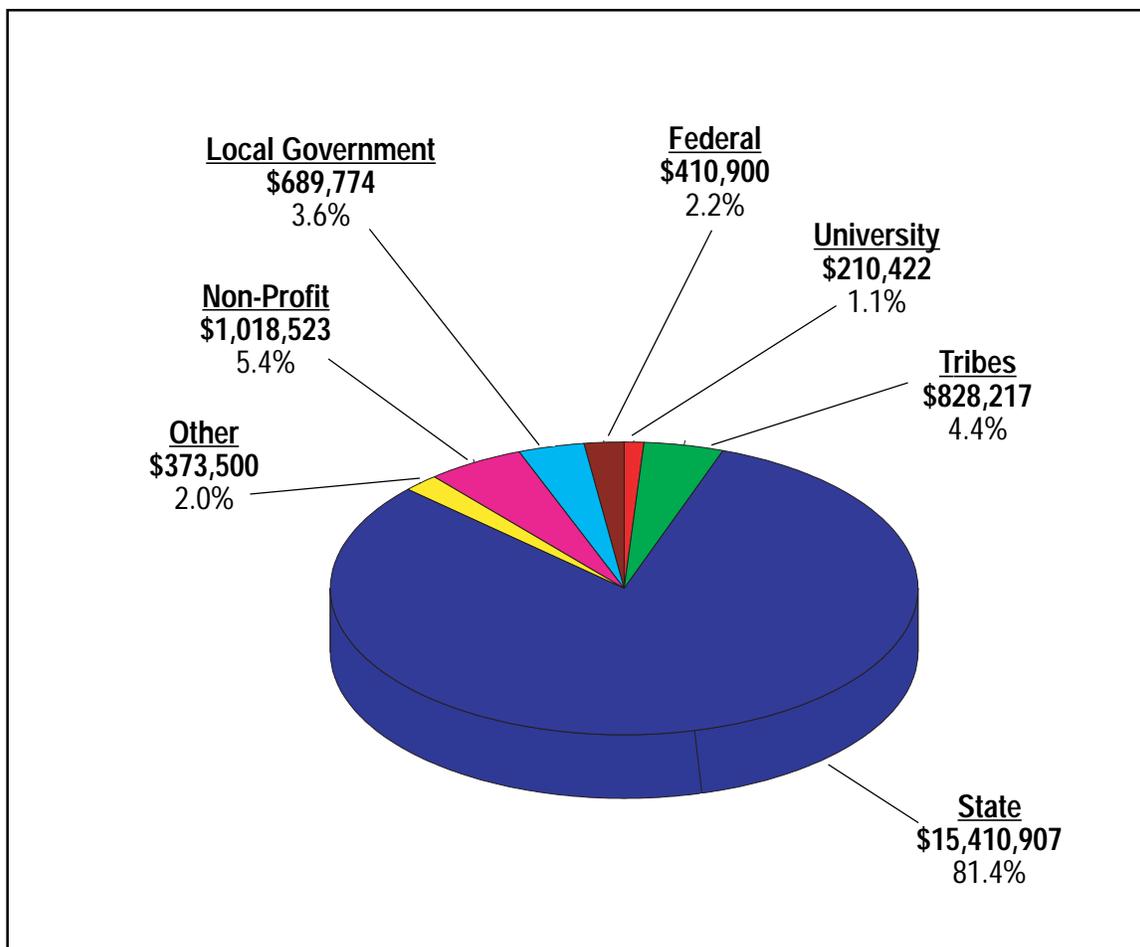
Where the Money Goes

Partners, Targets, Approaches, & Locations

As seen in the previous section, the programs managed by ECO work through a variety of mechanisms. The following figures depict some of the ways this work can be characterized. Note that in many cases, data representing the Clean Water State Revolving Fund (CWSRF) program has been excluded so that the detail of smaller programs is not overwhelmed by the large dollars associated with CWSRF.

Supporting our Partners

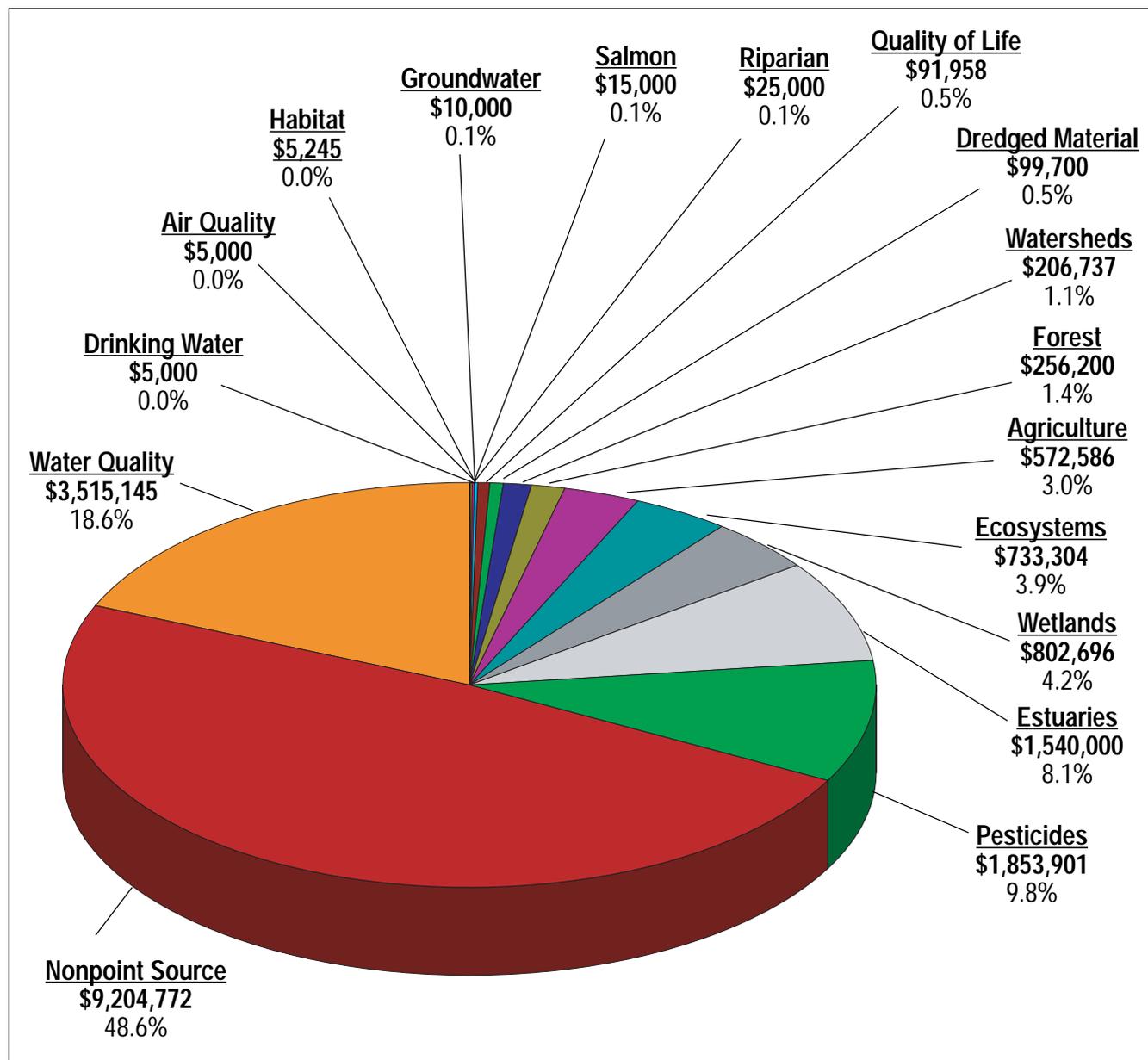
We work with a variety of federal, state, tribal, local, university and non-profit partners. State water quality agencies are by far the largest recipient of ECO funding. These agencies, in turn, use these federal dollars in a variety of ways, including funding for other government agencies and non-profit organizations; the details of those uses are not reflected in these charts.



