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Project Contact:
Mark Imperial
School of Public and Environmental Affairs
Indiana University
Bloomington, IN 47405
Phone (812) 855-5971
Fax (812) 855-7802
E-mail: mimperia@indiana.edu

The Tillamook Bay National Estuary Program

Using a Performance Partnership to Implement a CCMP

Mark T. Imperial
School of Public and Environmental Affairs
Indiana University
Bloomington, IN 47405

Katheryn Summers
School of Public and Environmental Affairs
Indiana University
Bloomington, IN 47405

School of Public and Environmental Affairs
Indiana University, Bloomington IN 47405
Telephone (812) 855-5971 Fax (812) 855-7802

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Finally, we wish to note that the views, opinions, and conclusions described in this report and the supporting case studies do not necessarily reflect those of the authors' affiliations or those of any individual or organization that reviewed and commented on its contents.

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Copies of the report and the supporting case studies can be obtained from:

National Academy of Public Administration
1120 G Street N.W., Suite 850
Washington, DC 20005
(202) 347 - 3190 • Fax (202) 393 - 0993
www.napawash.org

Additional information about this project can be obtained from:

Mark T. Imperial, Research Associate
Institute for the Study of Government and the Nonprofit Sector &
School of Public and Environmental Affairs
Indiana University, Bloomington, IN 47405
(812) 855 – 5971 • (812) 855 - 7802
mimperia@indiana.edu

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List of Acronyms Used in the Report

APDP	Action Plan Demonstration Project
BLM	Bureau of Land Management, DOI
BMP	Best Management Practice
CAC	Citizens Advisory Committee
CAFO	Confined Animal Feeding Operation
CCMP	Comprehensive Conservation and Management Plan
CES	Cooperative Extension System
COE	Corps of Engineers, United States Army
CWA	Clean Water Act
CWAP	Clean Water Action Plan
DCD	Department of Community Development, Tillamook County
DEQ	Department of Environmental Quality, Oregon
DOI	Department of the Interior, US
ECDTC	Economic Development Council of Tillamook County
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FSAC	Financial Strategy Advisory Committee
FTE	Full Time Equivalent
FY	Fiscal Year
GIS	Geographic Information System
GWEB	Governor's Watershed Enhancement Board
IAD	Institutional Analysis and Development
IGM	Intergovernmental Management
MEAD	Methane Energy & Agriculture Development
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NEP	National Estuary Program
NGO	Nongovernmental Organization
NMFS	National Marine Fisheries Service, NOAA
NOAA	National Oceanic and Atmospheric Administration
NPRG	National Partners for Reinventing Government
NPS	Nonpoint Source
NRCS	Natural Resources Conservation Service, USDA
ODA	Oregon Department of Agriculture
ODF	Oregon Department of Forestry
ODLCD	Oregon Department of Land Conservation and Development
OPB	Oregon Progress Board
OPSW	Oregon Plan for Salmon and Watersheds
OSDS	Onsite Sewage Disposal System
OSU	Oregon State University
OWEB	Oregon Watershed Enhancement Board
OWOW	Office of Wetlands, Oceans and Watersheds, EPA
RCWP	Rural Clean Water Program, USDA
SB	Senate Bill
SGP	Sea Grant Program
STAC	Science and Technical Advisory Committee
SWCD	Soil and Water Conservation District
TAC	Technical Advisory Committee
TBCC	Tillamook Bay Community College
TBNEP	Tillamook Bay National Estuary Program
TCWRC	Tillamook Coastal Watershed Resource Center

TCCA	Tillamook County Creamery Association
TCPP	Tillamook County Performance Partnership
TMDL	Total Maximum Daily Loading
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WWW	World Wide Web

The Tillamook Bay National Estuary Program: Using a Performance Partnership to Implement a CCMP

Abstract This case study examines the Tillamook Bay National Estuary Program's (TBNEP's) efforts to develop and implement a Comprehensive Conservation and Management Plan (CCMP) pursuant to the U.S. Environmental Protection Agency's (EPA's) National Estuary Program (NEP). These efforts were then assessed using evaluative criteria provided by the Academy. We concluded that the TBNEP experienced some staffing problems during the planning process. However, the TBNEP did develop a CCMP that met with broad support among its participants. Of particular interest to the Academy may be the Tillamook County Performance Partnership (TCPP), which was created to facilitate the CCMP's implementation and the performance measures used to monitor the progress of its efforts. Given the lack of implementation history, our analysis mostly speculates on the TBNEP's ability to ultimately achieve CCMP goals and targets. Initial efforts are encouraging and the TCPP partners have some history of collaborative activity that is cause for being optimistic about the CCMP's implementation.

Introduction

This case study examines the Tillamook Bay National Estuary Program's (TBNEP's) efforts to develop and implement a Comprehensive Conservation and Management Plan (CCMP) for the Tillamook Bay watershed. The TBNEP is one of 28 programs[1] in the National Estuary Program (NEP)[2] administered by the United States Environmental Protection Agency's (EPA's) Office of Wetlands, Oceans, and Watersheds (OWOW).[3] The NEP is a voluntary program that provides federal funds (with a 25 percent nonfederal match) and technical assistance to develop a CCMP. The Tillamook Bay CCMP addresses water quality, sedimentation, salmonid habitat, and flooding.[4] The goal of the CCMP is to improve the management of water quality and living resources in an estuary.[5] While the NEP relies on a relatively well funded and structured approach to developing a CCMP, individual programs are given a great deal of flexibility in determining how their plan will be implemented and financed. The program is not intended to develop a new program but rather it is designed to work within the existing framework of federal, state, regional, and local environmental protection and natural resource management programs.[6]

Each estuary program is required to create a Management Conference that will supervise the development of the CCMP and establish and support a program office or its equivalent. The Management Conference is a collection of advisory and decision making committees, which contain appropriate federal, state, and local government officials, representatives of the scientific and academic community, industry representatives, and concerned members of the general public.[7] While the management conference structure varies among the programs, most estuary programs use a policy committee,[8] management committee,[9] science and technical advisory committee (STAC), and citizens advisory committee (CAC).[10] The objective of the Management Conference is to :

- Stimulate the transfer of scientific, technical, and management experience and knowledge among management conference participants
- Enhance the general public's and the decision maker's awareness of the environmental problems
- Provide opportunities to discuss and propose solutions to environmental problems
- Provide a way to synthesize input in decision making processes
- Provide a forum to build partnerships and obtain commitments necessary to implement the CCMP[11]

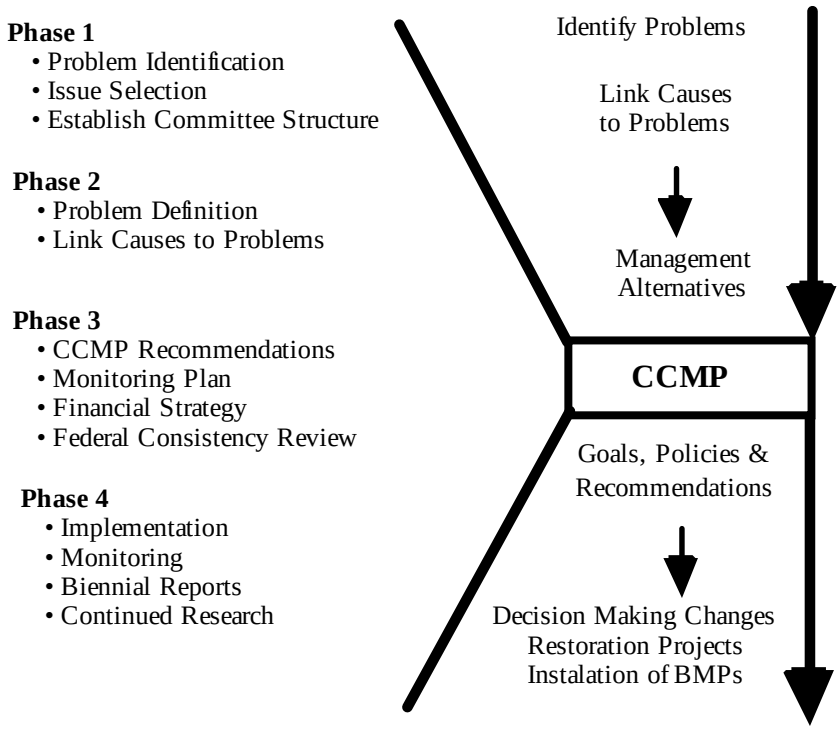
The Management Conference participants are expected to use a structured planning process[12] that is designed to satisfy the seven statutory purposes contained in Section 320 of the Water Quality Act of 1987:

- Assess trends in the estuary's water quality, natural resources, and uses
- Identify causes of environmental problems by collecting and analyzing data
- Assess pollutant loadings in the estuary and relate them to observed changes in water quality and natural resources
- Recommend and schedule priority actions to restore and maintain the estuary and identify the means to carry out these actions (the Comprehensive Conservation and Management Plan or CCMP serves this purpose)
- Ensure coordination on priority actions among federal, state, and local participants in the management conference
- Monitor the effectiveness of actions taken under the CCMP
- Ensure that federal assistance and development programs are consistent with the goals of the plan[13]

The planning process consists of series of interrelated federally mandated steps that emphasize problem definition, provide flexibility in issue selection, and promote rational, watershed-based planning [Figure 1].[14] Each program is expected to employ whatever forms of information gathering, public education, and public involvement needed to develop consensus on management actions and ensure the CCMP's implementation.[15] Each estuary program is also encouraged to take early action where problems and solutions have been identified and implement action plan demonstration projects (APDPs), which test, on a small scale, the effectiveness of strategies and technologies that may become part of the CCMP.[16] It should be noted that the planning process is intended to be iterative in nature with problems continually redefined and the development of a CCMP often begins prior to the completion of the characterization phase.[17]

The planning process culminates in the development of a Comprehensive Conservation and Management Plan (CCMP) for the EPA's approval. The CCMP contains action plans that address the priority problems identified by the management conference. It also identifies lead agencies for implementation activities, the sources of implementation funding, and a schedule for implementation. The CCMP must also include a federal consistency report and plans for its coordinated implementation. A monitoring plan that can be used to evaluate the effectiveness of implementation activities is also required.[18]

Figure 1: The NEP's Planning Process



Modified from: Mark T. Imperial and Timothy M. Hennessey, "An Ecosystem-Based Approach to Managing Estuaries: An Assessment of the National Estuary Program," *Coastal Management* 24 (no. 1, 1996): 121.

The EPA provides limited implementation funding, approximately $300,000 per year, for CCMP implementation, which goes primarily to maintaining a small core staff and a program office. Accordingly, the challenge for each estuary program is to develop an effective implementation structure that can monitor and coordinate implementation efforts and leverage or develop the resources necessary to support these activities.[19] The EPA provides each estuary program with a great deal of flexibility in these efforts and monitors implementation progress through the approval of annual work plans and requires each estuary program to undergo a Biennial Review that evaluates implementation progress.[20]

Objectives of this Case Study

This case study examines the development of the Tillamook Bay National Estuary Program's (TBNEP's) CCMP and its recommendations for addressing bacterial and sediment loadings from nonpoint sources of pollution and the actions designed to protect, restore, and improve the management of habitat. The analysis then describes the Tillamook County Performance Partnership (TCPP), which was created to implement the CCMP as well as address other problems and issues. These activities will then be assessed using evaluative criteria provided by the National Academy of Public Administration. The criteria are described in more

detail in the main report entitled *Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance*. Our analysis of the TBNEP also identified other innovative environmental initiatives in Oregon that may be of interest to the Academy in this or future projects: Oregon Plan for Salmon and Watersheds (OPSW); Oregon's Watershed Enhancement Board (OWEB);[21] Oregon's Environmental Benchmarks; and, Oregon's designation as a reinvention lab under Vice President Al Gore's National Partnership for Reinventing Government (NPRG). These initiatives are briefly discussed in Appendix A.

The case study begins with a brief discussion of the methods used to collect and analyze the data and the literature that framed and guided our inquiry. The following section examines the planning environment where the TBNEP is located. This includes a discussion of the Tillamook Bay ecosystem, the nature and extent of the environmental problems affecting the watershed, the changes in these problems overtime, and the institutional arrangement responsible for managing Tillamook Bay. The next section discusses the development of the TBNEP's CCMP and how it responded to the EPA's requirements. This will be followed by a discussion of the development of the Tillamook County Performance Partnership (TCPP) used to implement the CCMP and the extent of implementation efforts to date. The final section assesses the development and implementation of this watershed governance effort using the evaluative criteria provided by the Academy.

Methods

This case study was developed using systematic and generally accepted methods of qualitative research. Qualitative approaches[22] are often recommended when trying to understand how a process occurs or to examine complex relationships between decision-making processes, physical settings, community characteristics, stakeholders' interests, existing institutional arrangements, availability of resources, and the capacities of state, regional, and local actors.[23] As a result, qualitative approaches tend to be descriptive and focus on explaining why a process is, or is not, effective and how different contextual factors influence the success of that process.

Three distinct streams of research provide the theoretical foundation for our inquiry, identifying potential cause and effect relationships, and making recommendations to the Academy. The first line of research is environmental policy research on place-based or community-based management programs, which includes the growing research on ecosystem-based management and watershed management as well as the literature on integrated environmental management, integrated coastal zone management, and adaptive management. There is also great deal of environmental policy research in diverse areas such as collaborative decision making, stakeholder involvement and public participation, and the role of science in the policy process that informed our assessment. Unfortunately, this literature often ignores or downplays the administrative and institutional challenges associated with developing and implementing watershed management programs.[24] Accordingly, the second stream of research is the growing public administration literature on intergovernmental management (IGM) and networks, which is broadly defined here to include the literature on policy formation and implementation, interorganizational theory, policy networks, social networks, and federalism. The final line of research is the institutional analysis literature. In particular, the study draws upon the Institutional Analysis and Development (IAD) framework developed by Elinor Ostrom

and her colleagues.[25] Of related interest is research on assessing implementation "success" and measuring institutional or network performance. A more detailed review of this literature can be found in Appendix A of our final report *Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance*.

Data for the study was collected from several sources. Utilizing different data sources is important because it allows investigators to use a strategy of triangulation to improve the validity of our findings.[26] Documents and archival records were an important source of data. A bibliography of these materials can be found in Appendix C of our final report *Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance*. Field interviews with 34 individuals representing various organizations were the second source of data. The interviews were confidential and recorded on tape to ensure the accuracy of the data collected. Given the controversial nature of evaluation findings, steps were also taken to protect the identity of our informants. Follow-up telephone interviews were conducted with individuals who could not be reached in the field while email and telephone inquires were used to clarify responses from the field interviews and to obtain additional information. The final source of data was direct observation. The steps taken to collect and ensure the validity of this data and its analysis are documented in Appendix B of our final report entitled *Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance*.

Systematic qualitative techniques (e.g., coding) were used to analyze these data. Codes were derived both inductively and deductively from the data and generated based on a start list derived from previous research. As coding continued, patterns emerged and codes were used to dimensionalize concepts. When coding the data, quotes and short vignettes were identified to add context to the case studies. As the analysis continued, tables, figures, matrices, and network displays were used to identify trends and make observations.[27] The basic approach was one of synthesizing interpretations and looking for themes that cut across the cases.[28] These comparisons (i.e., cross-case analysis) helped deepen our understanding of this case and allowed us to determine the extent to which the findings extended beyond individual cases.

To ensure the validity of the findings, the strategy of triangulation was used.[29] Triangulation uses independent measures derived from different data sources to support, or at least not contradict, a research finding. The analysis also explored potential rival explanations for the findings and their consistency with the data. Arguments and alternative explanations were compared with one another to identify logical inconsistencies.[30] The chain of events was then examined to help determine causality. In some cases, this involved developing detailed timelines. Potential threats to the validity of the findings were then analyzed.[31] Additional steps were taken to address the particular threats to the validity of the findings created by our past involvement with the actors in this case [See Appendix B of the final report].

The Planning Environment

In order to understand the development and implementation of the CCMP for Tillamook Bay, it is important to have some familiarity with the Tillamook Bay ecosystem, the nature and extent of the environmental problems in the watershed, and the institutional framework of programs that manage these resources.

The Tillamook Bay Ecosystem

The Tillamook Bay watershed encompasses approximately 363,520 acres (570 square miles) and is located along the northwestern coast of Oregon [Figure 2]. Situated between physical extremes, it is bordered on the east by the Coast Mountain Range and on the west by the Pacific Ocean. The area is characterized by its marine climate. The average temperature is around 50 degrees Fahrenheit. Tillamook Bay watershed is also located in a coastal, temperate rainforest ecosystem. It also receives around 90 inches of rain per year in the lower basin and up to 200 inches in the upper basin with eighty-four percent of the annual precipitation falling between October and May.[32]

Tillamook Bay is the third largest estuary in the state, at 6.2 miles (10 km) long and 2.1 miles (3.4 km) wide covering an area of 13 square miles (34 km^2).[33] It is also relatively shallow averaging only 6.6 feet (2 m) in depth. The watershed comprises five subwatersheds formed by the Miami, Kilchis, Wilson, Trask, and Tillamook riverbasins.[34] These rivers empty into Tillamook Bay. Tillamook Bay is a drowned river estuary, characterized by a rich and expansive alluvial flood plain formed by natural sedimentation over geologic time. Extreme diurnal tides can reach 13.5 ft with a mean tidal range of 5.6 ft and a diurnal range of 7.5 ft. During the summer, the ocean inflows dominate the estuary since streamflow is low. Winter floods discharge high amounts of sediment and freshwater through the estuary. Despite heavy rainfall during the winter months, tidal fluxes dominate the system.[35]

The watershed topography is a mixture of extremes, with gently to steeply sloping rocky uplands and steeply carved canyons to flat and gently rolling flood plains. The elevations range from sea level to 3,461 feet. The soils are variable and range from deep, well-drained coarse textured bottomland soils with high permeability and slow run-off to well-drained, fine textured upland soils with moderate permeability and medium to rapid run-off.[36] As a result, the uplands support a diverse range of habitats. Tillamook also supports habitats such as salt marsh, mud flats, and eelgrass that play important roles in the life cycles of salmonids and other ecologically valuable resources.[37] The bay is perhaps best known for its harbor seals, Pacific salmon, great blue herons, shellfish, and migratory birds. Declines in the bay's coho salmon, steelhead trout and chum salmon stocks and their subsequent listings pursuant to the Endangered Species Act (ESA) are of particular concern to area residents as well as federal, state, and local officials.[38]

The Oregon Department of Land Conservation and Development (ODLCD) has classified Tillamook Bay as a "shallow draft development" estuary under Goal 16 of the Statewide Planning Goals.[39] This categorizes the bay as an estuary "with maintained jetties and a main channel maintained by dredging at less than 22 feet." This classification means that the bay has development, conservation and natural resource management units. State and local planners have designated these uses in their comprehensive land use plans and implement these designations through zoning ordinances. Portions of the estuary are currently zoned for urban, rural, natural, conservation, and development use.[40]

The entire watershed is contained in Tillamook County, a rural and sparsely populated county with a population of approximately 24,100 and a land area of 1,125 square miles.[41]

About 17,000 of Tillamook County's residents inhabit the watershed.[42] Approximately 89 percent of the watershed is forested, 6.5 percent is agricultural land, 3 percent is stream and bay, and 1.5 percent is urbanized.[43] While the natural resource-based economy led to a boom in the earlier part of the century, the region now struggles to maintain its infrastructure and deliver services to its residents. Tillamook County's annual per capita income of $18,712 (1997) is well below that of the state of Oregon ($21,000), which in turn is below the national average ($25,000).[44] From 1983 to 1995, the county's per capita income fell from 80 percent to 72 percent of the national average.[45] However, the unemployment rate has remained comparable to state and U.S. averages.[46]

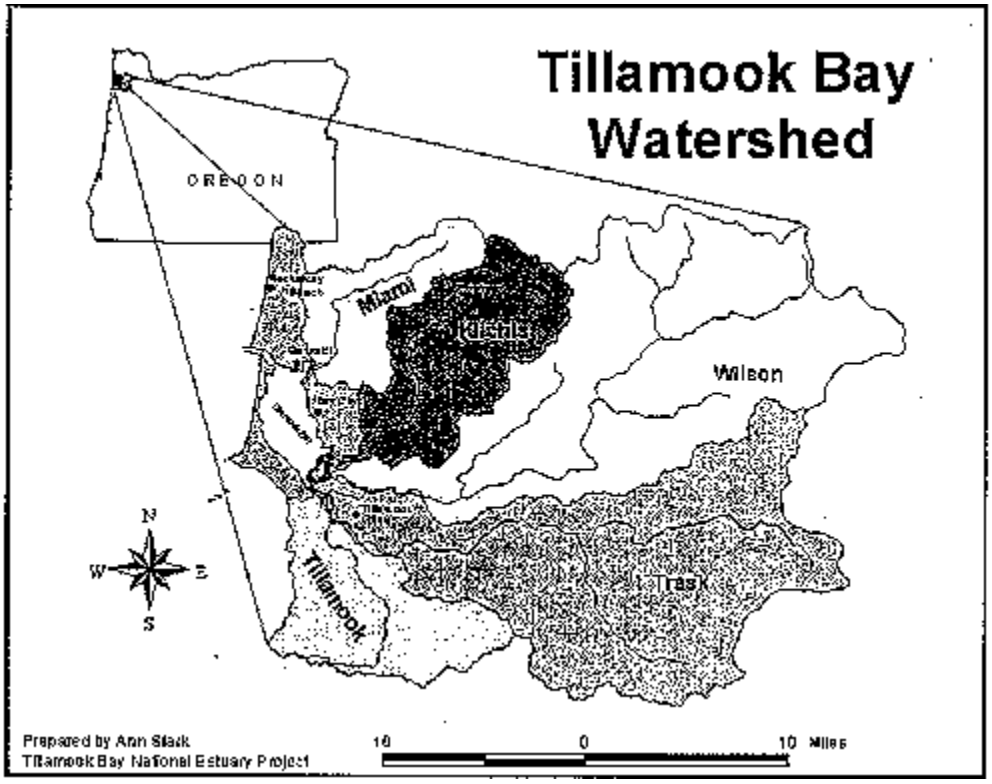
Tillamook County is undergoing significant demographic transitions. Population growth has increased in recent years, roughly paralleling that of Oregon.[47] Much of this increase is due to growth in the retirement and fixed income populations. The age distribution of the county is dramatically skewed toward retirees and retains few 18 – 29 year olds. As a result, there has been a large increase in transfer payments as a percentage of total personal income. Transfer payments currently represent 27 percent of the county's personal income, which limits the region's tax base.[48]

Like other coastal communities in Oregon, Tillamook County is in the midst of economic changes. Traditional resource-based industries such as fishing and timber have declined or have been supplemented by tourism. In Tillamook County, the major industries continue to be agriculture, timber, fishing and tourism. This gives rise to the county's slogan, which is "the land of cheese, trees and ocean breeze." Today, forestry and timber products account for 24 percent of the local economy followed closely by agriculture (23 percent). Commercial fishing (9 percent), tourism (8 percent), and other (36 percent) comprise the rest of the local economy.[49]

Eighty-nine percent of the drainage basin, roughly 323,050 acres, is forested.[50] The majority of this forested area is under public ownership, either in the Tillamook State Forest or the Siuslaw National Forest. As required by a deed between the county and the state, a sizable portion of the revenue generated by the sale of forest products from the Tillamook State Forest goes to various programs in Tillamook County. In 1998, this amounted to approximately $8 million or 22 percent of the county's budget. These revenues are projected to increase dramatically in coming years as the forest has finally recovered from a series of devastating forest fires.

It is almost hard to believe that the Tillamook State Forest was once a scorched landscape during the middle part of this century. In 1933 a major fire burned half of the watershed. In 1939, 1945, and 1951 history repeated itself when the area burned again giving rise to what became known as the "six year jinx." The fires are the subject of legends. During the 1939 fire, it is reported that sunlight was shut out in Portland, chickens went to roost in the middle of the day, and people could smell the smoke 100 miles at sea. It was also the first time in US history that the Army was ordered in to fight a forest fire. The salvage logging operations lasted decades. But the forest had been denuded of trees and undergrowth. When the rains came, mudslides and erosion led to sedimentation in the Bay and it's tributaries. Major reforestation efforts on a scale never before attempted began in 1949 and were completed in 1970.[51] The reward for these efforts is the current value of the forest, estimated to be more than $8 billion.

Figure 2: The Tillamook Bay Watershed, Oregon



Source: Tillamook Bay National Estuary Program, *Tillamook Bay Environmental Characterization: A Scientific and Technical Summary* (Garibaldi, OR: TBNEP, July 1998), 1-2.

While forest practices have improved dramatically over time, the legacy of erosion and sedimentation caused by the fires had a significant effect on the watershed. Moreover, forest roads continue to be responsible for sediment loading, which impacts the bay.

Agricultural lands make up over 23,540 acres or 6.5 percent of the watershed.[52] The land is used for production of pasture, hay and silage for the dairy herds located in the lowlands abutting the bay and its tributaries. Approximately 12,190 of these acres are used exclusively for dairy operations. Between 1920 and 1975, the number of dairy cows in the county remained stable at approximately 15,000. In the last twenty years, however, there has been an increase of almost 70 percent, to 25,000 cows. The dramatic increase reflects the rising costs of production coupled with falling milk prices which led to increasing production to prevent losing revenue. Today, around 150 active dairy farms provide milk for the Tillamook County Creamery Association (TCCA), which is a cooperative that produces nationally recognized cheese and ice cream. Tillamook is the leading county in Oregon in terms of a net return per acre and accounts for 30 percent of the state's milk production. The county ranks 4th nationally in terms of milk production.[53] The TCCA is a vital part of the community having generated $128 million in revenues in 1995. It also provides more than $70 million to the local economy through payroll

and purchases.[54] The TCCA's cheese factory and outlet store is one of the biggest tourist destinations in the entire state of Oregon with over 800,000 visitors a year.[55] Unfortunately, the dairy industry also generates approximately 322,500 tons of manure annually.[56] As a result, stormwater runoff from the dairy farms has contributed directly to the water quality impairment of the bay from high fecal coliform levels.[57] Interestingly, nutrient loadings are not a problem due to the high tidal range and the large volume of rainfall during the rainy season.

Historically, the fishing industry was important to the region's development and it remains an important part of the local culture and economy. In addition to various salmonid species, Tillamook Bay supports non-anadromous fishery resources such as bay clams, dungeness crabs, and oysters. Despite heavy sediment loading to the bay, the mid 1970s and early 1980s were boom years for the fishing industry, due to increases in catch, rising per capita fish consumption, and higher prices for fish. The industry has declined in its relative economic importance, as the bounty of commercial troll-caught coho salmon and recreational catch rates for both salmon and steelhead decreased since the late 1980s. The shellfish industry, by way of contrast, is still thriving and is estimated to be worth $1.5 million a year. The region also boasts of being the most productive estuary for commercial clam harvest in the state as well as the largest producer of cultured oysters in Oregon.[58] In fact, Tillamook Bay oyster leases comprise 68 percent of the total oyster bed leases for the entire state. Recreational fishing and shellfishing is also an important source of tourism revenue. For example, recreational fishing and shellfishing account for roughly 70,000 user-days per year.[59] However, the recreational fishery has been harmed by the declines in the salmon and the recreational shellfishery has been adversely affected by closures due to bacterial contamination.

Tillamook's other major industry is tourism. By virtue of being only 60 miles west of Portland, it is a haven for weekend vacationers year round as well as for seasonal tourists from out of state. Visitors are attracted to the wide range of outdoor activities that are offered by the region's forests, barrier beaches, and waterways. The region is also home to one of Oregon's largest tourist destinations, the Tillamook Creamery. These attractions support up to 2.4 million visitor-days annually.

Tillamook Bay's Environmental Problems

Since the region's settlement in 1851, the population of Tillamook County has grown at an annual rate of roughly 200 residents per year. Today, three primary issues affect the health of Tillamook Bay and its resources: bacterial contamination, sedimentation, and declining salmon and trout runs due to degradation of spawning and rearing habitat [Table 1].[60] These problems have developed over the span of generations and it is possible that solving these problems could take an equally lengthy period of time.

Tillamook Bay has a long history of bacterial pollution problems.[61] Bacterial contamination of Tillamook Bay comes primarily from the region's dairy farms as well as the failure of septic and wastewater treatment systems that serve the local population.[62] These problems tend to be most severe during the rainy season.[63] Thirty years ago, the FDA first took issue with the level of fecal coliform bacteria in oysters from Tillamook Bay. Today, the Oregon Department of Agriculture (ODA) closes the bay to shellfish harvests an average of 50 – 60 days

Table 1: Tillamook Bay's Environmental Problems

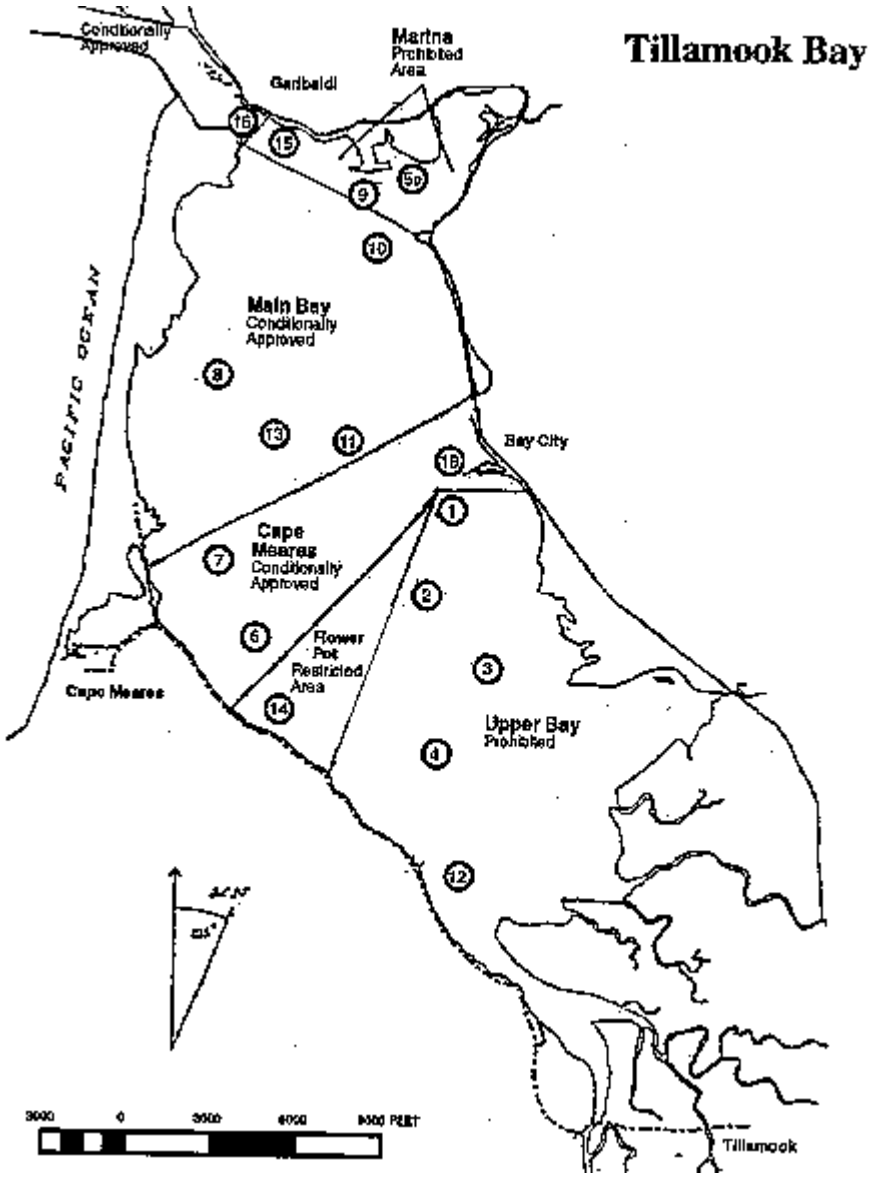
Problem	Source(s)
Water Quality	▪ Dairy industry ▪ Septic and sewer system failures
Sedimentation	▪ Cutting/Clearing trees ▪ Removal of natural wood jams ▪ Construction of river levees ▪ Road construction and development ▪ Forest fires (historically)
Degradation of Salmon Habitat	▪ Removal of natural wood jams ▪ Alteration of stream habitat by dairy herds ▪ Gravel extraction ▪ Logging and use of log rafts (historically)

a year due to high fecal coliform counts, which create a potential human health problem.[64] The bay has two conditionally approved shellfishing areas (Main Bay and Cape Mears), one restricted area (Flower Pot), and a prohibited area in the upper bay [Figure 3]. The Main Bay is closed for five days when the Wilson River has reached the seven-foot flood stage. Cape Mears is closed for the same period when precipitation of one inch of rain in 24 hours is recorded.[65] Obviously, these closures impact the commercial shellfishing industry. While bacteria is the only water quality parameter identified as a priority problem, temperature is also of concern in the lower reaches of the Trask, Tillamook, and Wilson rivers and exceeds DEQ's water quality standards. Nutrients are only of moderate concern due to the high tidal range and heavy rainfall.[66]

Sedimentation is also an important problem affecting Tillamook Bay.[67] While much of this sedimentation is from natural causes, the deposition of sediment has been affected by human activities (e.g., poor forest practices, road construction, and development) and catastrophic events such as floods and forest fires. It is estimated that sedimentation has reduced the volume of Tillamook Bay by nearly 30 percent since 1867.[68] However, the sedimentation rates varied over time. From 1867 to 1954, the bay underwent a period of heavy sedimentation, averaging 68 cm per 100 years. Since 1954, the rate has decreased to an average of 5 cm per 100 years.[69]

Several events in the early part of the century exacerbated sedimentation to the Bay. The North Jetty, completed in 1918, was intended to aid navigation but it is thought to have accomplished the opposite effect, increasing sand accretion in the Bay.[70] The breaching of the Bay-Ocean Spit had a similar affect.[71] The catastrophic forest fires in 1933, 1939, 1945, and 1951 represent one of the most important causes of accelerated erosion and sediment loading to the bay in this century.[72] Other activities which added to the sedimentation problems included the cutting and clearing of trees in the watershed, the removal of natural wood jams near the

Figure 3: Shellfish Management Areas for Tillamook Bay and the Locations of Monthly Water Quality Monitoring Sites



Source: Tillamook Bay National Estuary Program, *Tillamook Bay Environmental Characterization: A Scientific and Technical Summary* (Garibaldi, OR: TBNEP, July 1998), 4-14.

mouths of rivers, and the construction of river levees. The reduction in erosion rates in the later half of the century has been connected to the significant reforestation efforts conducted by the Oregon Department of Forestry (ODF) as well as improved forest management. However, mountain road and culvert wash outs remain significant sources of sedimentation as do flooding events that have occurred in the 1960's, 1970's, and most recently, in late 1990s.[73] These led to severe erosion, landslides, and significant sediment deposition in river mouths.