Type of Funding Recipient (not including CWSRF \$)

Our Environmental Objectives or Targets

We work with our partners to achieve a variety of objectives associated with the programs we are implementing. Since any individual program or project funded by ECO may affect more than one environmental target, we asked our staff to select one primary and multiple secondary targets as appropriate to characterize their projects.

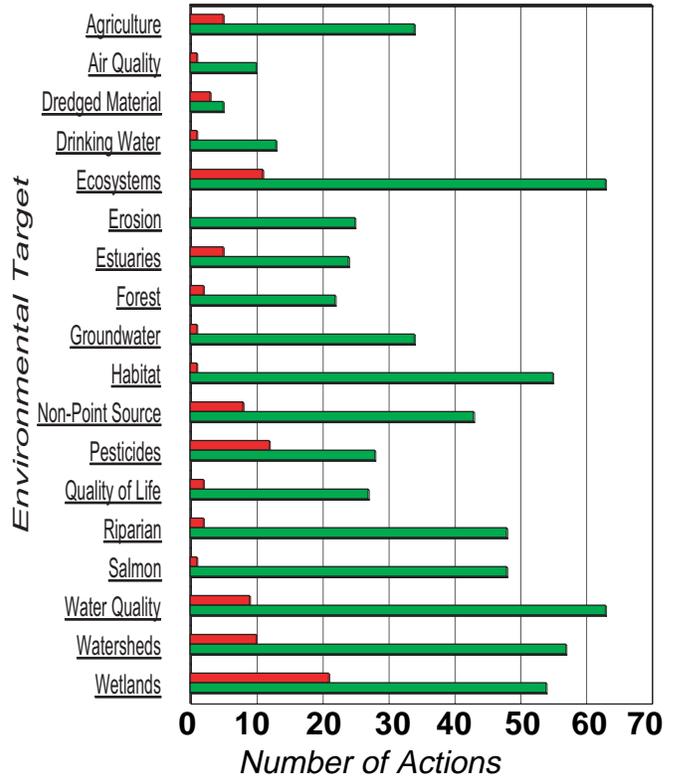
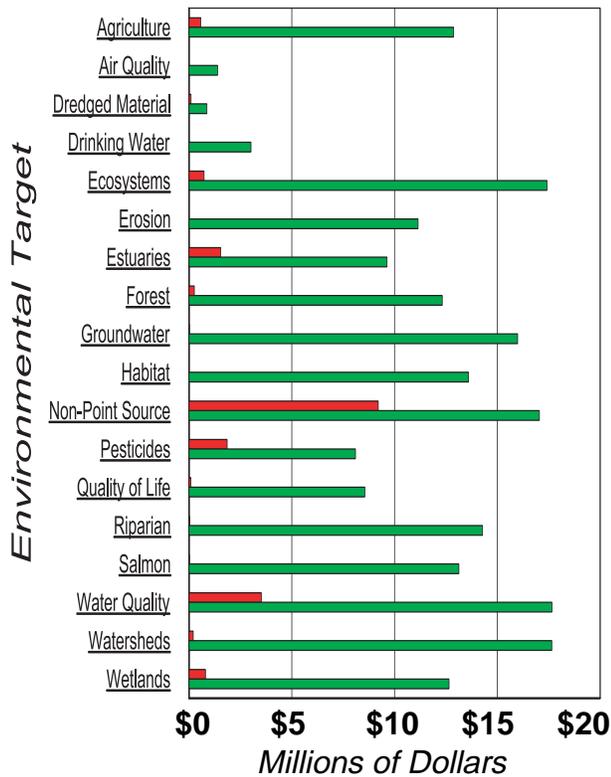


Funding Benefits Our Environment in Many Ways (\$ not including CWSRF). This graph depicts the dollar amounts and percentages of all grants by their primary 'Environmental Target.' For example, \$9,204,772 in grants in FY2000 were used to address Nonpoint pollution issues while \$3,515,145 was applied to general water quality issues. Note that only one primary environmental target was indicated for each grant project although several "secondary" environmental targets may have also been affected.

Our Environmental Objectives / Targets

Dollar Amount of Grant Actions Affecting Various Environmental Targets

Number of Grant Actions Affecting Various Environmental Targets

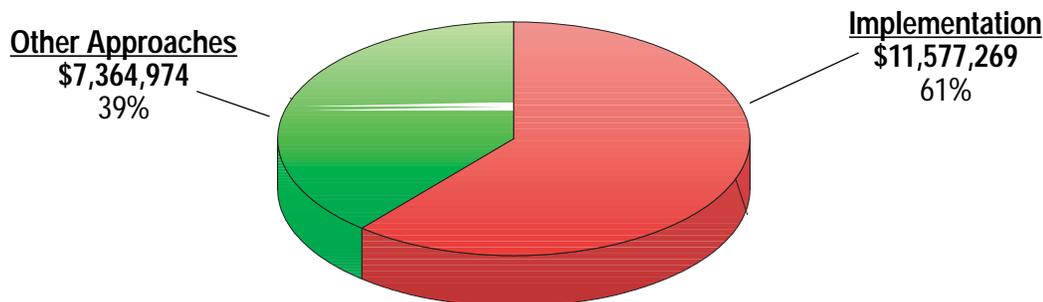


■ Primary Focus
■ Secondary Focus

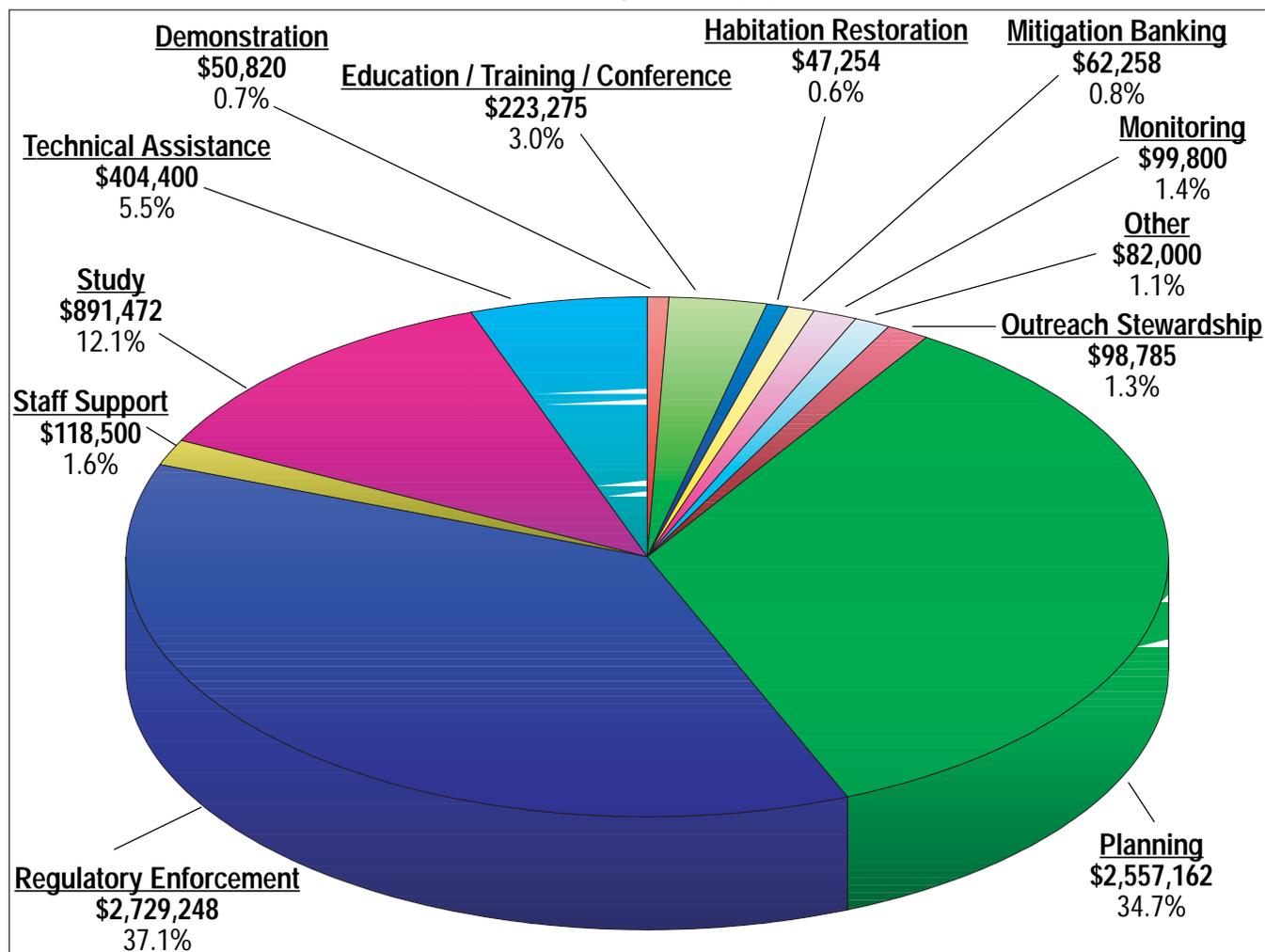
Approaches Used to Achieve Objectives

A variety of approaches are used to achieve the objectives described. We try to emphasize direct implementation, but planning and other approaches are often needed and supported.

Over 60% of our funds go to implementation (Not Including CWSRF)



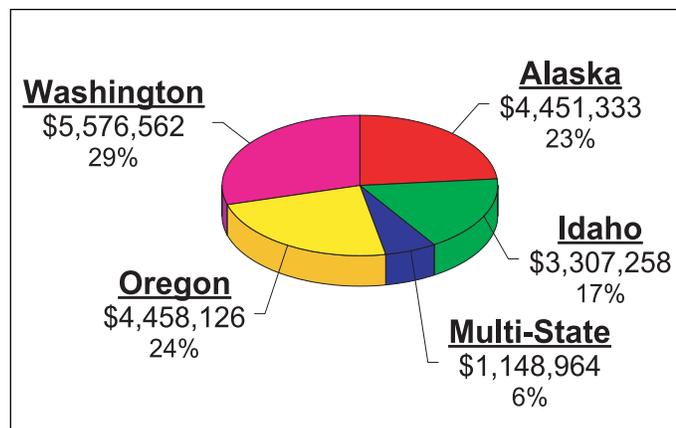
The other 39% funds a variety of approaches



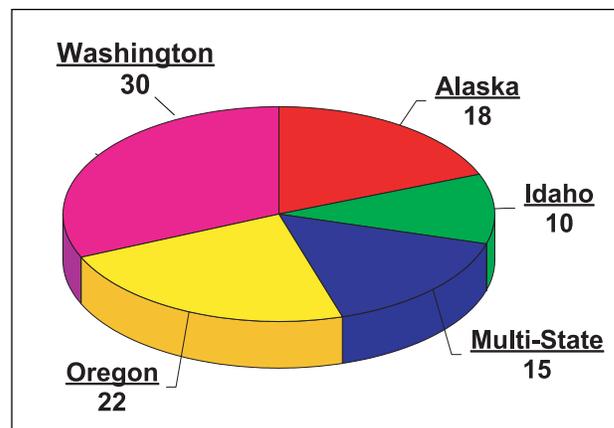
Geographic Distribution of Assistance

The following graphics display how our financial assistance gets distributed throughout the Region, both by total dollars and by numbers of grants. There is a fairly even distribution of assistance among the states.