Tillamook Bay is particularly susceptible to the effects of sedimentation. It is relatively shallow with over 50 percent of the area covered with mudflats at low tide.[74] Accordingly, sediment loading to the bay has hindered navigation and recreational boating. Only the Port of Garibaldi at the northern end of the bay continues to serve deep-water traffic. Sedimentation reduced viable habitat for the bay's flora and fauna by smothering eelgrass, shellfish beds, and shellfish larvae. It also clogs spawning gravel beds, which provide protection and aeration for developing salmon eggs. Dredging the bay, last completed in 1913 by the Army Corps of Engineers (COE), has proven both costly and ineffective.

The loss and degradation of salmon habitat is the third major environmental problem in the watershed.[75] This problem is particularly important given the recent listing of some salmon species pursuant to the Endangered Species Act (ESA). Declines in salmonid populations have been noted since the 1940s. While some declines in migratory stocks were due to their mismanagement and over exploitation, significant declines have been linked to the destruction of spawning habitat. A number of human activities altered habitat ranging from timber harvest practices to commercial and residential development.[76] For example, the logging that occurred from 1870's to the 1920's involved the use of log rafts in order to move logs into the estuary. These structures severely altered streamside vegetation and riparian channel habitat. While these activities were particularly destructive, similar alterations of habitat have occurred as a result of agricultural and land development activities. Significant reduction in river channel complexity accompanied other activities such as the clearing of natural wood jams for navigation. Some of these problems were also due to a faulty scientific understanding of salmonid species. For example, prior to the early 1980s, fishery scientists mistakenly removed wood from streams thinking it would increase fish passage. Today, these structures are being reintroduced to streams as part of restoration efforts. These examples reveal some of the complexity underlying attempts to protect and restore salmon habitat. A wide range of activities impact salmon habitat. Accordingly, an equally diverse range of activities will be required to restore habitat. But perhaps the greater challenge is the complexity of the salmon's life cycle and the wide range of factors that affect it during different stages of its lifecycle.[77]

Institutional Framework Managing the Tillamook Bay Watershed

In order to understand the development and implementation of the Tillamook Bay CCMP, it is important to have some understanding of this complex framework of governmental and nongovernmental organizations (NGOs) that govern the watershed. To simplify the discussion, only the key actors involved in the development of the CCMP are discussed. These include: Oregon Department of Environmental Quality (DEQ); Oregon Department of Forestry (ODF); Oregon Department of Agriculture (ODA); Oregon State University (OSU); Tillamook Creamery Association (Creamery); and, Tillamook County. The role of other actors such as the

United States Environmental Protection Agency (EPA) and the Oregon Watershed Enhancement Board (OWEB) will be discussed as appropriate. The following sections provide a brief overview of these actors and their programs.

Oregon Department of Environmental Quality (DEQ)

The Oregon Department of Environmental Quality (DEQ) was formed in 1969 to function as the state's lead agency for regulating air, water and land quality. Its 750 employees serve in programs such as Water Quality, Air Quality, Hazardous and Solid Waste Management, and Environmental Clean Up. Until around seven years ago, the DEQ was a centrally directed agency, with two thirds of its staff at headquarters and one third in regional offices. In recent years, the DEQ has become more decentralized with a majority of staff now located in six regional and seven smaller branch offices. One of these branch offices is located in Tillamook County and has one staff member. It was established to serve as a liaison with the TBNEP and to participate in other place-based efforts in the region. Headquarters is primarily involved in policy and administrative issues while the regional offices focusing on permitting and enforcement. As a result of Oregon's move towards watershed management, the DEQ is collaborating much more with other agencies and watershed management programs such as the TBNEP.

Oregon Department of Forestry (ODF)

The Oregon Department of Forestry (ODF) manages approximately 786,000 acres of state-owned forest. Unlike other state agencies, the Department of Forestry's funding is based on timber revenue rather than tax dollars. Roughly one-third of the revenue generated by harvests goes to the ODF. Harvests in the Tillamook State Forest currently generate approximately $12 million annually and the forest is primarily undergoing commercial thinning. By state law, the timber revenue also benefit county governments and local taxing districts.[78] The Tillamook State Forest is managed by the ODF's local office, which is developing long-range forest management[79] and habitat conservation[80] plans. The long-range management plan incorporates a new approach to managing forest lands called structure-based management.[81] This approach involves the production, through active management, of an array of forest stand structures across the landscape. These include stands of varying ages and type, such as older forest structure, complex stands, closed canopy, and regeneration areas.[82] The draft habitat conservation plan addresses salmon habitat conservation through increased riparian protection and improved upland management.[83] The management of the forests is also regulated by the State Forest Practices Act, which was first adopted in 1971. This act regulates harvesting, road construction and maintenance, slash disposal, reforestation, and chemical application on private and state forest land.

Oregon Department of Agriculture (ODA)

The Oregon Department of Agriculture (ODA) is composed of nine divisions. The Natural Resource Division provides administrative oversight for the 45 local Soil and Water Conservation Districts in the state. The Tillamook County Soil and Water Conservation District (SWCD) has been active in the development and implementation of the TBNEP's CCMP. It has

also been actively involved in previous water quality planning and implementation efforts such as the RCWP. The Water Quality Program within the Natural Resources Division is responsible for regulating nonpoint source pollution associated with agricultural lands and activities. Until 1993, this program primarily addressed agricultural water quality concerns through the permitting of confined animal feeding operations (CAFOs). In 1993, the Oregon Legislature passed Senate Bill (SB) 1010, which required the ODA to develop and implement water quality management plans for any agricultural or rural area if federal or state water quality standards were not met. Tillamook County is one of these priority areas and the ODA is currently developing a watershed based plan for landowners to prevent and control nonpoint water pollution in the region.

Oregon State University (OSU)

Oregon State University (OSU) played a critical role in the development of the TBNEP through the involvement of various faculty members and programs. OSU's Cooperative Extension System (CES) served as the hiring entity for TBNEP staff during the planning process and EPA funding flowed through OSU. The CES was an active participant in the development of the CCMP and administers a number of outreach and technical assistance programs that continue to assist the TBNEP in its efforts. OSU's Sea Grant Program (SGP) has also been actively involved in the CCMP's development and implementation. These programs have been important partners in many of the TBNEP's public outreach and education activities as well as efforts to train officials involved in local watershed management programs.

Tillamook County Creamery Association (TCCA)

The Tillamook County Creamery Association (TCCA) was formed in 1909 as a quality control organization for ten cheese factories operating in the county. By 1918, this cooperative association had become a marketing entity for the cheese factories. Today, the Tillamook Cheese Factory is the largest in the state and is one of Oregon's biggest tourist attractions, which draws over 750,000 visitors annually. It is also one of the largest employers in the region. The TCCA has long been involved in efforts to address the water quality problems in Tillamook Bay. For example, during the Rural Clean Water Project (RCWP), the TCCA provided an incentive to farmers to participate in the program by instituting a tax on milk from farmers who failed to implement Best Management Practices (BMPs) on their farms. Information about the RCWP was also sent to farmers throughout the county in the TCCA newsletters. In addition, a TCCA field representative encouraged farmers to participate by visiting with them one-on-one. During the TBNEP, the TCCA has demonstrated a similar commitment to improved water quality in Tillamook Bay.

Tillamook County

Clearly the major actor in this case is Tillamook County. Three county commissioners who are elected generally for four-year terms administer the County. The commissioners are very active in administering county programs as there is no County administrator. The annual budget for Fiscal Year 1999 – 2000 is around $32 million. However, the county sustained $53 million worth of damage from the 1996 flood as well as additional damage from seven 100-year

flooding events since then. As a result, the $3 million in the county's growth fund was expended on flood damage.[84] Funding services such as road construction and finding matching dollars for local projects is now very difficult.

The commissioners have been actively involved in previous efforts to manage Tillamook Bay. One commissioner's involvement dates back to the Bay Sanitation Task Force that was organized in 1984 to address bacterial contamination of shellfish beds in Tillamook Bay. Numerous county departments were involved in the development of the TBNEP's CCMP. Perhaps the most significant involvement was that of the Department of Community Development (DCD). The DCD administers the Tillamook County comprehensive plan. Since 1973, Oregon has maintained a strong land-use planning program, which includes 19 statewide planning goals. One of the goals included in the Oregon Land Use Act (ORS 197) mandates the protection of estuarine resources by dividing them into management units with specified uses.[85] Local comprehensive plans must be consistent with these policies. Tillamook County developed the required ordinances and regulates development within wetland, riparian, and estuarine areas. The ordinances define riparian zones as areas within 50 feet of estuaries and the main stems of selected rivers where widths are greater than 15 feet. These include the Tillamook, Trask, Kilchis, Wilson and Miami Rivers. In addition to limiting development, the ordinances restrict the removal of riparian vegetation by prohibiting the removal of trees or more than 50 percent of the understory vegetation within the riparian zone. The DCD is also responsible for building and sanitation planning, code enforcement via on site inspections, as well as urban growth boundary definition. They conduct planning for all unincorporated areas, rather than cities, in the county. Their staff is composed of a director, five land use planners, two full-time building inspectors, a building official, and one on site inspector.

Efforts to Improve the Management of Tillamook Bay

These institutions have already been involved in a number of planning efforts to improve water quality and restore habitat [Table 2]. During 1979 and 1980, the DEQ sampled the watershed's five rivers to determine potential bacterial sources from livestock operations, wastewater treatment plants, and failing septic tanks. In 1981, in response to heavy loading from agricultural sources, the Rural Clean Water Program (RCWP), a voluntary, experimental nonpoint source pollution control program funded by the United States Department of Agriculture (USDA) to address the need for agricultural waste management. Tillamook was home to one of 21 RCWP projects nationwide.[86] The USDA's Natural Resource Conservation Service (NRCS) provide participating landowners with the technical assistance necessary to prepare their 5 – 10 year Rural Clean Water Conservation Plans and to install waste management structures. Along with local cost share, the federal government spent roughly $6 million over 15 years to improve agricultural practices in the watershed. Three years after the Tillamook RCWP project began, the Tillamook Bay Sanitation Committee was formed out of concern by local residents that the State Health Division was not doing enough to address the bay's water quality.

A number of changes in state-level programs have also benefited Tillamook Bay. In 1987 the state's CAFO legislation was strengthened, providing for stricter penalties for violators and an additional staff person for the program. Eight years after the start of the RCWP project, Tillamook County began requiring agricultural building permits. In 1989, the first of a series of

Table 2: State and Local Efforts to Address Tillamook Bay's Water Quality Problems

Date	Administering Organization	Program/Regulation/Studies
1979	DEQ	Tillamook Bay Bacteria Study initiated to identify the source and extent of fecal coliform pollution occurring in the bay and its watersheds.
1981	USDA's Agricultural Stabilization and Conservation Service (ASCS)	RCWP project contracts began in Tillamook County; Best Management Practices implemented on farms in the watershed.
1987	Oregon Department of Agriculture	New CAFO law prescribes stricter penalties for violators; ODA given authority to inspect CAFOs for non-compliance even without a complaint being filed.
1987	Tillamook County and Oregon State Health Department	A water quality monitoring strategy was developed to classify and monitor commercial shellfish growing areas.
1987	Board of Tillamook County Commissioners	Established the Tillamook County Bay Sanitation Technical Advisory Committee to assist the County in identifying, monitoring and addressing the causes and extent of pollution in the County's rivers and bays.
1989	Tillamook County	Requirement for agricultural building permits.
1980s	DEQ	Oregon Statutes require livestock wastewater disposal system permits.
1990	Oregon Department of Agriculture	Oregon Statutes amended to require that general permits for CAFOs specify the maximum number of animals that may be housed at a facility (to protect water quality).
1991	Oregon State University	The Department of Bioresource Engineering completed the methane plant feasibility study for Tillamook County's Methane Energy and Agricultural Development Committee (MEAD).
1991	Oregon State University	Extension Service began a Nutrient Uptake study in order to develop adequate manure utilization specifications.

Source: Department of Agriculture, State of Oregon (ODA). *Tillamook Rural Clean Water Project: 10-year Progress Report.* Tillamook, OR: ODA. September 1991.

successful lawsuits against the DEQ forced the agency to revise its Section 303(d) list and to begin developing Total Maximum Daily Loads (TMDLs) for impaired waterbodies. After DEQ conducted river monitoring from 1995 – 1998, they listed part or all of the five rivers found in the Tillamook Bay watershed on their 303(d) list. The DEQ continues to monitor water quality at various locations in the watershed and recently developed draft temperature TMDLs for Tillamook Bay in April 1999 while bacterial TMDLs will be developed in the near future.[87] In

1990, state CAFO requirements were strengthened. In 1992, SB 1010 was passed and required basin plans for agricultural areas failing to meet federal or state water quality standards. In 1993, the state legislature approved $10 million for water resource management and salmon recovery. Two years later, Governor Kitzhaber approved the Oregon Plan for Salmon and Watersheds (OPSW)[88] and expanded local involvement by creating over 80 citizen-led watershed councils state-wide under the direction of the Oregon Watershed Enhancement Board (OWEB) [Appendix A].[89] Tillamook's watershed council is still young and the benefits of on the ground projects have not been fully realized.

Collectively, these efforts have led to significant investments in best management practices (BMPs) and other activities designed to address Tillamook Bay's nonpoint source (NPS) water quality and habitat restoration problems. Expenditures to date have focused mostly on improving degraded roads, restoring riparian zones, and installing BMPs on the region's dairy farms. The ODF has been a leader in funding these efforts, with a commitment to date of over $16,659,561 for road improvements. Expenditures by the US Fish and Wildlife Service (USFWS), the TCCA, the SWCD, and private contributors have been more modest. For example, in three years, the USFWS invested $260,000 in on the ground projects and the TCAA spends around $30,000 - $40,000 per year on the ground projects. The SWCD also spends hundreds of thousands of dollars each year.

The USDA's RCWP appears to have been particularly effective in reducing bacterial loadings in the bay and spend millions of dollars installing BMPs such as manure storage facilities throughout the watershed.[90] The rate of goal achievement for BMP installation ranged from 207 percent (e.g., feet of buried mainline manure pipe) to 0 percent (e.g., feet of diking). One of the most important successes was in the area of dry and liquid waste storage with 79 dry and 83 wet storage units constructed during the program.[91] The installation of these BMPs helped decrease fecal coliform levels in the bay by 50 percent, which led to the subsequent reopening of some oyster beds [Figure 4]. The TCCA's support was pivotal to the RCWP's success as they provided financial incentives to dairy farmers by penalizing those which scored below a baseline level on a conservation-management rating scale by paying a lower price for their milk. In addition, Oregon provided a 50 percent tax credit on water quality improvements by private landowners. These incentives helped achieve the Tillamook RCWP achieve the highest level of landowner participation among the twenty-one RCWP projects in the nation.[92]

While fecal coliform levels declined between the 1979 to1983 and 1984 to 1988 periods, they increased between the periods 1984 to 1988 and 1989 to 1993.[93] The earlier reductions have been attributed to the BMPs instituted under the RCWP. The subsequent increase is most likely due to the near doubling of the overall size of the dairy herd since 1980 combined with changing precipitation patterns, shifting dairy farm ownership, decreasing BMP implementation or maintenance, as well as decreasing riparian vegetation which filtered pollutants.[94] Moreover, despite efforts to protect the salmon, four out of five anadromous salmonid species have declined dramatically: coho and chum salmon; steelhead; and, cutthroat trout. This was the context surrounding the CCMP's development and implementation.

Figure 4: Installation Rate of Five BMPs and Changes in Fecal Coliform Levels at Shellfish Growing Areas

Note: BMPs including waste storage, roofing, gutters, curbing, and areas of field application of manure are plotted from 1980 to 1989 along with annual geometric mean of fecal coliform at shellfish growing areas in Tillamook Bay (Monitoring sites 6, 7, 8, 11, 13, and 14 in Figure 3).

Source: Tillamook Bay National Estuary Program, *Tillamook Bay Environmental Characterization: A Scientific and Technical Summary* (Garibaldi, OR: TBNEP, July 1998), 4-16.

Tillamook Bay National Estuary Program (TBNEP)

When the EPA issued a call for governor's nominations in 1991 to expand the National Estuary Program (NEP), Oregon and Washington planned to nominate the Lower Columbia River estuary. The two states had been involved in discussions for years and this appeared to be an opportunity for the two states to take the next step in their efforts to protect and restore this water body. However, as the EPA deadline neared, conflict between Oregon and Washington emerged and the decision was made to postpone the nomination.[95] This decision opened the door for Tillamook County, which quickly emerged as a last minute substitute for the Lower Columbia River.

Tillamook County and various state officials viewed the NEP as an important opportunity to bring in federal funds to address the problems that had long plagued the Tillamook Bay

watershed. It also helped that the watershed fit the EPA's requirements for applying to the NEP rather well. A great deal of information about Tillamook Bay existed. There was also a long history of stakeholder involvement in addressing the Bay's problems through previous efforts such as the RCWP and the Bay Sanitation Task Force. State and local officials seized this opportunity and a small group of state and local officials worked quickly to put together the necessary nomination package. Many of these officials believed that federal involvement would bring national attention to the Bay and its problems, which might attract additional federal and state funds. However, as one respondent recalled "the general public was skeptical about what good it was going to do and what it would do to them." Others were afraid the effort might hurt the dairy industry. These fears and concerns were mostly alleviated when they learned the NEP was not designed to result in a regulatory effort.