Our Grant funds are almost evenly divided among the Four Region 10 States.



Dollars Awarded by State (excluding CWSRF).



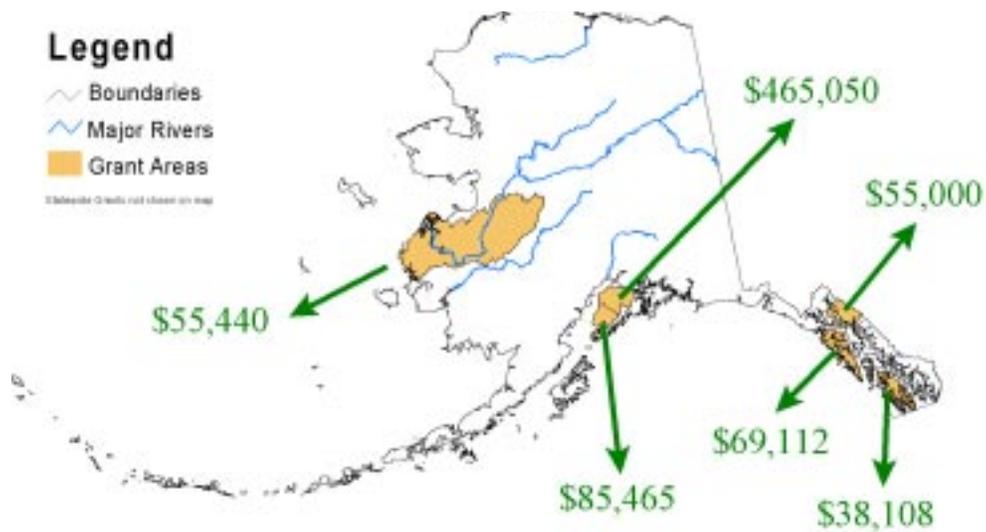
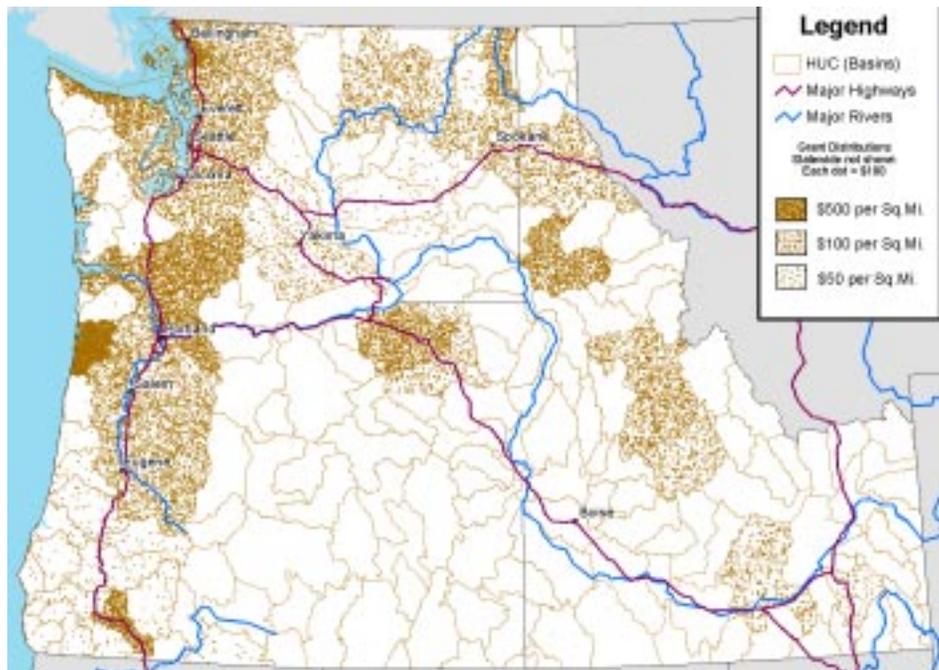
Number of Grants by State (excluding CWSRF).

Most of our financial assistance goes to state recipients or to projects affecting very large geographic areas. Smaller amounts of money are targeted at specific watersheds or counties as shown in the table on this page and the maps on the next page. Although the maps display only a small part

of our overall financial assistance, they give some indication of the geographic areas of emphasis for our programs. In the future we hope to tease more of this type of detail out from some of our programs that essentially pass money through state recipients to smaller scale projects.

<u>State</u>	<u>Mapped</u>	<u>Non-Specific Location</u>	<u>Total</u>
Alaska	\$768,175	\$19,737,958	\$20,506,133
Idaho	\$346,883	\$9,515,575	\$9,862,458
Oregon	\$660,620	\$18,708,762	\$19,369,382
Washington	\$1,202,486	\$51,382,964	\$52,585,450
Multi-State	\$510,657	\$638,307	\$1,148,964
	<u>\$3,488,821</u>	<u>\$99,983,566</u>	<u>\$103,472,387</u>

Some funds are targeted at priority watersheds throughout the four states.