In April of 1992, Governor Barbara Roberts nominated Tillamook Bay to the NEP pursuant to the EPA's streamlined Governor's nomination process [Table 3].[96] After a fair bit of politicking and lobbying on behalf of their application by various organizations and politicians, Oregon and the EPA signed a cooperative agreement to begin initial development work on the Tillamook Bay National Estuary Program (TBNEP) in June 1993. These start-up activities consisted of developing the State-EPA Management Conference Agreement and the annual work plan. During this phase, EPA funding came to DEQ whose staff coordinated early activities. As a Tier IV program, the TBNEP was expected to complete its CCMP within four years of signing the Management Conference Agreement, June of 1998.[97] Once the Management Conference Agreement was signed, Oregon State University became the hiring entity.

Staffing and Organizational Problems

The TBNEP ended up completing the planning process more than a year behind schedule. This is largely due to organizational and staffing problems that plagued the program throughout the planning process. It is important to have some understanding of these problems as they impacted other TBNEP activities. The program is currently on its third director (with two interim directors) and has experienced significant staff turnover with the program currently on its third set of core staff (STAC coordinator, Public outreach coordinator). The problems appear to stem from several interrelated factors.

The Policy Committee made a poor choice in selecting its first director. While the first director was technically competent, the individual had virtually no experience managing staff or multiple contracts with a program budget of around $1 million per year. The director treated the TBNEP as if it were a collection of research projects. There was little sense of a vision for where the program was going or what they were there to accomplish. There was also little team building or professional development. As one person knowledgeable of these problems observed: "When I first became involved with the NEP, I remember telling someone that it looked like a graduate school bullpen. The attitude was that I've got my project and I don't need anyone to tell me what to do. These were people that didn't lend well to supervision and they didn't understand the concept of teamwork." Moreover, by all accounts, the director appeared to lack the interpersonal skills necessary for managing this type of program or its staff. There were also major interpersonal conflicts among staff members, which the director either caused or was unable to resolve.

Table 3: Timeline of Selected Activities Related to the TBNEP

Date	Activity
1851	▪ First European settler, Joseph Champion, arrives in Tillamook
1853	▪ Tillamook County established; Three dairy operations begin exporting butter
1880s	▪ Permanent logging and lumber operations begin; regular dredging of bay
1892	▪ Extensive draining of lowlands begins; commercial fishing for coho in bay is regulated
1909	▪ Tillamook County Creamery Association formed
1923	▪ 20 sawmills operating in the county
1928	▪ Oysters first planted in Tillamook Bay
1933	▪ First of the Tillamook Burn forest fires. Subsequent fires in 1939, 1945, 1951
1940s	▪ Large scale salvage logging begins
1949	▪ ODF begins reforestation
1952	▪ Bayocean Spit is breached
1953	▪ Peak of salvage logging, 610 million board feet harvested in the watershed
1971	▪ State adopts Forest Practices Act
1974	▪ COE says sedimentation makes dredging of upper Bay infeasible
1979	▪ DEQ conducts Tillamook Bay Bacteria Study to identify sources of fecal coliform bacteria
1981	▪ RCWP begins addressing NPS pollution from farms.
1987	▪ Tillamook County Bay Sanitation Task force created; GWEB established
1989	▪ Successful lawsuit requires DEQ to revise 303(d) list and begin developing TMDLs
1992	▪ Governor's Nomination submitted to the EPA
1993	▪ Work on the TBNEP begins. Senate Bill 1010 requires watershed management plans
1995	▪ Development of Oregon Plan for Salmon and Watersheds (OPSW) begins; GWEB begins supporting local watershed councils
1996	▪ RCWP ends; TBNEP releases Preliminary CCMP; Major flood
1997	▪ Public meetings generate citizen actions for CCMP; OPSW submitted to NMFS
1998	▪ Draft CCMP is released; Tillamook Coastal Watershed Resource Center is established; coastal coho listed as endangered under the ESA; TCPP established
1999	▪ TBNEP's CCMP is completed in June and approved by EPA in December; TCPP begins implementing CCMP; GWEB becomes OWEB

The funding and hiring arrangement developed to administer the NEP during the planning process also had problems. Initially, the EPA start-up funding was passed through DEQ but with the approval of the Management Conference Agreement, OSU served as the hiring entity for the program during the planning effort while the TBNEP retained control over grants management. The program office was located in Tillamook County, approximately a two-hour drive from the OSU campus. One Policy Committee member characterized the rationale in this way: "The grant complexity is largely due to an uncertainty about the county being able to attract the kind of people that were desired for the staff, in particular, during the characterization phase. You wanted to connect good scientists to the process and the university was seen as a good mechanism for that. . . . It was also seen by some people as being more neutral, not overly molded by local interests." The belief was that the program would have great difficulty recruiting staff if the TBNEP was housed in county government, the prevailing alternative. Other respondents suggested that there were also concerns about the County's grants management capacity at this point in time.

Another problem was caused by the way that the EPA funds the NEP. Even though they had committed to fund the program through the four-year planning process, the EPA administers estuary programs through annual workplans. This translated into TBNEP staff working exclusively off annual contracts (i.e., soft money). This created a great deal of uncertainty and led to staff turnover, particularly at the end of the planning process when institutional memory was most needed. Moreover, the program's workload and pace were enough to cause burnout among the most dedicated staff members and added to turnover problems.

The turnover was particularly problematic because using OSU as the hiring entity meant that hiring replacements for the program directors and other technical staff moved at what one respondent characterized as a "glacial" pace; a direct contrast to a program that was moving at a frenetic pace with tight deadlines. The turnover in the directors and the delays in hiring replacements was particularly problematic because many of the respondents we interviewed suggested that this equated to the loss of 6 months to a year of progress. Moreover, each new director lacked an institutional memory, had little familiarity of the local context, and did not understand the complex governance system. Many committee members grew frustrated as old issues were rehashed and there was a general sense that no progress was being made.

A related problem concerned the supervision and oversight of the staff. It was unclear to whom the staff were accountable. The Policy Committee appears to have been relatively disengaged during the early years of the planning process and OSU and the EPA did not take aggressive oversight roles during the early years of the planning process. The EPA also believes that it is not appropriate for them to interject themselves in the day-to-day operations of an estuary program. Since it took a while for these problems to become visible outside of the TBNEP office, these problems festered for some time. This left the TBNEP staff with unclear lines of authority. As a result, it was not clear where a staff member should go to if they had a grievance or problem with their boss. Morale problems and interpersonal conflicts were reported. Poor oversight of the program also led to some grants management and record keeping (e.g., accounting) problems as well.

The Planning Process

The TBNEP generally followed the NEP's planning process as depicted in Figure 1. Previous efforts such as the RCWP and the Bay Sanitation Task Force had done a good job of identifying stakeholders and prioritizing the major problems affecting Tillamook Bay. While there certainly were some differences between the NEP and previous programs like the RCWP [Table 4], the core group of participants had a history working together. Accordingly, aside from the program's staffing problems the early years of the TBNEP went relatively smooth.

Establishing the Management Conference

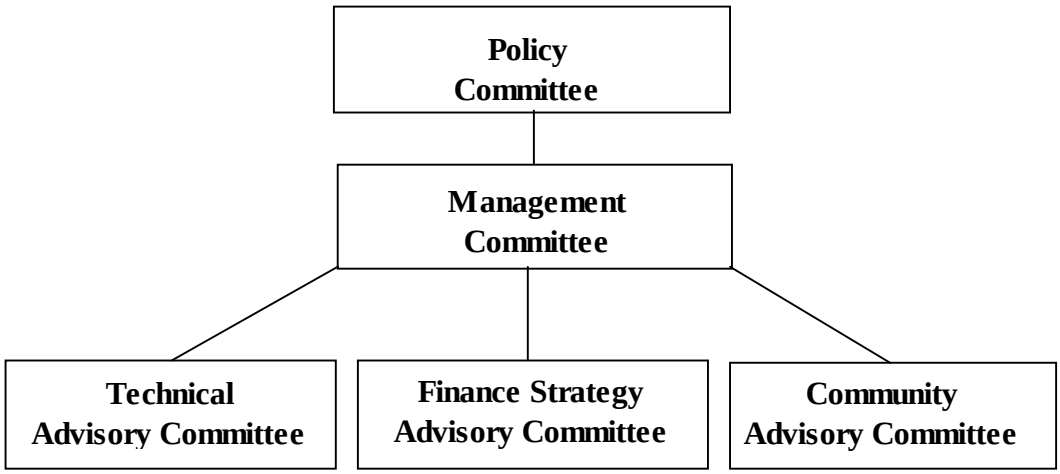
One of the first steps in the NEP's planning process was for the TBNEP to establish its Management Conference (i.e., committee structure) [Figure 5]. The TBNEP utilized a Management Conference structure similar to other estuary programs. There was also a lot of cross-pollination between their membership and that of previous advisory committees used in the RCWP and the Bay Sanitation Task Force. As one Tillamook resident stated, "the NEP wasn't

Table 4: Some Differences Between the USDA's RCWP and the EPA's NEP

Characteristics	RCWP	NEP
Program Mission	Federally-sponsored program designed to control agricultural nonpoint source pollution in rural watersheds with the goal of improving water quality.	Federally-sponsored program with a mission to protect and restore the health of estuaries while supporting economic and recreational activities.
Federal Agency	USDA's Agricultural Stabilization and Conservation Service	EPA
Funding Emphasis	Implementation	Planning
Funding Commitment	Long-term	Annual
Duration (in Tillamook)	1980 – 1996	1993 - Present
Participants and Partners	▪ EPA ▪ Cooperative Extension ▪ GWEB/OWEB ▪ Oregon Department of Fish and Wildlife ▪ Tillamook County Soil and Water Conservation District ▪ DEQ ▪ Tillamook County Creamery Association ▪ Soil Conservation Service ▪ Forest Service ▪ Agricultural Research Service ▪ Economic Research Service ▪ Farmers Home Administration	▪ EPA ▪ Cooperative Extension ▪ GWEB/OWEB ▪ Oregon Department of Fish and Wildlife ▪ Tillamook County Soil and Water Conservation District ▪ DEQ ▪ Tillamook County Creamery Association ▪ Oregon Dept of Forestry ▪ Tillamook County Dept of Community Development ▪ Tillamook County Board of Commissioners ▪ Oregon Dept of Agriculture
Primary Activities	▪ Installation of BMPs	▪ Installation of BMPs ▪ Public Education ▪ Scientific Research ▪ Restoration Projects

an immaculate conception; we've been dealing with these issues for a long time." Most of the Bay's stakeholders were already represented at the Bay Sanitation Task Force meetings and this group later became the core of the Management Committee. One of the directors of the Bay Sanitation Task Force, then Director of the County Health Department and now County Commissioner, remained a strong influence under the new TBNEP Management Conference structure as a member of the policy committee.

Figure 5: TBNEP's Management Conference Structure



The Policy Committee provided the overall policy guidance for the TBNEP and consisted of many of the individuals who helped to put together the Governor's Nomination. The nine members of the policy committee consisted of EPA Region 10, the Governor's Senior Policy Advisor for Natural Resources, the DEQ Director, a Tillamook County Commissioner, an elected official from a local city, an elected member of the Tillamook County Soil and Water Conservation District, and elected commissioner from a local port, the chair of the Management Committee, and OSU's CES, which served as the hiring entity.[98] The Policy Committee was charged with establishing the program's overall goals, objectives, priorities, and direction. It also appointed members to the Management Committee and reviewed and approved its work. Finally, the Policy Committee was responsible for hiring and contracting decisions.

The twenty member Management Committee consisted largely of government officials from federal agencies (2), state agencies (6), Tillamook county (4), the port district (1), and OSU (1). The citizens and stakeholders were represented by six members including a representative of the citizen from the TBNEP area, the coastal areas, the commercial fishing industry or the Salmon and Trout Enhancement Program (STEP), the commercial shellfishing industry, and the dairy industry.[99] The Management Committee defined and ranked the estuary's problems, supervised characterization work, formulated management strategies, and developed the CCMP. It also had the responsibility for overseeing the development of project budgets, schedules, and workplans. It also established the program's other advisory committees and defined their roles and responsibilities. The committee was initially chaired by a local businessman and was later chaired by an influential and well-respected member of the TCCA.

The TBNEP also relied on three advisory committees. A Science and Technical Advisory Committee (STAC) was used to advise the Management Committee on technical issues such as research, data management, modeling, and sampling. It also conducted peer reviews on technical reports. The membership of this committee consisted mostly of state agency officials and faculty from OSU. A Citizens Advisory Committee (CAC) was created to advise the

Management Committee on ways to inform the public and involve them in the decision-making process. Finally, a Financial Strategy Advisory Committee (FSAC) was created to develop funding strategies for program activities and CCMP implementation. The members of these advisory committees were appointed by the Management Committee.[100]

Priority problems

Once the Management Conference was established, the participants had to develop a list of priority problems. Due to previous efforts such as the RCWP and the Bay Sanitation Task Force, there was already a good understanding of the Bay's problems. The priorities that framed the TBNEP's efforts were:

- Bacterial contamination that causes periodic closure of Tillamook Bay's shellfish harvest
- Excessive sedimentation that has reduced the volume of the Bay, adversely affected fish and wildlife habitat, and decreased available area for recreation and commercial boating
- Declining salmon and trout runs due to degradation of spawning and rearing habitat

While these were focal issues during the early years of the planning process, flooding emerged as a central issue during the latter part of the planning process. This was the direct result of a devastating flood in February 1996 that caused damages in excess of $53 million. Fortunately, this event occurred during the characterization phase. After the 1996 flooding event, the Management Committee had repeated discussions about adding flooding as a priority issue. However, it took some time to do so because some management conference participants were concerned that the recommended actions could become a political hot potato (e.g., dredging) and dominate the overall process to the detriment of actions to address the original priority issues.

Ultimately, the decision was made to go ahead and add flooding as a priority issue. The new priority problem reads as:

- The interaction of human activities with dynamic natural systems have increased the magnitude, frequency, and impacts of flood events. These events affect water quality, cause erosion, imperil fish and aquatic wildlife, destroy property, and threaten life.

Fortunately, this occurred early enough in the planning process to include this issue in the draft CCMP. However, in a separate, but related issue emerged during the CCMP's development as a result of adding this new priority issue. EPA Headquarters was concerned that several of the actions proposed in the draft CCMP relating to flooding that had no apparent relationship to environmental risks. This forced the TBNEP to beef up some of the recommendations and clarify the connections between recommended actions and environmental improvements.[101] Other recommended actions that would address flooding problems but were unrelated to environmental improvements were dropped from the CCMP. This was a source of some frustration to our respondents who could not understand why the EPA would object to the inclusion of these "nonenvironmental" recommendations because they were designed to address the region's most important public policy problem. Moreover, many respondents noted that

adding flooding proved to be a key to the TBNEP's success because it allowed local officials to link environmental protection efforts with economic development issues. This broadened the base of public support for the CCMP and the TCPP created to implement the plan. It is also doubtful that the CCMP would have been well received if it did not address the most important issue on the policy agenda at the time.

Characterization Phase

One of the reasons the planning process was so lengthy, in this case around 6 years, was that the program invested considerable financial resources in research, which attempted to link specific causes to environmental problems. The product of this phase is a status and trends (characterization) report which identifies probable causes of identified problems and documents the relationships between pollution loads and potential uses of an estuary.[102] The TBNEP followed a characterization process similar to other estuary programs, although it appears to have been somewhat less effective than some other programs due, in part, to the aforementioned administrative problems.

The TBNEP clearly produced some excellent research and technical reports.[103] The program also appears to have been effective in synthesizing available technical information and putting it into a form that could be used by decisionmakers such as *Tillamook Bay Environmental Characterization: A Scientific and Technical Summary*.[104] The characterization efforts also helped the TBNEP and Tillamook County develop a rich Geographical Information System (GIS) database. However, many respondents, particularly those with scientific or technical backgrounds, were critical of the TBNEP for failing to make good use of the EPA's research funding during the early years of the program. As one STAC member noted: "Sources of contamination weren't clear. Baseline data for the bay wasn't there. We *still* don't have a good handle on that." The main criticism appears to be that the program did not fill important gaps in understanding and often failed to provide the "type" of information that decisionmakers needed. There appear to be several possible explanations for why this occurred.

Some suggested that the problems were due to the decision-making process used to decide on research projects. The TBNEP staff, in conjunction with the STAC, largely controlled the decisions about what research was funded. Some respondents suggested that the research seemed organized around the research interests of the staff who treated the program as more of a science project than a planning effort. Others noted that there appeared to be no systematic research agenda. The first two years were spent focusing on the bay and then the focus shifted to the watershed and then it shifted back to the bay. In part, this might be attributed to the shifts in directors who had different research agendas. Other respondents noted that the TBNEP staff appeared to have been captured by consultants and noted that TBNEP staff seemed to favor projects that appeared to be on the "cutting edge" rather than projects that provided information that was needed to make decisions. The example that respondents repeatedly used to illustrate these problems was the TBNEP's efforts to develop a "state of the art" water quality model. One attempt cost $63,000 and was not completed. Another was completed but was not a good choice for coastal Oregon watersheds and cost $80,000. This latter model might be able to be adapted to the region with more investment. However, in its current form it appears to be of little use to

anyone, including the DEQ who could have used the model to help develop TMDLs in this watershed.