*Sometimes progress happens one shovel full at a time...
ECO staff helping to eradicate Spartina from Puget Sound tidal marsh.*

Our Money In Action: Stories From the Ground

The following stories provide examples of the types of accomplishments that are achieved through our financial assistance programs. They are representative of some of the range of issues tackled, partnerships involved, and environmental benefits achieved.

	page
Opening the Tide Gates	
Tillamook Bay National Estuary Program -- Blind Slough Project	18
Planning for Smart Growth	
Alternative Futures/Smart Growth Planning for the Chico Watershed	20
Reducing Pesticide Risk	
Wenatchee Valley Pear Project	22
Conserving Wetlands	
The City of Juneau Wetlands Mitigation Program	23
Restoring Paradise Creek	
Paradise Creek Restoration	24
Stream Restoration Yields Dramatic Improvements	
Oregon - Upper Grande Ronde Basin	26
Dairy Farm Partnership Protects Watersheds	
Dairy Waste Management in Whatcom County	28
Irrigation Changes Successfully Reduce Sediment Problems	
Sediment Reduction in the Yakima River Basin	29
Citizens Aim for Sustainable Future	30

Opening the Tide Gates

Tillamook Bay National Estuary Project (\$330,000 in FY2000)

Blind Slough Project (\$3,500 in NEP funds and \$15,440 in 319 funds)

Issues and Context

The long term nature of our commitment to National Estuary Programs (NEPs) allows for support of projects that develop over time. As the Tillamook Bay NEP identified its environmental problems, the loss of tidal fish habitat was noted as a priority issue for salmon resources. Early demonstration work subsequently tested “fish-friendly” tide gate designs to allow fish access to side channel sloughs that had previously been cut off by levies. The project described below successfully builds on this earlier work.

Project Description

The NEP started the Blind Slough project in the summer of 1998, planning to replace blocked tide gates to return the slough to its former function as a salt-fresh water transition zone for fish use. Such areas are relatively rare in the lower Tillamook Delta and this one was the most important slough of all those investigated. About one and one half miles of slough, including side sloughs, were cut off from functioning. Permission was requested and received from landowners. Permits were applied for from Tillamook County, U.S. Army Corps of Engineers, and Oregon Department of State Lands. The tide gates were built in the Spring of 2001



Blind Slough near Tillamook, OR.

and installation was completed in July of 2001. All the concept development, project planning, and contract preparation and management were made possible by the basic NEP support provided by EPA.

Results

This project resulted in quick improvements to about four acres of tidal marsh habitat. Prior to the installation of the new tide gates, there was no evidence of smolt using the slough even though there were many sightings of them on the river side of the levee. Within twenty-four hours after installation, hundreds of smolt moved up into the slough and were observed jumping. A plentiful supply of insects should provide good food for the fish, increasing their chances of survival.

Similar quick changes were observed in the vegetation in the slough. Prior to this project, the slough was covered with a fresh water weed (Parrots Foot) so thick that it was very hard to paddle a boat through it. Within seven days of the introduction of salt water to the slough the Parrots Foot was gone and the slough was clear and bright.



New "Fish friendly" tide gate opened tidal marsh habitat to migrating fish use.

Planning for Smart Growth

Alternative Futures/Smart Growth Planning for the Chico Watershed
(\$35,000 in RGI funding and \$40,000 in NEP funding)

Issues and Context

Cumulative effects of sprawl-type development patterns are overwhelming water quality and aquatic habitat protection efforts in many areas in the Northwest. Effective aquatic resource protection and restoration efforts need to be planned at the watershed-scale to avoid these impacts. Located in Washington, the Chico watershed, one of Kitsap County's most productive salmon bearing streams, is feeling the pressures of increasing development. Without adequate planning, the environmental infrastructure of our watersheds (*i.e.*, our stream-sides, estuaries, floodplains, fish rearing habitats, *etc.*) is usually severely degraded. Generally, local infrastructure investments have not been able to keep pace with sprawl development. This reality leads to both community livability and environmental protection issues. Further, the piecemeal fashion of many environmental protection programs makes it difficult for local governments to efficiently and effectively respond to these issues.

Project Description

In 2000, EPA Region 10 approached the Puget Sound Action Team with the idea of applying techniques in evaluating alternative future development options in the Puget Sound area. A case study developed by the EPA Corvallis Research Lab helped interest Kitsap County in the concept. A project was then co-designed with the Puget Sound Action Team, the Washington State Office of Community Development, and Kitsap County.

Funding included \$35,000 of EPA Regional Geographic Initiative funds; \$40,000 of EPA HQ support from the National Estuary Program; and about \$150,000 in state and local funds. In the Chico watershed, water quality, water quantity, aquatic resource habitat protection, and community infrastructure investment priorities are being evaluated.

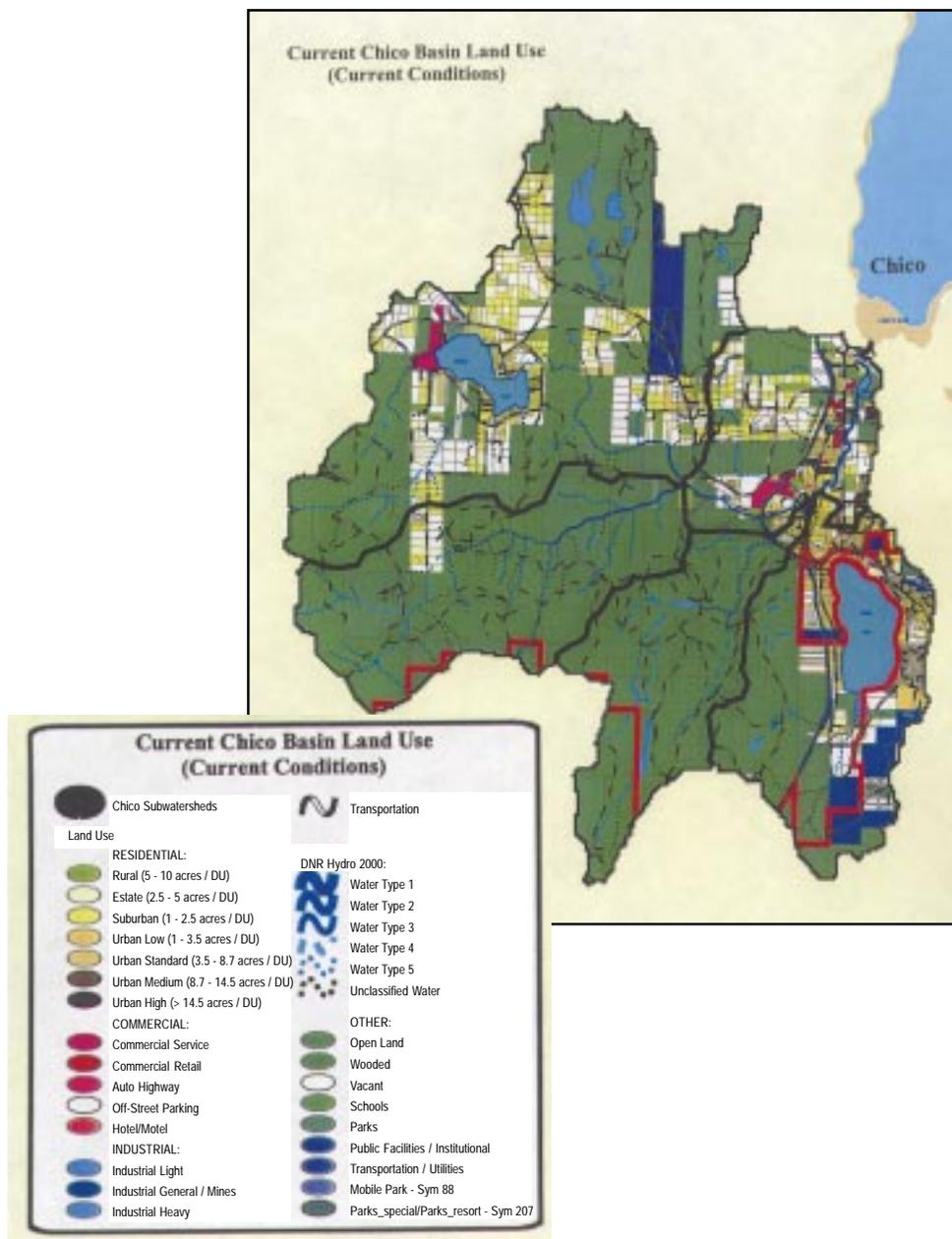
The specific goals of the Alternative Futures/Smart Growth project are to:

- a) improve the protection of aquatic resources through the design and evaluation of alternative development scenarios considered through local planning processes;
- b) foster broader discussion and understanding of both community and ecosystem-based approaches as they relate to federal, state and local program objectives;
- c) more clearly define the types of information and analyses needed by local jurisdictions to successfully develop smarter growth and development patterns that result in more effective watershed protection and restoration efforts.

Results

A conference on alternative future and "smart growth" concepts held in Bremerton was well attended and initiated substantial discussion. Kitsap County has committed to using the results of the alternative futures project to adjust the land use plan for Chico Watershed. Decisions about further development are awaiting the results of this project, planned for completion in March, 2003.

Smart Growth in the Chico Basin starts with understanding how land is being used.



Reducing Pesticide Risk

Wenatchee Valley Pear Project (\$19,000 in EPA funding)

Issues and Context

In this project, EPA partnered with commercial pear growers in the Cashmere-Peshastin growing area of the Wenatchee River Valley in Eastern Washington. Concern has been expressed over potential movement of organophosphate pesticides from orchards and decreasing effectiveness of pesticides due to pests developing resistance.

This project focused on decreasing insecticide use and enhancing the populations of natural enemies. Funding partners include the Washington Tree Fruit Research Commission, The Pew Charitable Trust, and the U.S. Environmental Protection Agency.



Scouting for pests.

Project Description

An area of 141 acres in the Wenatchee Valley was divided into blocks with differing approaches to pest treatment (with and without organophosphates). Blocks not using organophosphate pesticides used pheromone to disrupt codling moth mating success. All blocks were intensively monitored for key pests such as the codling moth, pear psylla, grape mealybug, natural enemies, and efficacy and economics. Project representatives produced weekly scouting reports and held lunch meetings with 15 participating growers, including D'Anjou pear producers and agchem fieldmen. Monthly newsletters with information on pests, natural enemies and pest control options were also produced. Two early season hands-on training sessions (scouting, pest and natural enemy identification) were held and one pre-harvest field day was completed.

Results

The different pest control treatments used in this study showed some clear differences. Although requiring more intensive management, "soft" treatments (those not using organophosphate pesticides) saved an average of \$160 per acre when compared to the costs of treatments using organophosphates. As expected, populations of natural enemies of pests were highest in the soft treatments. Fruit damage by one key pest, pear psylla, was three times greater in the "soft" treatments, but overall damage was economically acceptable.

This project demonstrated that a combination of soft programs and enhanced natural enemy populations can result in effective and economic fruit production, while reducing risks from organophosphate pesticides. As a result of this project, an increased number of growers choose to use mating disruption techniques for control of codling moth in commercial pear orchards.

Conserving Wetlands

The City of Juneau Wetlands Mitigation Program (\$65,000 in Wetlands Funding)

Issue and Context

The City and Borough of Juneau (CBJ) is surrounded by towering mountains, glaciers and fjords in a temperate rainforest along the coast of Southeast Alaska. The cool, wet climate and topography create an environment that supports an abundance of forested and inland meadow wetlands, streams, ponds, tide flats and estuaries which provide important habitat for five species of salmon and other resident fish populations. In the past 30 years, residential and commercial development in the community has grown at a rapid rate. Useable land is limited to a narrow fringe along the coastline and the Mendenhall Glacier Valley. Much of the development has occurred in wetlands, resulting in a loss of over one third of the original historic wetlands acreage. In addition, such development has contributed to the impairment of five urban salmon streams and their listing on the Clean Water Act Section 303(d) list for sedimentation, dissolved oxygen, fecal coliform bacteria, hydrocarbons, heavy metals and habitat alteration.

Project Description

The CBJ Wetlands Mitigation Program is an opportunity to establish wetland conservation areas in the community that could be used to compensate for future wetland development impacts under the Clean Water Act Section 404 permitting process. The U.S. Environmental Protection Agency provided the City and Borough of Juneau (CBJ) with a \$65,000 Wetland Program Development Grant to establish a wetlands mitigation program for the community. In order to mitigate for the unavoidable wetland losses under the Clean Water Act Section 404 regulatory program, the



Saltwater marsh near Juneau.

CBJ initiated a community planning process to establish a wetlands mitigation program. The program was developed and established an initial preservation bank site and a criteria matrix that could be used to evaluate and rank future restoration sites.

Results

The CBJ is looking at purchasing an initial preservation bank site through a land swap or outright purchase. A portion of the monies gained from the sale of credits could be used for restoration of other degraded sites. After the restoration has been completed for the degraded sites, credits may be sold from that site as well. The CBJ Wetlands Mitigation Program has identified approximately 10 sites that could be part of the overall Wetland Mitigation Program. The sites include: North Twin Lakes, S&S Pond, Lower Duck Creek, Duck Creek Enhancement Ponds, Kodzoff Property, Taku Boulevard Greenbelt, Upper Jordan Creek, Montana Creek Greenbelt, Lower Montanan Fen and Herbert River.