Poor attendance at the STAC meetings and lack of oversight by the Policy and Management Committees may have contributed to these problems. After the early enthusiasm died down, so did participation in the STAC. The long drive for many state officials and OSU scientists made it difficult for some individuals to consistently attend TBNEP meetings. Other respondents suggested that some STAC members dropped out of the process when it was clear that they would not receive research funding. The lack of engagement of key Policy and Management committee members also appears to have contributed to these problems. In particular, the DEQ headquarters office became disengaged during the early years of the planning process because they did not see how they could benefit. Unfortunately, this decision also guaranteed that they would miss opportunities such as the decisions regarding the development of a computer model for the Bay. Later in the planning process, the DEQ regional office became involved because they had experience in collaborative planning and their staff recognized that there were ways for them to benefit from the TBNEP. Creating a regional DEQ branch office and having a DEQ staff member dedicated to participating in these efforts further improved these interactions and allowed the TBNEP to benefit from greater DEQ involvement.

Other Notable Activities

While this technical work was going on, the TBNEP was also busy conducting a wide range of additional activities in support of the program. The TBNEP was engaged in a wide range of public involvement and education activities designed to build support for the CCMP and its implementation. While the program had some trouble in building a maintaining a large CAC, a small group of dedicated individuals were instrumental in helping develop education materials such as fact sheets, a newsletter, a World Wide Web (WWW) site, and a display for exhibition at public events like the county fair. The staff also organized a number of activities designed to enhance public education. These included:

- A speakers series providing speakers to various schools and organizations
- Installing interpretive signs at various viewing points around the bay
- Organizing special events such as Tillamook Bay Paddle to help improve public awareness of bay problems

The TBNEP also developed a "Challenge Grant" program that awarded small grants to schools, educators, and community groups to do educational and scientific research. Volunteer organizations also played a critical role in the development of the CCMP. The TBNEP organized a volunteer water quality monitoring program. It has also worked with stewardship groups involved in activities such as planting trees along streams and installing fish monitoring devices.

Another notable accomplishment occurred in the spring 1998 when the TBNEP collaborated with the Economic Development Council of Tillamook County (ECDTC), Tillamook County Soil and Water Conservation District (SWCD), and Tillamook Bay Community College (TBCC) to establish a new Tillamook Coastal Watershed Resource Center

(TCWRC), which is now home to the GIS system developed by the TBNEP. The hope is that the TCWRC will be a valuable resource to local watershed councils and other community-based environmental programs. The TCWRC will provide training to citizens and government officials involved in watershed management efforts. This effort is closely coordinated with the OWEB's activities and uses several of its training manuals in its programs.

In addition to these activities, a number of the TBNEP partners such as the ODF continued their efforts to install BMPs and other implementation actions that would be recommended in the CCMP during the planning process. These efforts will be discussed in greater detail in a subsequent sections of this report.

Developing the CCMP

The characterization and public participation efforts were designed to culminate in the development of the TBNEP's CCMP. The development of the CCMP could be characterized as a collaborative effort with a great deal of input from citizens and the stakeholders represented in the Management Conference. These activities first began back in late 1995 and early 1996 when a group of ten individuals, one land owner and one dairy operator from each of the five subwatersheds, met on several occasions to work out policies and actions for what was to become the Preliminary CCMP.[105] These meeting resulted in what became the Land Use Actions in the Preliminary CCMP. In all, the Preliminary CCMP contained 162 actions with TBNEP staff generating the remainder of the plan. The Preliminary CCMP was published in July 1996 to assist the Management Committee in developing a draft CCMP. This draft contained a summary of the technical information generated to date, outlined possible management strategies, discussed potential implementation structures, and was designed to begin a discourse between the Management Conference and other citizens and public officials. Essentially, this document provided the basis for discussion during 1996 and 1997 and provided the framework for the draft CCMP that was released in September of 1998. In fact, many of the ideas and actions contained in the Preliminary CCMP can be found in the subsequent draft CCMP.

To get public input on the CCMP, the TBNEP held a series of 14 public meetings between January and July of 1997 to solicit public input. The program held three types of meetings. Sector meetings brought together individuals with similar backgrounds or interests (e.g., forestry, agriculture, business, education, etc.). The second set of meetings were geographical in orientation, focusing on forested uplands, agricultural lowlands, urban areas, the estuary, and educational activities. The final meeting was designed to synthesize the work of earlier meetings. With assistance from the CAC, the TBNEP received more than 300 recommended actions. By July 1997, the CAC refined this list to 24 broadly supported, high priority citizen actions and forwarded the list to the Management Committee for their consideration. To further assist the Management Committee, the TBNEP's staff provided them with their best technical judgement of the merits of the each action.

These recommendations as well as the Preliminary CCMP provided the framework for what would become the draft CCMP. To write the draft CCMP, subcommittees were created for each chapter. These individuals worked out the action plans for each chapter with TBNEP staff

being responsible for putting their ideas on paper. It was an iterative process involving lots of drafts and ultimately the Management Committee approved the draft chapters and the draft CCMP was released for public comment in September 1998. Despite the problems that the TBNEP encountered during the planning process, the draft CCMP was well received. The TBNEP received mostly supportive comments on the draft CCMP and no major conflicts emerged. Most of the changes involved minor wording changes such as changing "shalls" to "shoulds" as well as other changes that respondents characterized as "cosmetic". Few changes to the CCMP involved what the respondents termed as "substantive" changes in the meaning of the CCMP or its recommended actions.

In fact, the only real frustration that emerged concerned EPA's approval process. The EPA then informed the TBNEP that it had to go through another public notice period. This further delayed a project that was behind schedule. Moreover, the public notice process resulted in additional costs with little perceived return on this investment. Respondents were unable to identify many major changes that occurred to the CCMP as a result of this additional public comment period. Another issue was that many of the participants were not aware that all agencies had to sign off on the final CCMP until they had nearly completed the planning process. Most simply assumed that the governor would sign the final version of the plan. Instead, the Governor's office wanted these approvals to make sure that none of the agencies objected to the CCMP. This requirement caused additional delay as the various signatories worked their ways through their various chains of command to get permission to sign the CCMP. It also generated some new concerns from parties who were unsure why they needed to sign a voluntary plan that was going to be signed by the Governor. Moreover, some officials in state agencies had different opinions than the local representatives that participated in the Management Conference. After these delays, the parties officially signed the CCMP in June of 1999 at one of the first meetings of the Tillamook County Performance Partnership (TCPP). While EPA Region 10 signed the implementation agreement, this did not signify the EPA's formal approval of the CCMP.

However, this did not end the frustration of the Management Conference members who had to wait until December 1999 for EPA's final approval. Despite the approval of the CCMP and the creation of the implementation structure, the TBNEP staff still had several months worth of work left to finish editing the plan and to make the cosmetic changes necessary to conform to the EPA's requirements for an approved CCMP. Many of the respondents we interviewed failed to find any justification or value to these changes since the CCMP was already approved.

While the planning process took a long time and was further delayed by staff turnover, most respondents felt that the time spent was crucial to both the CCMP's widespread acceptance and the development of the Tillamook County Performance Partnership (TCPP). As one local official observed the consensus based process was "a little more painful, but it's worth it because at the end you have a better product and better buy in. . . . I think you have to go through the building of relationships and have the committees wrestle with the issues." Many respondents also thought that a system based on majority voting would have failed. As one participant noted, "I don't think majority vote would have worked nearly as well as consensus here. It got people out on the ground looking at things." Most of the respondents, particularly the Policy and Management Committee members, also felt that the consensus-building process was instrumental in helping the various participants learn about each other's concerns. Many of the

participants also felt that the consensus-building process helped build interpersonal trust and personal relationships that have helped in operations beyond those of the TBNEP.

Two other factors also appeared to help the group reach consensus. First, there was good leadership on the Policy and Management Committees from political officials and agency officials. There was also good leadership from the dairy industry representative who helped the group reach the compromises necessary for the CCMP to have widespread support. Second, the fact that the CCMP is a voluntary, rather than a regulatory document, enabled the participants to feel more at ease with the entire process and made them more willing to compromise since they knew they had some flexibility with respect to how the CCMP would be implemented.

The CCMP

The TBNEP's CCMP contains 21 policies and 63 actions that collectively outline a detailed strategy to:

- Improve fish, shellfish, and aquatic habitat
- Reduce sedimentation to the Bay and rivers
- Improve water quality
- Reduce flood impacts
- Strengthen education and community institutions

Each action describes what to do and why to do it. It also identifies a lead agency to take responsibility for implementation. Many of the actions also include applicable information about costs and regulatory issues. This format and procedure closely follows that of other CCMPs. The actions are designed to achieve 3 goals and the TBNEP developed quantifiable targets for tracking progress towards these goals [Table 5]. These targets have various timeframes ranging from 2000 to 2010. The TBNEP is currently working to develop a monitoring and tracking system that would use the WWW to illustrate the progress towards these targets. It is also important to note that the TBNEP is more concerned with achieving its goals and meeting its targets than it is with accomplishing the actions in the specific manner described in the CCMP. Accordingly, the actions are best viewed as a starting point for the partners to determine how they will work towards achieving the CCMP's goals and targets.

Tillamook County Performance Partnership

Once agreement on the goals and substance of the CCMP was reached, the TBNEP partners turned their efforts towards making the CCMP more than just a "plan". Early in the planning process, the community at large was disillusioned with the idea of developing another plan. As one respondent recollected, people were saying: "Oh my god, you're going to do another government plan, spend millions of dollars, and put it on the shelf." Accordingly, early in the planning process, the committee members promised their community, as well as each other, that this time the plan would be designed with implementation in mind. However, most committee members did not want to create a new regulatory authority either. The Preliminary CCMP included an analysis of the various options for implementation structures that could be used to implement the CCMP. These included:

Table 5: Goals and Targets in the TBNEP's CCMP

Goal	Targets in the CCMP
Critical Habitat Restore healthy stocks of salmonids, shellfish, and other aquatic species	▪ Enhance 200 miles of forested riparian habitat to meet TBNEP standards by 2010 ▪ Manage 90% of upland riparian zones to meet state forest HCP requirements ▪ Enhance 100 miles of upland instream habitat by 2010 ▪ Enhance 500 miles of continuous riparian habitat in the 0 – 500 ft elevation band to healthy condition by 2010 ▪ Upgrade 50% of all tide gates by 2010 ▪ Conserve and restore 750 acres of tidal wetland by 2010 ▪ No decline in eelgrass beds due to degradation or loss ▪ Achieve an improved climate for fisheries practices and regulatory actions ▪ Achieve wild fish production and spawner escapement goals set by the Oregon Department of Fish and Wildlife for Tillamook Basin rivers
Erosion & Sedimentation Reduce sediments to meet salmonid habitat requirements and achieve water quality standards	▪ Upgrade 1,400 miles of forest roads by 2010 on state and private lands ▪ Decommission 50 miles of forest management road by 2010 ▪ Conduct road maintenance activities on all 2,000 miles of forest management roads annually ▪ Limit the amount of forested lands in clearcuts to no more than $1/8^{th}$ of the total forest lands in the watershed ▪ Conduct risk analysis on 95% of proposed high risk timber harvesting sites on slopes of 80% or greater ▪ Manage 67% of the watershed's privately-held, forested riparian areas under HCP standards ▪ Assess 90% of upland county and state roads, both paved and unpaved, for their sediment contribution ▪ Control erosion from all construction and development in urban areas by 2003
Water Quality 1) Achieve water quality standards for Bacteria in the rivers and the Bay by 2010 2) Achieve in-stream temperatures and suspended sediment concentrations that meet salmonid habitat requirements by 2010	▪ Achieve at least a 25% reduction in bacteria and sediment loads to rivers (apparent decreasing trends by 2005. Statistically significant results by 2010) ▪ Achieve SB 1010 Plan compliance among 100% of livestock operations by 2010 ▪ Achieve routine annual inspections of 100% of the CAFOs by 2004 ▪ Achieve at least a 25% reduction every 4 years in the number of days that the rivers are not in compliance with water quality standards for bacteria ▪ Achieve total compliance with NPDES permits for wastewater treatment facilities by 2002 ▪ Reevaluate commercial shellfish harvest area classifications and closure criteria on an annual basis
Flooding No goal, only targets	▪ Develop a hydrologic model by 2000 ▪ Complete 20 projects within 2 years of developing the hydrologic model that: 1) reduce runoff rate in uplands; 2) alleviate drainage problems in lowlands; 3) increase floodplain storage in lowlands; and 4) improve the capacity to withstand or benefit from flood events. ▪ Raise at least 55 houses to at least 3 ft above the 100-year flood elevation by 2010 ▪ Construct 18 cow pads in flood prone areas to protect livestock by 2000 ▪ Increase the percentage of compensated damages from flood events

- Leaving OSU as the hiring entity and relying on modified version of the Management Conference structure
- Folding the program into a Tillamook Bay Watershed Council as part of OWEB
- Creating a tax-exempt nonprofit organization
- Government program possibly a new county department of a special watershed district
- A program housed in OSU extension and or departments at the University of Oregon

However, none of these options other than creating a new Department in county government was considered a viable option as they neared the end of the planning process. Two leaders of the Policy Committee then became the "champions" for the idea of using a "Performance Partnership" as the implementation structure for the CCMP.[106] The idea originated from their discussions with the director of the Oregon Progress Board, the agency responsible for setting the state's strategic vision, the Oregon Benchmarks.

The idea for the Performance Partnership was derived from Vice President Al Gore's National Partners for Reinventing Government (NPRG) and the objective was to use the TCPP to reinvent government in Tillamook County. The three key components of a Performance Partnership are flexibility, accountability, and measurable performance standards (outcomes).[107] Oregon has been a leader in the area of performance measurement with the Benchmarks developed by the Oregon Progress Board serving as a model for other states. In recognition of these efforts and to support the state's efforts pursuant to the Oregon Plan for Salmon and Watersheds (OPSW), Oregon and ten federal agencies entered into an MOU in 1997, which built upon an earlier MOU entitled the *Oregon Option*.[108] This agreement was reaffirmed and further strengthened in 1998 when Governor Kitzhaber and Vice President Gore signed the Oregon Watershed MOU that designated the state's watershed-based efforts as a reinvention lab pursuant to the NPRG.[109] As a result of the two MOU's, Oregon and ten federal agencies mutually agreed to:

- The support of watershed and community-based efforts will be managed at the local level with strategies, priorities, and implementation developed locally to be responsive to the specific needs and desires of the area.
- Local commitment may be formalized through a more localized agreement, which involves the needed representation of private, tribal, and public entities.
- Implementation of a watershed and community-based effort may require changes in existing processes and policy within each of the participating parties.
- Each party will actively seek opportunities to assist in the implementation of watershed plans through the provision of technical assistance, dissemination of information, and allocation of staff, equipment, and funds.
- Delegate authorities and decision making to the lowest level practical, as allowed under current law.[110]

However, the MOU also made it clear that: 1) no signatory was committing funding or resources other than designating a policy level contact; 2) it does not eliminate or relieve participants from any existing rules, regulations, or requirements; 3) it does not substitute for or replace the need

for government to government consultation.[111] These provisions imply that the MOU's usefulness hinges on the willingness of the ten federal agencies to support Oregon's watershed-based reinvention efforts.

The Tillamook County Performance Partnership (TCPP) is designed to build upon the commitments in this MOU. The officials who created the TCPP hoped that the MOU would allow the policy makers and resource managers to coordinate the various resource management plans that exist throughout Tillamook County. These plans include:

- *Tillamook Bay Comprehensive Conservation and Management Plan (CCMP)*
- *Tillamook County Flood Hazard Mitigation Plan* resulted from the major flooding in 1996
- *Tillamook County Comprehensive Plan* developed to implement *Oregon's Statewide Planning Goals and Guidelines*
- *The Oregon Plan for Salmon and Watersheds (OPSW)* which guides state agency actions and relies on efforts of the OWEB's Watershed Councils
- *Oregon Northwest State Forest Management Plan* guides the management of state forests and includes *The Western Oregon State Forests Habitat Conservation Plan* that addresses strategies for the management of endangered and threatened species
- *Total Maximum Daily Loads (TMDLs)* are currently being written by DEQ in several areas of Tillamook County
- *Oregon's Senate Bill 1010 (SB 1010)* mandates water quality management plans for agricultural regions and the Tillamook Bay watershed is considered a high priority region
- *The President's Forest Plan* provides a long range vision of federal lands in the Pacific Northwest
- *The Methane Energy & Agriculture Development (MEAD) Project Plan* has been developed to construct a facility that collects manure and converts it to electricity, potting soil, nutrients, and other usable material[112]

The objective was to develop a collaborative organization that could better coordinate these federal, state, and local programs around shared goals and priorities and to more effectively utilize the limited resources that these programs receive. As one Policy Committee member put it: "Our concept is focus on what you want to achieve, get people around the table, and do something. Quit planning." The idea was to get all three levels of government to agree on goals and outcomes (e.g., using a MOU) and then provide some flexibility for project funding and management. Accountability is maintained by having the program achieve goals through measurable results.[113] It was hoped that the MOUs and the designation of Oregon's watershed based activities as a reinvention lab would provide these agencies with the flexibility necessary to implement the performance partnership concept.

The TCPP also became a way for the TBNEP to reinvent itself. Near the end of the planning process the TBNEP received some bad press. One policy committee member characterized this coverage as follows: "We didn't have a local director, we brought in all of these outside scientists, and we spent $5 million. All we have is a plan." Thus, the TCPP and the move from the watershed to the county-level and from Bay problems to other problems

including flooding became a way to recast the TBNEP as being focused on implementation. These efforts appear to have garnered strong support within the community as reflected in the TCPP's positive press coverage since its inception.

The TCPP was established in July 1998 through a resolution of the Tillamook County Board of Commissioners. It is a collaborative organization with a two-tiered administrative structure and a staff comprised of former TBNEP staff who are now county employees. The county is now the hiring entity and grants manager for EPA funds. The TCPP has adopted bylaws. While not legally-binding, they establish the intent, structure, and rules of the organization. The objectives of the TCPP include:

- Prioritize ecosystem problems and projects to address them throughout the county
- Locate funding and coordinate existing funding to accomplish projects
- Implement projects
- Monitor and evaluate projects
- Transfer information (e.g., GIS)
- Implement the TBNEP's CCMP[114]

The TCPP is administered by an Executive Board that provides the overall policy guidance and direction for the TCPP and its staff. It also participates in personnel decisions regarding the Partnership Director and support staff in consultation with the employing agency (i.e., the county). The Executive Board comprises the following members:

- Environmental Protection Agency
- Oregon Governor's Natural Resources Office designee
- Oregon Department of Environmental Quality
- A Tillamook County Commissioner
- Another County official appointed by the County Commissioners
- One person to represent local cities who is selected by the cities
- A representative of Tillamook Bay Community College
- Four members of the Performance Partnership, one of whom must be a state agency representative, elected annually by the Council
- President and Vice President of the Performance Partnership, if not already represented[115]

In some respects, it is an expanded version of the TBNEP's Policy Committee. The Executive Board makes decisions based on a majority vote, meets monthly, and is more directly involved in the daily activities of the TCPP.

The Executive Board is a subset of the Performance Partnership, and is analogous to the prior Policy Committee that was a subset of the Management Committee participants. The Performance Partnership is quite large and in some respects represents an expanded version of the TBNEP's Management Committee. The Performance Partnership has a target membership of at least 61 representatives of various stakeholder groups. The membership consists largely of federal (11 representatives), state (11), county (7), and local governments (7) as well as numerous special districts within the county. It also includes regulators, industry representatives

such as the TCCA, commercial shellfishing industry, commercial fishing industry, and other business interests as well as environmental interest groups. It also includes public representatives as well as representatives from various educational institutions.[116] The Performance Partnership is required to make decisions by consensus and has the following duties and authorities:

- Develop consensus for coordinated solutions and projects for ecosystem restoration
- Design and recommend multi-agency or landowner projects to the TCPP
- Prepare and monitor project budgets with a view towards consolidating funding streams and leveraging new funds
- Form task forces for project implementation/administration
- Coordinate multi-agency information transfer and real time reporting of outcomes
- Annually elect 4 representatives to serve on the Executive Board
- Provide oversight and support for task force activities[117]

Accordingly, it has functions similar to the TBNEP's Management Committee and is required to make most decisions by "consensus", although the TCPP's bylaws do not define what this requires. The TCPP office serves as the primary media contact and members are not supposed to represent the TCPP without authorization.

The cornerstone of the TCPP is accountability for outcomes. To provide this accountability, the TCPP adopted goals that coincide with the Benchmarks adopted by the Oregon Progress Board (OPB) and the goals contained in the CCMP [Table 6].[118] The TCPP also tries to link environmental restoration with economic development. To achieve these goals, the TCPP has chosen to focus on five strategies and actions that coincide with the TBNEP CCMP's priorities.[119] These include:

- Improve degraded roads
- Restore riparian zones
- Enhance in-stream conditions
- Improve floodplain conditions
- Apply 'state of the art' technology and training.[120]

The TCPP also identified various plans that recommend similar actions, who has responsibility for the actions, progress that has been made in the past, how much these activities cost or are expected to cost, and where they have been able to leverage funding for implementation in the past [Tables 7, 8, and 9].[121] Thus, the TCPP's approach to implementation is to improve communication among stakeholders, coordinate existing programs by prioritizing activities around shared goals, and leverage resources among existing federal and state programs to pay for these actions.

Several challenges are likely to confront the TCPP as it begins to develop as an organization. One is to overcome the existing barriers to coordination that come from having different statutory objectives and budget priorities. These priorities are decided at higher governmental levels that may or may not be willing to grant the flexibility necessary for the field offices to adopt the TCPP's priorities. The "reinvention lab" designation may help achieve some

Table 6: Comparison of Oregon Benchmarks with the TCPP and CCMP Goals

Oregon Benchmark	TCPP	CCMP
#82 Water Quality: Percentage of monitored stream sites with significantly increasing trends in water quality	Achieve compliance with the DEQ water quality standards and remove all stream reaches from the state 303(d) list	1) Achieve water quality standards for bacteria in the rivers and the Bay by 2010 2) Achieve in-stream temperatures and suspended sediment concentrations that meet salmonid habitat requirements by 2010
#89 Fish Populations: Percentage of wild salmon and steelhead populations in key sub-basins that are at target levels	Provide anadromous fish habitat suitable for species' recovery	1) Restore healthy stocks of salmonids, shellfish, and other species 2) Reduce sediments to meet salmonid habitat requirements and achieve water quality standards
#69 Flood Mitigation: Percentage of counties with the capability to respond to an emergency and to assist communities to recover fully from impacts	Develop, maintain and (when necessary) effectively implement a Comprehensive Floodplain Management Plan	None, only targets
#19 Economic Development: Per capita income as a percentage of U.S. per capita income	Achieve per capita income levels equal to the state average	None

Note: Many of the targets contained in the CCMP also coincide with the Oregon Benchmark and TCPP goals.

of this flexibility. However, it is questionable whether restoration projects will be funded in the manner envisioned.[122] As one member of the TCPP noted: "The naivete I see is people saying 'let's have the agencies pool their resources and we'll have enough to do what we need to.' The idea that this organization and this one have pots of money and we'll throw it together and they'll be happy with how it's being used . . . well, we'll just see about that." A related challenge concerns the complex nature of the federal and state funding streams that will fund the TCPP's activities. Often several agencies at different levels of government are involved in reviewing a project. These agencies may have different priorities, grant restrictions, and cost-share requirements and the members of the Performance Partnership may be unable to adjust these requirements.

Tillamook County's poor financial situation and the lack of matching funds also make it difficult to apply for some federal and state grants. The final challenge will be to institutionalize the TCPP and develop the peer pressure mechanisms and public support necessary to sustain

Table 7: TCPP Strategies and Plans that Recommend Similar Strategies

TCPP Strategy	Plans Referenced
Improve Degraded Roads	▪ Oregon Plan for Salmon and Watersheds ▪ Oregon Northwest Forest Management Plan ▪ Western Oregon State Forests Habitat Conservation Plan ▪ Draft Federal Clean Water Action Plan ▪ TBNEP CCMP
Restore Riparian Zones	▪ Oregon Plan for Salmon and Watersheds ▪ Draft Federal Clean Water Action Plan ▪ NRCS North Coast Basin Strategic Plan ▪ Senate Bill 1010 ▪ TBNEP CCMP
Enhance In-Stream Conditions	▪ Oregon Plan for Salmon and Watersheds ▪ Draft Federal Clean Water Action Plan ▪ Tillamook County SWCD Annual Work Plan 1997 - 98 ▪ TBNEP CCMP
Improve Floodplain Condition	▪ Army Corps of Engineers Challenge 21 ▪ Tillamook County Flood Mitigation Plan ▪ TBNEP CCMP
Apply 'State of the Art' Technology	▪ Tillamook County Economic Development Council Strategic Plan ▪ Tillamook Bay Community College Five Year Strategic Plan ▪ TBNEP CCMP

Source: Trenholm, Mark, *Summary of the Tillamook County Performance Partnership* (Eugene, OR: University of Oregon, RARE Program, July 1998).

political commitments over the long-term. The development of an effective monitoring and tracking system may be an important step in this direction.

Implementation Progress

The EPA approved the CCMP in December 1999. Therefore, it is difficult to do more than speculate about the likelihood of implementation success. As noted in Table 8, a great deal of implementation activities occurred during the planning process that advances the CCMP and TCPP goals and targets.[123] Perhaps the most significant activities in terms of scope and cost have been implemented by the ODF. Since 1994, the ODF has spent in excess of $21.4 million on road improvements in the Tillamook State Forest with funding coming from timber sale revenues as well as funding from other agencies such as OWEB and the Federal Emergency Management Agency (FEMA). Many of these projects were designed to reduce erosion and sedimentation. Over 2,142 culverts and 17 bridges have been built while 776,000 cubic yards of rock has been spread. In addition, 30.3 miles of new road have been built, 515 miles of road have been improved, and 11.3 miles of road have been closed. To improve salmon habitat, in

Table 8: TCPP's Strategies, Five-Year Local Actions, and Implementation Success

Strategy	Local Action	Leveraged Sources
Improve Degraded Roads	1) Complete road surveys and improve 360 miles of road built to salvage Tillamook Burn - Implement OPSW using Road Inventory Protocol on all forest lands ($16,000/year) - Bring roads up to present day standards ($18 million/year)	▪ Since 1994, the ODF has surveyed 1133 miles ($120,000 – 70% federal, 30% state) ▪ Since 1994, the ODF closed 7 miles of road ($200,000) ▪ Since 1994, the ODF improved 469 miles of road ($15,077,000) ▪ Since 1994, the FEMA ($2,623,000 – 75% federal, 25% state)
Restore Riparian Zones	1) ODF, BLM, watershed councils, and private landowners will stabilize 200 miles of streambanks ($ 1 million/yr.) 2) SWCD, TCCA, and others will install 130 miles of streamside fencing, off-channel watering facilities on 75 farms, and replant 130 miles degraded streambanks ($2.5 million)	▪ Since 1996, the US F&W and others converted 7,571 ft of alder to mixed conifer and released 6 miles of conifer from competition ($118,175) (1) ▪ Since 1991, the TCAA and SWCD fenced 53 miles of streambank, built 3 cattle bridges, and 100 alternative watering sites ($214,000) (2)
Enhance In-Stream Conditions	1) ODFW will work with land owners to install in-stream and off channel habitat structures 2) SWCD will install 90 stream barbs treating 18 miles of eroding streambanks ($900,000) 3) ODFW, watershed councils, and DEQ will place hatchery carcasses in streams to increase productivity ($5,000 per year)	▪ Since 1996, the ODF completed 24 in-stream restoration projects ($1,262,561 - $644,220 federal, $563,934 state, $54,407 private) (1) ▪ Since 1996, the SWCD constructed 34 barbs protecting 4,200 ft of streambank ($95,000) (2)
Improve Floodplain Conditions	1) Develop structural flood mitigation requirements 2) Reopen, unclog, and maintain sloughs and where necessary modify river segments ($2,250,000) 3) Projects based on COE Reconnaissance Study and FEMA's Project Impact	▪ COE (Reconnaissance Study) ($100,000) (1 & 2) ▪ FEMA (Project Impact) ($250,000) (3) ▪ Installation of cow pads ▪ Houses raised
Apply State of the Art Technology	GIS Development and Unified Watershed Assessments: 1) TCWRC should develop Tillamook County land use information system and GIS repository ($400,000 per year) 2) TCWRC maintain a real time and interactive tracking system	▪ Tillamook County Economic Development Council ($35,000) (1) ▪ Tillamook Bay Community College (faculty and staff) ($10,000) (1) ▪ TBNEP (hardware) ($42,500) (1) ▪ OWEB ($10,000) (1) ▪ TBNEP (software) ($250,000) (2)

Note: Costs in local actions category are estimates tat have been generated. Costs in leveraged sources indicate the commitments and expenditures and their timeframes.

Source: Trenholm, Mark, *Summary of the Tillamook County Performance Partnership* (Eugene, OR: University of Oregon, RARE Program, July 1998).

Table 9: Section 319 Funding for Tillamook County

Project	Amount
1998	
▪ Tillamook County Soil & Water Conservation District	$78,953
▪ Oregon State University	$10,000
▪ Oregon Department of Forestry	$30,000
TOTAL	$118,953
1999: Round 1	
▪ Tillamook County Soil & Water Conservation District	$119,100
▪ Tillamook County School District #9	$50,000
▪ Nestucca - Neskowin Watershed Council	$15,000
▪ Nehalem Watershed Council	$30,000
TOTAL	$214,100
1999: Round 2	
▪ Tillamook County Soil & Water Conservation District	$28,276
▪ Tillamook County Performance Partnership	$162,115
▪ Nestucca - Neskowin Watershed Council	$11,088
TOTAL	$201,479
TOTAL For 1998 and 1999	$534,532

1998 alone the ODF installed 20 boulder weirs, 11 off-channel alcoves, 8 jump pools, and 429 root wads that weigh between 1,000 and 9,500 lbs. were placed in headwater streams. At a minimum, the ODF expects to continue a similar level of effort in the future and hopes to leverage additional funding to step up these efforts.[124] The TCPP members have also had some success in leveraging funding from federal sources such as the EPA's Section 319 Nonpoint Source Management Program. For example, in 1998 and 1999 over $534,532 in Section 319 funds were awarded for projects in Tillamook County and the TCPP was recently awarded a Section 319 grant of $162,115 [Table 9]. The TBNEP and the TCPP have had some success in leveraging funding from state sources (e.g., OWEB). For example, the TBNEP received $43,000 from the OWEB to help fund the TBNEP's volunteer water quality program. These actions give cause for being optimistic about the TCPP's future success.

While these activities are notable and have likely led to improvements in the conditions of Tillamook Bay, it will take a sustained effort over many years to accomplish the goals and reach the targets noted in Table 5, 6, and 8 and implementation is expected to cost between $80 and $160 million over the next ten years. In support of these efforts, the EPA is expected to commit to four years of implementation funding of approximately $300,000 per year to support the TCPP's staff. In 1999, the EPA committed $340,000 that will go mostly to fund the operations of the TCPP staff. These resources will be supplemented with other federal and state funds as well as other county appropriations (e.g., the TCPP's GIS system). The Tillamook County Board of Commissioner's approved a 1999-2000 Fiscal Year (FY) budget for the

Performance Partnership of $1,576,500, the source of which lies outside the County's general fund (e.g., EPA's Section 320 and Section 319 funding) and therefore is not supported by local tax payers. This amounts to $226,941 in personal services, $1,317,400 in materials and services, and a contingency fund of $32,159.

Given the financial situation of Tillamook County, meeting the CCMP's goals and targets will certainly be challenging. Indeed, long term success is likely to depend on the TCPP's ability to leverage the necessary federal and state resources to sustain implementation efforts. It will also depend on the partners' abilities to sustain their commitment and maintain the slack organizational resources (e.g., funding, staff, technical expertise, etc.) necessary to continue their meaningful participation in the TCPP. However, the biggest challenge to implementing the CCMP may be the question of whether the focus of the TCPP will remain on implementing the CCMP and achieving its goals and targets. The TCPP's members implement a wide range of policies and plans and the program is broader in scope than the Tillamook Bay watershed. It also emphasizes its own goals, strategies, and performance measures, not the CCMP's. Accordingly, it is an open question as to whether the TCPP's activities will accomplish all of the CCMP's goals and targets.

Analysis

The analysis of this case study is divided into two sections. The first identifies those factors that appear to influence the success of a watershed management initiative, whether it is positively or negatively. In some cases, the Academy requested we explore the importance of certain factors (e.g., public and community involvement). In other cases, the factors emerged from our comparative analysis and review of the applicable literature. The second section examines the institutional performance of the TBNEP using criteria provided by the Academy.

Components of a Successful Watershed Management Program

Our comparative analysis suggested that the following factors had some influence on the development and implementation of watershed management programs: 1) a program's contextual situation; 2) public and community involvement; 3) use of science and other technical information; 4) well managed decision making process; 5) program administration; 6) collaboration; 7) EPA's programs and action forcing mechanisms; and, 8) performance-based management. The following sections discuss the importance of each factor. For a more detailed discussion of the definitions and concepts discussed in this analysis, please consult the main report entitled *Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance.*

Context Matters

One of the observations that emerged from our analysis is that contextual factors play a strong role in influencing the development and implementation of the TBNEP's CCMP. Two contextual factors seem to have a big influence on the development of the TBNEP. The first is the small, rural, and economically depressed nature of the community. This appears to have affected the development of the TBNEP in several ways. The rural character meant that several

of the stakeholders had personal relationships with one another beyond those resulting from their official duties. This appears to have helped in building consensus and resolving conflict. As one local official noted: "That is one of the beauties and one of the struggles about having an NEP in such a small community. You have to pay attention to the personal." At the same time, the close-knit nature of the community posed challenges for the TBNEP staff because they were perceived as "outsiders". Many local people were not "thrilled" that a bunch of outside scientists were coming and telling them what to do with their Bay. Thus, it was a major challenge for the TBNEP staff to gain the trust of the local community and have them value their opinions.