Restoring Paradise Creek

Paradise Creek Restoration (\$1,746,948 in CWA 319 funding)

Issues and Context

Paradise Creek flows from its headwaters in the Palouse Range through the City of Moscow and across the Washington State line to the South Fork of the Palouse River near Pullman, Washington. In 1994 Paradise Creek was identified as water quality limited from its headwaters to the Washington State line for the following pollutants: ammonia, nutrients, sediment, habitat modification, pathogens, flow alteration, and temperature.

The primary nonpoint sources of pollutants in the Paradise Creek watershed are non-irrigated croplands, grazing lands, land development (construction activities), urban run-off, roads and forestry activities. Permitted point sources of pollution include the Moscow wastewater treatment plant and University of Idaho's aquaculture facility.

Interstate waters, such as Paradise Creek, are required by the Clean Water Act to meet the receiving state's water quality standards at the state line. Washington water quality standards classify Paradise Creek as a Class A water to be protected for reasons such as salmon spawning, water supply, wildlife and aesthetics. A water quality management plan (TMDL) to ensure that these waters will meet both Idaho and Washington water quality standards was finalized in 1998.

Several partners including the City of Moscow and other local entities, the USDA, the Bureau of Disaster Services, and EPA have come together to fund the restoration of Paradise Creek and implement the TMDL. EPA has provided Clean Water Act Section 319 grants totaling over \$1.7 million to assist in these efforts.



Stream channel prior to restoration work.

Project Description

The Foothill Road Project is an example of the restoration work funded. A 3600 foot section of stream channel had been previously straightened and used as a drainage ditch along Foothill Road. The streambanks were bordered by reed canary grass, and active wheatfields were directly adjacent to the stream. Without an effective riparian buffer, this section of creek was exposed to unfiltered storm water runoff and direct heating by the sun.

To restore this stream segment, a new riparian corridor, approximately 300 feet wide, was constructed with a meandering stream channel and associated wetlands. Native woody vegetation, grasses, and emergent herbaceous wetland plants were used in the restoration.

Results:

This rural riparian restoration project will demonstrate the effectiveness of maintaining a riparian buffer strip along agricultural stream channels. A riparian functioning assessment team will monitor the site annually. The following benefits are expected:

- The recreation of meanders that resemble the creek's historical path will restore hydrological diversity within the creek.
- The 300 foot vegetated buffer will improve water quality by providing shade to the creek and filtering sediments, nutrients and organic matter from runoff before it reaches the creek.
- Native riparian vegetation along the creek will also provide improved habitat for fish and aquatic invertebrates, a corridor for migratory wildlife, and habitat for resident wildlife.



Paradise Creek will benefit from a newly constructed stream channel, vegetation and wetlands.

Stream Restoration Yields Dramatic Improvements

Oregon - Upper Grande Ronde Basin (\$70,000)

Issues and Context

A wet meadow once flourished near the confluence of McCoy Creek and the Upper Grande Ronde River in northeast Oregon. Grasses grew high and the creek ran clear and cold. Streams in the area supported rainbow trout, salmon, summer steelhead, and bull trout. Beaver ponds provided cool refuge and habitat complexity. The lush grass provided good forage for grazing. Unfortunately, as the meadow was managed for grazing in the past few decades, the creek was straightened and moved to one side of the valley where

it became shallow, muddy and exposed to the sun. Grasses did not grow as well. Beaver disappeared. Cold water fish became rare. Water quality conditions were poor.

Project Description

A group of people with a vision of restoration possibilities came together to discuss their ideas. The group included progressive landowners, Oregon DEQ,



Before restoration.

Union County SWCD, the Confederated Tribes of the Umatilla, NRCS, EPA, and others. The group decided to use the Upper Grande Ronde area as a long term monitoring site for the Nonpoint Source National Monitoring Program and to document the results of stream restoration with physical, chemical, and biological data. \$70,000 a year supports monitoring for this project and for the Upper Grande Ronde as a whole. In 1997, a section of McCoy Creek was restored by redirecting flow from the straightened channel to the remnant old channel that meanders through the meadow. The response has been dramatic.

Results

Grasses responded immediately, greening and growing. Beaver are back and their ponds provide habitat complexity and cold refugia at their depths. The channel is narrower, deeper and colder in the restored reach. The highest concentration of fish in McCoy Creek is seen in the restored reach; the numbers of rainbow trout juveniles have increased each year since 1997 while rainbow trout numbers in adjacent, unrestored reaches remain unchanged during the same period. \$165,000 of CWA Section 319 funds supported the restoration work. Because this reach is so much improved, similar restoration is being considered for additional reaches of this stream and for other streams as well.



After restoration.

Dairy Farm Partnership Protects Watersheds

Dairy Waste Management in Whatcom County (\$90,000 per year for 3 years)

Issues and Context

When improperly managed, manure from dairy cows can become a major problem affecting water quality. Each adult milk cow produces waste equivalent to the waste of 22 humans. Whatcom County is located in a high rainfall area of Washington State and has approximately 69,000 cows resulting in a quantity of waste equivalent to that produced by 1.5 million people. The Washington Department of Ecology (Ecology) has been coordinating an ongoing Watershed Based Approach to Dairy Waste Management project focused on the Nooksack River watershed using CWA 319 funding.

Project Description

The goal of this project was to lower dairy-related fecal coliform and other manure associated contaminants in the watershed. The Watershed Approach to Dairy Management, coordinated by Ecology, received \$90,000 in CWA 319 funding from U.S. Environmental Protection Agency for each year of the project to improve water quality (ongoing for the past three years).

Ecology partnered with The Northwest Indian College to monitor fecal coliform levels on a bi-monthly basis. In addition to the mandatory inspections of the dairy farms, the consistent monitoring data collected by the college for this and other 319-funded projects helped determine which sub-basin tributaries have the highest level of fecal coliform loading. These monitoring results helped focus follow-up work.

Outreach and education is vital, and farmers are referred to the Whatcom County Conservation District for farm planning and technical assistance. The referrals, education and outreach have encouraged farmers all over the county to implement BMPs such as long-term waste storage facilities, manure solids separators, rainwater gutters and down spouts, agronomic manure field applicator schedules, and fencing livestock out of streams.