The rural nature of the program and the fact that dairy farmers were a key constituency group also complicated public involvement efforts. A dairy farmer's life style does not lend itself to going to advisory committee meetings during the day when federal, state, and local officials are working. Most work long hours seven days a week. As one person noted: "In an agricultural community such as this one, you can't expect people to drop everything and come to meetings. You don't start meetings around here until about 7:00 PM." The small population has also made it difficult to replace volunteers in such efforts as the TBNEP's volunteer water quality monitoring program once they burn themselves out. As one official familiar with these efforts observed: "Some folks [volunteers] have done an outstanding job, but you can't ask them to go on year after year." One person familiar with the efforts to use volunteers for restoration projects noted that: "At several projects, agency folks have shown up but no citizens and that's tough. They're [agency officials] willing to help. As long as there are people here." Since there is only a fixed pool of potential volunteers for the TBNEP to draw off, the program is increasingly reliant on working with the schools to provide a source of volunteers. Finally, the community has sizable low and fixed income populations and is used to relying on federal and state assistance to solve problems.[125] Thus, the local community was supportive of the federal government's intervention in trying to solve Tillamook Bay's problems.

The second big contextual factor was the institutional environment in which the program was embedded. The long history of collaborative efforts to address Tillamook Bay's problems appears to have paid dividends during the TBNEP's planning process. Despite the staffing problems, the TBNEP was able to put together a CCMP in a relatively quick timeframe that had broad public and community support. We believe that this was due, in part, to the fact that the previous planning efforts e.g., RCWP and Bay Sanitation Task Force) did a good job of identifying the problems, educating the community about what needed to be done, and building trust and interorganizational relationships. The TBNEP was able to build upon this social capital by developing definitive goals and targets and a collaborative institutional arrangement for overseeing implementation efforts. Moreover, the setting has a complicated set of regional plans working at different scales that are implemented by different agencies. However, the plans have similar goals and rely on the cooperation of other agencies and nongovernmental partners. The actors are also faced with the political implications of the endangered species listing. Accordingly, there are incentives for these organizations to embrace the TCPP concept and work together.

Public and Community Involvement

The NEP places great importance on public and community involvement. Programs are expected to use a complex advisory committee structure, provide opportunities for public involvement, and to develop effective public education programs. The underlying assumption is that these activities will improve the program's effectiveness. Our analysis of this case study suggests that public and community involvement played an important role in the development and implementation of the TBNEP's CCMP.

Local government participation at the county level is clearly an important element of the program. The other seven local governments, with the exception of Garibaldi, were less involved and, in many respects, their involvement was less critical. Many of these governments lack capacity in the area of planning and environmental protection. For example, several local governments contract with the county for planning services. Accordingly, the county government is the main local actor and the TCPP has largely developed as a county-level problem solving entity. The program also benefited from the active involvement of other stakeholder groups. State officials have been very supportive. The ODF, which manages the vast majority of the land in the watershed, was not only actively involved but also provided leadership and support. It is doubtful that the effort could have made it this far without this level of support. The TBNEP was also fortunate to have the active involvement of the TCCA and the shellfishing industry. More importantly they had the "right" people from these associations involved. For example, the TCCA representative was well respected both inside and outside of the association. This involvement and support helped legitimize the TBNEP's efforts. This biggest disappointment in terms of stakeholder involvement would be the DEQ's lack of engagement during the early years of the planning process when the Headquarters office failed to see how they could benefit from the TBNEP's efforts. As a result, opportunities were lost. However, the DEQ's involvement increased dramatically in the latter years of the planning process as responsibility shifted to the regional and Tillamook branch offices.

It is less clear how important public involvement and outreach efforts have been in terms of building support for the TBNEP or its CCMP. Some respondents noted such things as "there has been a significant education of the community by the resources the NEP has brought to bear." Others noted that the TBNEP experienced some difficulty in building a large and active CAC. Many of these problems can be attributed to the rural nature of the community and the fact that there are many two-income families. Even many of the retirees in the community have taken jobs to supplement their income. Others suggested it might have been due to the fact that many community members viewed the TBNEP staff as outsiders. This was particularly true during the early years of the program when staff were mostly scientists from outside the community. While the TBNEP ran a standard outreach and education effort, several respondents suggested that this may have been inappropriate. Previous planning efforts had done a good job of telling folks what the causes of the problems were. Many of the techniques also did not seem to fit the rural nature of the community and some respondents suggested that more one-on-one education with landowners may have been more appropriate. It is also possible that the previous efforts had already created a constituency in support of the TBNEP so the relative importance of public involvement and education efforts was greatly reduced. Instead, the CAC became a small core group of individuals who provided assistance to the TBNEP staff. The CAC was also

instrumental in organizing the series of meetings used to develop citizen actions for the CCMP and in helping to prioritize these actions. While these efforts certainly helped TBNEP staff, they do not appear to be critical to the program's success or support.

Use of Science and Other Technical Information

One of the major features of the NEP is that programs are given substantial resources during the planning process to do the scientific research necessary to develop, modify, and refine management strategies. The TBNEP spent a disproportionate amount of its funding on planning as compared to implementation. The EPA also encourages estuary programs to maintain an active research agenda during the implementation phase, although they are expected to leverage this research money from other sources.

One of our observations was the importance of "nesting" science within decision-making processes. As one respondent observed, the "value of the NEP is that it brought some better current science to some of these issues that we've been arguing about. Science doesn't make them go away, but it informs and influences our decisions." While the TBNEP certainly sponsored some valuable research, the program appears to have had some problems keeping the research targeted at the information needs of decisionmakers. As a result, several respondents expressed disappointment at the fact that the program failed to fill important gaps in understanding and often failed to provide the "type" of information that decisionmakers needed. The respondents suggested a number of explanations for why this appears to be the case:

- TBNEP staff's research interests drove the selection of projects more than the needs of decisionmakers
- TBNEP staff treated the program as more of a research project than a planning effort
- Lack of a systematic research agenda for the program
- Bias towards cutting edge projects instead of projects that inform decisionmakers
- Turnover in the TBNEP director and staff
- Lack of effective oversight and participation by the Policy and Management Committee members in the decisions regarding research projects (i.e., too much reliance on the STAC and TBNEP staff)
- Lack of involvement by DEQ staff during the early years of the program
- Distance of Tillamook from Salem, Corvallis, and Portland limited participation by STAC members
- Too much influence by consultants in the selection of projects and not enough input from agency officials

There may also have been a mistaken belief that "science" would tell the TBNEP participants what to do. However, as one staff member noted: "I knew I became a manager the first time I made a decision based on no data." The example that the respondents continually used to illustrate these problems was the difficulty the TBNEP had in developing a "state of the art" computer model that would be useful to any of the watershed's decisionmakers. It also appears that as the TBNEP enters the implementation phase, it still lacks a systematic research agenda to use in focusing its development of external grant proposals.

The one area where the program appears to have been particularly effective in filling the information needs of local decisionmakers was in the development of a GIS system that now provides the foundation of the Tillamook Coastal Watershed Resource Center (TCWRC) and its training and education programs. The TCWRC is also expected to play an important role in monitoring and tracking the progress of the TCPP and the CCMP's implementation.

Well Managed Decision-Making Process

Another observation was the importance of a well-managed decision-making process. Our analysis suggests that it is important to: pay attention to the committee structure and the roles of these committees; have clear rules to govern decision making; have a focal problem or issue to structure the planning effort around; and have a clear vision of what the "plan" will become in the implementation phase. The case also illustrates the importance of leadership and having someone play the role of a champion (i.e., fixer or broker). The case also illustrates that a professional facilitator is not needed to resolve and manage conflict.

Overall, the TBNEP appears to have done a good job managing its decision-making process. As one respondent observed: "It's created a dialog. It's created a process. It's created a table for people to come together around and that's extremely valuable for a community. Although the respondents were generally satisfied with the decision-making process, the TBNEP did experience some problems. While the TBNEP had a well-defined committee structure with differentiated roles and responsibilities, there appear to have been some problems in terms of managing the interactions between the committees. Staffing problems also festered during the early years of the planning process because of the lack of oversight by the Policy Committee.

In terms of decision-making rules, the TBNEP relied on consensus. Although there was no working definition of what constituted "consensus", the program appears to have been very effective in managing conflict as the CCMP was overwhelming supported by the committee members. The fact that the issues were well defined from previous efforts helped keep the decision-making process focused. The fact that many of the committee members had experience working together from these earlier efforts also appears to have helped them reach consensus and manage conflict throughout the planning process. Moreover, the fact that the plan was always considered to be voluntary and nonbinding made it easy for the group to reach consensus. Most of the changes made from the draft to CCMP amounted to making wording changes like "shall" to "should" which didn't matter to the stakeholders, which were concerned less about the language and more about the substance of the recommendation.

While the program was effective in reaching consensus, it is important to acknowledge that the decision-making process was lengthy and time consuming. The TBNEP's staffing problems exacerbated this. The TBNEP also chose to rely on its own committee members to run meetings and manage discussions. The TBNEP did not rely on a mediator or professional facilitator to help develop the CCMP. The respondents had mixed feelings on whether a facilitator would have helped to speed up the process. Some thought that bringing in an "outsider" would not have helped and might even have slowed down the process because it was important to have a local person manage the decision-making process. Others thought a facilitator might have managed the discussions more effectively and helped decrease the time it

took to develop the CCMP. However, few respondents suggested that a facilitator was needed to manage conflict.

Leadership also appears to have played an important role. There appears to have been leadership at all levels. There was active involvement from the elected county commissioners and their department heads as well as from several state agency officials. The program also benefited from the leadership of a well-respected member of the TCCA who chaired the Management Committee throughout the development of the CCMP and was instrumental in reminding the other members that a good plan is a done plan. Finally, two committee members proved to be "champions" for the idea of using a Performance Partnership to implement the CCMP. Leadership proved to be instrumental in moving the TCPP from an idea to reality.

Given the recent creation of the TCPP, it is less clear whether it will be able to develop and effective and well-managed decision-making process. However, our analysis of its structure and operation to date raises some questions, many of which may only be answered by the evolution of the TCPP. Our first concern surrounds the staff of the TCPP and to whom they are accountable. The staff is supposed to work for the TCPP, yet they are also county employees. As stated in the TCPP's bylaws: "Direction to the Partnership Director, other Partnership staff and performance reviews shall be provided by the Executive Board via the employing agency. Disciplinary action or dismissal shall not occur without agreement by the majority of the Executive Board and the employing agency."[126] Thus, it appears that the TCPP staff has two masters, the Executive Board and the hiring agency (i.e., the county). This is a similar situation to the one that led to personnel problems during the planning process. It also raises questions about what would happen if the Executive Board and the county's interests diverged. This question of accountability is important from an organizational standpoint because it will help determine whether the TCPP ultimately becomes an advisory structure to the county or whether it develops into a collaborative organization.

Our second concern is the access rules of the TCPP and the large and unwieldy size of the Performance Partnership. There are minimal access rules for who is allowed on the Performance Partnership. In theory, anyone can join provided that the Performance Partnership approves the application. It is less clear how people can be removed from the Performance Partnership other than failing to attend three consecutive meetings. The size and composition of the Performance Partnership suggest several potential problems. The inclusive nature of the structure and its large membership will make it more difficult for it to function effectively as a group decision-making body. With a target membership of around 60 individuals that means that in a four hour meeting each individual would only have about 4 minutes to contribute to the discussion if all were to participate equally. Since the discussions are likely to be dominated by a few individuals, others who are left out are likely to become frustrated with the process. Thus, most of the actual work of the Performance Partnership has to be accomplished through separate task forces and subcommittees created to address specific issues. Another concern stems from the Performance Partnership being composed of a collection of unequals, meaning that there are clear differences in status among the group members. It includes bosses (e.g., county commissioners) and subordinates (e.g., department heads). It also includes state agency officials and their federal counterparts. It includes members of competing interest groups as well as private citizens. Our concern is that it might stifle open discussion. A subordinate might be

unwilling to contradict their boss. Government officials might also be unwilling to discuss matters with certain members of the public in the room.

While the group dynamics appear to be healthy at this time, this may be due to the particular mix of individuals and personalities and the social capital (i.e., trust and relationships) that developed during the TBNEP's planning process. However, as participants enter and exit the process things could change. Moreover, many of these problems would be subtle and might not be noticed easily. The danger is that these conditions increase the potential for common group decision-making problems such as groupthink to occur. It also could create conflict if the Performance Partnership has decision-making authority and some members of the group feel that some of the members lack the legitimacy to be involved in making decisions.

A related concern involves the decision-making rules that govern the structure and operations of the TCPP. While the TCPP's Bylaws describe some different roles of the Executive Board and the Performance Partnership, there appears to be an overlap in function. It is also unclear whether the Performance Partnership is a decision-making body in its own right or whether it primarily advises the Executive Board. These relationships, roles, and responsibilities will need to be formalized.

Another concern are the decision-making rules used by the Executive Board and the Performance Partnership which include:

- The Executive Board makes decisions by majority vote
- The Performance Partnership makes decisions based on "consensus"
- A super majority (2/3) of both the Executive Board and the Performance Partnership is needed to amend the bylaws

Our concern is with the requirement for the Performance Partnership to make decisions by consensus, yet it is left undefined. There are several reasons why this is of concern. The Performance Partnership is very large, which will complicate reaching consensus. It also has members that have not worked together before. It is likely to take some time for this group to build the social relationships that are involved in managing an effective consensus-based process. The Performance Partnership also has more diverse interests than the TBNEP's Management Conference, which could make it difficult for the group to reach consensus. Finally, if conflict emerges and consensus cannot be reached, it is unclear how the Performance Partnership will function. One possibility is that the Executive Board will make decisions and the Performance Partnership will largely function as an advisory committee. While this might resolve the problem, it is also inconsistent with the rules as they are currently specified. While continued operation of the TCPP is likely to refine these rules, their lack of structure is cause for concern. While the TCPP has not experienced any of these problems yet and is functioning better today than when it was first created, it also has not faced any serious challenges or conflicts an is largely in its "honeymoon period".

Finally, the TCPP's membership is much broader than that involved in developing the CCMP. While the CCMP's goals and strategies should help provide some initial focus, the actors are still bound by the larger set of goals, targets, and priorities contained in their respective

programs. The TCPP is also a political entity at this point in time. On the one hand this may prove to be useful. Linking environmental and economic interests (e.g., flood control) certainly help build public support for expenditures in a tight fiscal climate. The program also benefits from having active county commissioners who are not shy about lobbying federal and state officials for money to address local problems. The potential danger is that politics and the issues of the day will capture the TCPP. This might make it difficult to implement the long-term sustained activities that are necessary to address some of Tillamook Bay's specific problems. As one respondent noted:

> "I think the potential danger is that in any big group like the NEP you've got all these people who are supposed to be working together. They want to communicate. They want to spend money effectively. But each one of those people has a whole other job and whole other set of requirements. And the minute the legislature changes their mind about something, this may not be the focus either."

Moreover, since the scope and jurisdiction of the TCPP is now much larger than Tillamook Bay, it is possible that other problems and issues will capture the agenda of local politicians and emphasis could conceivably shift away from Tillamook Bay to other areas within the county. While this may no doubt prove effective in dealing with these local problems, this activity will not be solving the problems that are of concern to the EPA. Accordingly, the design of the TCPP raises questions about the changing nature of federalism and whose interests and priorities should drive the implementation process.

Our analysis suggests that given the TCPP design as a collaborative organization, a well managed decision making process will be crucial to its long-term success and viability. It appears to us that it is particularly important that the TCPP takes the next step and institutionalizes informal norms and rules. The TCPP is still relatively informal and is reliant on individuals and personal relationships. We believe that its long-term success and survival would be enhanced if it were to become more formal and dependent on institutional relationships. A possible first step would be to give the TCPP some form of legal existence and to adopt more detailed bylaws that define its mission and objectives while addressing some of the questions noted above.

Program Administration

We also concluded that there is no substitute for well-managed program and building an effective organization. Factors such as having an effective program director, staffing (e.g., recruitment, hiring, retention, training) and personnel management (e.g., personnel evaluations, grievance procedures), budgeting, grants management, and contracting procedures had an important affect on the TBNEP's efforts to develop and implement the CCMP. Our cases also illustrate the important role that financial resources can play in the development and implementation of a CCMP. Moreover, our analysis suggests that the stability and flexibility of resources is at least as important as having adequate funding because it allows implementation to move beyond implementing discrete or loosely-connected projects to systematically address specific problems.

Staffing and managerial problems plagued the TBNEP, particularly during the early years of the planning process. Many of these problems stemmed from hiring a director who had scientific qualifications but lacked the management skills necessary to effectively manage the staff and budgets. The director appears to have been incapable of building the "team-oriented" environment necessary for this type of planning effort and morale among the staff was reported to be very low. Many respondents also described the first director as being in over their head and being unable to manage all of the program's grants effectively. One respondent described the situation this way:

> "You throw someone like that [lacking management experience] into a really complicated management system . . . and then they hired Ph.D. ivory tower research scientists. They were highly talented individuals but they never gelled into a team at all. Overlay that with a highly complex budget scheme. The NEP and county budgets were totally different. They were impossible to mesh. . . . The director was also not experienced at dealing with consultants. They ate this project alive."

The TBNEP also had sloppy record keeping. During the early years of the program there was basically no accounting system and had trouble balancing its books during the early years of the planning process, although no funding was lost or misappropriated. In fact, several respondents described the program's accounting system during this period as consisting of post-it notes stuck to a computer monitor. The sloppy record keeping resulted in other problems as well. For example, the current TBNEP staff is still trying to ascertain what the various GIS coverages actually consist of.