Results

This program has resulted in major changes in the way dairy farmers operate their farms. Inspections and monitoring have shown that many significant problems were associated with areas away from their milking facilities where replacement stock are managed. About 75 informal (non-penalty) enforcement notices were issued for potential discharge problems as preventative solutions between July 1998 and June 2000.

Upgrades to control pollution completed to date have been accomplished through partnerships established between Ecology, the Whatcom Conservation District, and the Whatcom County office of the Natural Resources Conservation Service. As of the last quarter of 1999, fecal coliform loads in the Bertrand/Fishtrap Creek sub-basin were down 21% and are expected to drop further. The Department of Ecology has also signed an agreement that calls for a 15% per year reduction in fecal coliform loads as compared with the 1996-1998 TMDL fecal coliform monitoring study conducted by Ecology.

Irrigation Changes Successfully Reduce Sediment Problems

Sediment Reduction in the Yakima River Basin
(CWSRF \$10,000,000, CWA 319 \$1,292,458)

Issues and Context

Since 1994, the Yakima Conservation District, the Department of Ecology, and the U.S. Environmental Protection Agency along with many other groups have been working to reduce sediment erosion in the Yakima River Basin, particularly in the Moxee, Granger, and Sulphur Creek Drains. Agriculture in this area has traditionally used furrow irrigation, especially on hops farms. This method of irrigation is notorious for high water use, causing sediment loss, and carrying associated pesticides like DDT into the water. In 1994, furrow irrigation resulted in the loss of 100 tons of sediment and pesticides per acre, per year into the water.

Project Description

Since 1994, the North Yakima Conservation District has received CWA 319 funding, and shortly thereafter, the South Yakima Conservation District also received CWA 319 funding to work on reducing impacts from irrigation practices. The Department of Ecology also started developing a management plan to achieve water quality standards in the entire Yakima Basin; the plan was finalized in 1997.

The main method used to reduce sediment loads due to furrow irrigation is the implementation of more efficient drip irrigation methods, such as sprinklers. Site-specific Best Management Practices (BMPs) were

(continued on next page)



Turbidity has been greatly reduced from the Sulphur Creek Wasteway.

(continued from page 29)

designed with individual landowners. In one case, the demonstration included application of polyacrylamide (PAM) through a central pivot irrigation system. PAM is a coagulating agent, and when used in irrigation, causes better soil saturation and less runoff in the fields. The combination of these two management practices was new in this area.

Another primary goal of the combined 319-funded projects was to provide education and outreach to local groups and individual farmers to inspire people to take responsibility and become involved in their watershed.

Results

Education and outreach has been so successful that the irrigation districts have joined together on their own accord and formed a joint interest group, the Roza-Sunnyside Board of Joint Control. They took responsibility for their watershed, obtained a 10 million-dollar SRF loan to improve water quality and because of their efforts, received an award for Environmental Excellence in 1998.

By the time Ecology's management plan (TMDL) was finalized in 1997, there was a 30% reduction in sediment load in the Moxee Drain alone, and drip irrigation has been implemented on over 2,000 acres of farmland. Samples were collected in approximately 15 sites within two sub-basins from June 1997 through October 1999. One sub-basin registered a decrease in total solids (TSS) of 86% and the other sub-basin showed a decrease of 56%. Thanks to CWA 319 funded projects and to BOJC's ongoing efforts, that turbidity reduction goal in the Yakima Basin has already been reached this year in the majority of drains.

Citizens Aim for Sustainable Future

Hundreds of citizens in Washington, Oregon and Idaho recently participated in **Regional Watershed Roundtables**. These successful events were funded with \$15,000 from the U.S. Environmental Protection Agency and an additional \$17,000 from the U.S. Forest Service. With an eye towards "creating a sustainable future for fish, water and people," the citizens spent two intensive days building consensus, crafting watershed solutions, learning skills and sharing successes. A set of recommendations for future actions emerged. The recommendations were featured at the National Watershed Forum in 2001. They include:

- increasing public education and outreach on watershed issues;
- building better mechanisms for collaboration within watersheds, such as professional facilitation;
- creating a common vision for sustaining watersheds among various groups; and
- increasing awareness of the variety of funding mechanisms and watershed groups' ability to leverage these funds.

Washington State University Center for Sustaining Natural Resources sponsored the three roundtables. Summary reports from these meetings will be available on their web site at: www.wsu/csanr.org and on the EPA Region 10 Clean Water Action Plan webpage at: www.epa.gov/r10earth/cleanwater.htm.

In conjunction with the roundtables, Funding Workshops were held by the Environmental Finance Center at Boise State University and University of Maryland. Attendees learned about working with watershed stakeholders to leverage restoration and protection funding. EPA and other agencies within the Regional Watershed Coordinating Team has since sponsored more of these workshops.

Helping Our Partners and Benefitting the Environment. FY2000 Grants.

Office of Ecosystems and Communities:

Elbert Moore, *Director*

Roger Mochnick, *Associate Director*

Production:

Kathy Veit, *Community Involvement & Outreach*

John Gabrielson, *Natural Resources Management*

Tina Hendrix, *Researcher*

Andrea Lindsay, *Community Involvement & Outreach*

Christopher Moffett, *Graphics*

Woody Pang, *Community Outreach Publications*

Photo Credits:

Tillamook Aerial (cover & p.18): Don Best Impressions, Tillamook, OR

Tillamook cover inset and tidegate (cover & p.19): John Gabrielson, EPA Region 10

Chico map (p. 21): Kitsap County Planning Dept.

Pesticide project (p. 22): Sandy Halstead, EPA Region 10

Juneau wetlands (p. 23): Society of Wetland Scientists, Alaska Regional Chapter.

Paradise (pp. 17, 24-25): Palouse-Clearwater Environmental Institute, Moscow, ID

Upper Grande Ronde (pp. 26-27): *from* Lombardo, L.A., G.L. Grabow, J. Spooner, D.E. Line, D.L. Osmond, and G.D. Jennings. *Section 319 Nonpoint Source National Monitoring Program Successes and Recommendations*. NCSU Water Quality Group, Biological and Agricultural Engineering Department, NC State University, Raleigh, North Carolina, 2000.

Sulphur Creek (p. 29): Joe Schmitt, Roza-Sunnyside Board of Joint Control