These problems were further exacerbated by the "unwieldy" hiring process and the lack of effective oversight by the Policy Committee and EPA. As one respondent close to the problems observed: "It seems like everybody thought somebody else was providing oversight so in the end, it wasn't done." In addition, the uncertainty of the TBNEP's funding increased staff turnover. As one respondent noted: "The money is soft and people bail as soon as they find a permanent job. It's just a personal reality. Working year to year is hard. If they had secure funding, they would have some of the original team members. . . . It leads to a lot of wasted time and money when this turnover happens."

The staffing and management problems also prolonged the length of the planning process. It also led to exceptionally poor morale among the staff, which spilled over to the committee members. The problems also caused a great deal of frustration among committee members who knew that their time was being wasted as a result of these problems. It should not come as a surprise to learn that many respondents highlighted the importance of having a director with good management skills. As one respondent noted: "If I were to make one recommendation, it would be to ensure that the director has experience with managing an office, not a good scientific background. No one ever hires a director." Many of these problems have been reduced now that the staff are county employees.

Given the financial situation of Tillamook County, the resources provided by the EPA have been critical to the program's success. The county is heavily reliant on federal and state financial assistance to address many of its pervasive problems. Accordingly, even EPA's

nominal implementation funding is important because it allows the county to hire on staff for the TCPP. The TCPP is also reliant on other federal funding such as EPA's Section 319 NPS grants, although there is frustration on the part of local officials with how the program is administered (e.g., high administrative costs and the DEQ's expanded use of the 319 funds for its own purposes). Many TCPP members expressed these frustrations at a recent meeting and questioned why having a completed CCMP has no influence on EPA or DEQ's decision-making processes with respect to the allocation of Section 319 grants. Another area of concern for local officials is the matching requirements for many federal grants, which are particularly difficult for a county in Tillamook's financial situation to satisfy. Other respondents were critical of the overall structure of the NEP, which provides a disproportionate amount of funding for an estuary program's planning activities when compared with their implementation activities.

The TBNEP also benefited from the stability in the resources available to the ODF for the implementation of BMPs and restoration activities. This allows the ODF to plan and prioritize activities more effectively. In fact, several respondents suggested that the stability of funding is more important than the aggregate amount because it allows them to prioritize and allocate funding better. For many respondents, this is another problem with the EPA's Section 319 program. It is based on one-year projects with priorities, grant restrictions, and cost-share requirements that encourage some activities and discourage others. At the same time, EPA and DEQ priorities shift from year to year in what several respondents referred to as a "flavor of the month" mentality. There is also the political reality that the EPA and the DEQ want to spread the money around the state. This makes it difficult for a grant applicant such as Tillamook County to plan in advance or have a sustained effort in a particular watershed or subwatershed.

Many respondents were critical of this approach to funding BMPs and restoration efforts because as one respondent noted, it results in "random acts of environmental kindness". In other words, the individual projects may be notable and result in environmental improvements but are too limited in scale, scope, number, magnitude, or duration to significantly change the underlying problems. Many respondents suggested that the RCWP was designed much more effectively. It had lower administrative costs associated with managing the grants and it provided a stable and predictable source of implementation funding that allowed the participants to systematically address a specific problem [Figure 4]. These observations are consistent with those of the federal evaluation of the Tillamook Bay RCWP.[127] A comparison of the implementation activities on state forestland with other areas in the watershed also illustrates the importance of having a flexible and stable source of implementation funds. The ODF has the capability of systematically addressing specific problems given the revenue generated from timber harvests. Conversely, Tillamook County's financial problems caused by a series of devastating flooding events makes it difficult for them to move beyond a project-based approach that is heavily reliant on leveraging funding from other agencies.

Collaboration and Building Effective Partnerships

This case study also illustrates that watershed management is really an attempt at intergovernmental management (IGM). In other words, its value hinges on its ability to develop, manage, and sustain collaborative relationships that add public value. This is clearly a challenge because the jurisdictional boundaries of state and local governments rarely coincide with

watershed boundaries. However, the potential rewards are great. As one respondent noted: "People can achieve things that were just unimaginable when they first got together. Once they understand what their opportunities are, they create opportunities that were previously unbeknownst to them."

While the TBNEP was itself a collaborative planning effort, the program's real value might be the other forms of collaboration that were the by-product of the planning process. One way value was added was by creating new collaborative partnerships such as the Tillamook Coastal Watershed Resource Center (TCWRC) and the TCPP. These two examples illustrate that watershed management is more than just planning or creating a new program. Rather, it appears to be about improving agency decision making and finding ways for existing programs to work together more effectively. As one respondent noted: "it [the TBNEP] has created awareness and brought groups together that otherwise wouldn't have worked together." This adds public value to existing institutions.

Collaborative partnerships such as the TCWRC and the TCPP also create institutional infrastructure that future programs can build on in the future. For example, the OWEB can use the TCWRC to train watershed council members in other watersheds while the TCPP is now a mechanism for discussing and addressing other problems throughout Tillamook County. Increased collaboration can also improve the capacity for solving problems. In terms of project level collaboration, the TCPP serves as a forum for bringing together various organizations that might be involved in a project and coordinating these activities. For example, one partner may own the land, others may provide funding, others provide technical or design expertise, and another might contribute some of the labor or volunteers associated with installing or maintaining a BMP. To further assist in project level collaboration and expedite restoration efforts the ODF had developed a partnership with ODFW. The ODF has hired an ODFW fish biologist and a wildlife specialist to work entirely on habitat restoration in the Tillamook State Forest. This allowed the ODF to step up its restoration activities and improved communication between the two agencies. In the ODFW, a private timber company pays for a staff member to work in private forests designing and implementing similar projects. Collaboration at the project level adds public value in many ways. It allows more projects to be completed than otherwise might get done. It may also allow projects to get finished at less cost to tax payers, especially when existing agency resources are leveraged or volunteers are employed.

The TCPP is also designed to improve interagency communication and coordination so that the partners better leverage existing resources. For example, at one of the first meetings of the TCPP, one of the members reported on a $500,000 grant available through the U.S. Forest Service but the deadline for the application was in two weeks. Several members of the TCPP then arranged to get together to determine if they might be eligible for the grant and if they were, would work together to develop the necessary grant proposal. This project level collaboration and development of cooperative grant proposals are two of the principle forms of collaborative activity that the TCPP is designed to encourage.

These collaborative activities add value in other ways as well. First, the TBNEP and TCPP appear to be effective in leveraging funding sources. Tables 8 and 9 illustrate some of the various federal and state funding sources that the TBNEP's partners have been able to leverage

to address Tillamook Bay's problems. Moreover, Tillamook County and the TCPP partners have an impressive record of getting federal funding through programs such as the RCWP, EPA's NEP, and FEMA's Project Impact. The TCPP may also help Tillamook County attract additional federal funding by allowing the participants to leverage each other's different policy networks. Second, the partners developed some shared goals and targets under the TCPP [Table 8] to prioritize and coordinate restoration efforts pursuant to various plans [Table 7]. Presumably, this will result in a more effective use of existing agency resources and better integrate existing programs. Finally, the trust and cooperation that developed through these activities is social capital that can be leveraged in future collaborative problem solving or planning efforts much the same way the TBNEP leveraged the social capital developed by prior efforts such as the RCWP ad the Bay Sanitation Task Force.

These various collaborative activities suggest that watershed management may be more about governance than it is about planning. As one Policy Committee member put it: "So much of what this work comes down to is less technical, less scientific than we make it out to be. It's more practical, political, and social and it's local." While the planning efforts help establish joint priorities, improving the management of a watershed requires changing decision making and finding ways for existing programs to work together more effectively.

Our analysis suggests several factors that influenced the ability of partners to work together effectively. The first is having a previous history of collaboration. The TBNEP and the TCPP have been able to leverage and build on the social capital that developed in previous planning efforts. This appears to have been further enhanced by the rural nature of the community and the high cultural value placed on social relationships in the community.

The second factor is the influence that staff and management capacity plays in a collaborative effort. The analysis has already noted how staffing and management problems can influence a collaborative effort. A related problem is having the slack resources (e.g., staff) necessary to participate in the collaborative activities. As one respondent observed:

> "I see that meeting the goals is all dependent on budgets. If you don't have the people, how are you going to meet the goals. These are ambitious and lofty goals, but I can't guarantee that I can always be here in this office to help. If people decide to consolidate my office into another area, that will have a big impact on many resources we can commit in this area since they'll be competing with a larger area and all it's problems."

This appears to be an important problem that is growing as a result of the growth in collaborative efforts throughout the state (e.g., OPSW, 85 watershed management councils, SB 1010) [See Appendix A]. Many respondents suggested that the staff in the federal and state agencies are stretched too thin to work effectively with all of Oregon's watershed efforts. Moreover, many respondents noted that local capacity is often lacking. As one state official put it: "Capacity building is a central necessity. Unless we raise local capacities these expectations will be dashed because of lack of technical capacity." This is one of the reasons why the EPA's grant to fund the TCPP staff is so important. It allows a small core staff that otherwise would not exist to work on collaborative projects throughout the watershed and to provide technical assistance to other programs outside of the watershed.

The third factor appears to be having the right people represent stakeholders in the process. In terms of government actors, this means having directors and other key staff who are "opinion leaders" within the organization. In terms of nongovernmental organizations such as the TCCA, it appears to be important that a well-respected member of the association who is also and opinion leader represented the group. This improved the likelihood that the TCCA's membership would support the commitments made by their representative and support the CCMP. It also helped legitimize the collaborative effort. Finally, it appears to helps when the actors have incentives to participate in the effort. In Tillamook County, there are interrelated incentives. The first is the wide range of plans that all require collaboration to achieve their goals [Table 7]. The second is the listing of the coastal coho, the OPSW, and the Governor's directive to report monthly on activities to protect the salmon. Thus, there is an incentive for all of the parties to demonstrate that progress is being made.

EPA's Role in Watershed Management

Another observation was that the role of EPA and DEQ (i.e., its state counter part) and their various water quality and nonpoint source management programs (e.g. NEP, Section 319) and action forcing mechanisms (e.g., TMDLs) varied within the case. In some cases, the EPA and DEQ programs had little role. The DEQ's headquarters office became disengaged from the TBNEP early in the process and remains relatively uninvolved. For example, officials in DEQ's headquarters office were unable to identify any change in agency decision making that would occur as a result of the CCMP's adoption. This lack of involvement caused a number of problems and led to the TBNEP paying for scientific research that would not aid in DEQ decision making. Accordingly, an important role for DEQ officials (or any state-EPA) is to ensure that the research funded by the EPA helps to fill the needs of state decisionmakers. As one DEQ official put it: "State agencies really need to be involved with things like this so the NEP doesn't get taken to the bank [by consultants] with things they don't need."

The two DEQ programs with the most involvement are the Section 319 NPS Management Program and the efforts to develop TMDLs, although in both cases involvement was mixed. The Section 319 program serves as an important source of implementation funding. However, many respondents were disappointed with the fact that the development of the CCMP has not influenced DEQ's decision making with respect to grant awards. There is a similar mixed relationship with the DEQ's efforts to develop TMDLs. Even though the DEQ is required to develop TMDLs in the Tillamook Bay watershed, there was no attempt to coordinate the two efforts during the planning process. As a result, the computer models developed by the TBNEP were not reported to be of much assistance in terms of developing TMDLs in the watershed. However, the DEQ does plan on using water quality data collected during the planning effort as it begins to develop the TMDLs for the watershed. The CCMP's goals are also consistent with the TMDLs that will be developed. However, there was little reported interaction between the TBNEP and the DEQ's recent efforts to develop the draft temperature TMDLs for Tillamook Bay in April 1999.

The program that played the most constructive role was obviously the NEP. This program played several constructive roles. First, the funding provided the TBNEP partners with

an opportunity to fill gaps in technical knowledge and refine the technical basis for decision-making processes. It also provided the TBNEP participants with the funding necessary to manage these collaborative activities. This is particularly important given the high transaction costs associated with managing collaborative process and the lack of slack organizational resources on the part of many of the TCPP's partners. Second, most respondents noted that the key to their success has been the flexibility and resources that EPA provided to the TBNEP. Finally, the EPA designation and presence appears to have been important to local officials if only in symbolic terms. Several respondents noted that their hope is that the designation as a "National Estuary Program" would bring federal attention to their local problems and would help them to attract additional federal and state dollars for addressing the Bay's problems. Others suggested that the EPA's participation helped to put a good face on the agency and was good public relations.

While the EPA provided some valuable guidance and technical assistance to TBNEP project staff, greater assistance could have been given in several areas. In retrospect, it is clear that the TBNEP could have used assistance and support in the area of personnel and grants management during the early years of the planning process. The EPA should also have been more active in addressing the staffing problems created by the hiring delays created by using OSU as the hiring entity. One EPA official downplayed the problem by suggesting that: "None of the NEPs are simple. It [TBNEP] created complaints about the hiring process, but all NEPs generate this type of complaint." We believe that comments such as these illustrate the necessity for the EPA to be more proactive in addressing these important programmatic issues. Unfortunately, the EPA policy is also not to interject itself in the day-to-day operations of an estuary program. We find this curious because the EPA often takes an active role in other areas such as dictating what constitutes an "acceptable" CCMP.[128] While we certainly would not recommend that the EPA begin to micro-manage estuary programs, there are ways that the EPA could provide some additional assistance to try and minimize these problems. The EPA could do a better job in trying to identify these problems earlier in the process and could also make management consultants available to work with estuary program participants to address these managerial problems much the same way it runs workshops to improve the management of group-decision-making processes.

Performance-Based Management

The TBNEP and the TCPP have both embraced performance-based management. Table 5 illustrates the goals and targets contained in the CCMP while Table 8 illustrates the targets for the TCPP's five strategies. In both cases, the targets are quantifiable and measurable. The TBNEP and TCPP have also tried to coordinate their goals with the Oregon Benchmarks [Table 6]. The development of the goals and targets appears to be a critical element in focusing the collaborative effort and developing social norms for the type of behavior that is required by members of the collaborative organization (e.g., TCPP). The development of a regular forum to discuss progress towards the targets such as the Executive Board and the Performance Partnership also appear to be important. Aside from the value added as a result of this communication and collaboration, these interactions appear to be important in terms of developing an effective peer pressure mechanism that can monitor other actors contributions and encourage the partners to fulfill their commitments. Finally, several respondents suggested that

the development of a monitoring and tracking system will be important. As one respondent explained: "We need to keep measuring our progress as we go and make sure we're meeting our targets over the timeframe we've set. We need to make sure we have measurable outcomes. We tend to spend time on things that are urgent but not important and not enough on things that are important but not urgent. That is why we need to have discipline and plans." Monitoring progress towards the performance measures may therefore provide focus to the TCPP's activities. The monitoring system is also important because it should reinforce the peer pressure developed through social interactions, improve accountability, and encourage policy-oriented learning.

Institutional Performance

When examining the performance of an institutional arrangement, it is important to use several criteria to understand its strengths and limitations. It is also important to recognize that there may be a disconnect between the performance of an institutional arrangement and its ability to achieve environmental outcomes.[129] For example, you could have a well functioning institutional arrangement but the underlying policy is flawed and unable to achieve the desired outcomes. The nature of watershed management also makes it difficult to determine causality. Numerous federal, state, regional, and local programs have an impact on the outcomes of interest (i.e., changes in water quality and habitat). It is difficult to disaggregate the effects of each program let alone determine which marginal changes in these programs were due exclusively to a watershed management program. Moreover, given the collaborative efforts employed, it is important to assess performance form the perspective of different actors since measures of success might change as you move from actor to actor.

Our analysis relies primarily on criteria provided by the Academy which were then supplemented with additional criteria derived from the literature. These criteria included: 1) risk reduction; 2) potential for short- and long-term gain; 3) cost-effectiveness; 4) predictability of the process; 5) certainty of effect; 6) accountability; 7) equity; 8) adaptability; and, 9) capacity building. For a more detailed discussion of the definitions, concepts, criteria, and the application of these criteria, please consult the main report entitled *Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance*.

Risk Reduction

This criterion is concerned with the question of whether the TBNEP demonstrated an ability to achieve the desired environmental outcomes. We are primarily concerned with the program's ability to achieve its water quality and habitat restoration goals. There is little data linking changes in environmental outcomes to implementation outcomes such as those resulting from the RCWP [Figure 4] at this point in time. Two factors complicate the use of environmental outcome data to examine the effectiveness of implementation efforts. In the water quality area, bacteria levels are largely a function of rainfall patterns and tend to vary greatly. Therefore, it can be difficult to identify trends without long-term data and it is hard to separate out the changes due to varying rainfall patterns. The problem is more complicated in terms of salmon habitat restoration. Salmon have a four- to five-year life cycle. Thus, the impact of restoration efforts on the salmon is unlikely to be observed until a particular year class returns.

Moreover, given the wide range of natural and anthropogenic influences on salmon populations, it may take several breeding cycles to observe trends. Other restoration activities have similar time lags. For example, if a fir tree is planted along a streambank, it may take decades to produce the shading necessary to observe reductions in stream temperatures. Accordingly, it may take a decade or more to observe the environmental affects of restoration activities. Given these time lags, it would be hard to identify specific cause and effect relationships. Given these problems, and the lack of good data on changes in environmental outcomes, we rely mostly on examining the intermediate-level changes that are expected to result in improved water quality or habitat such as the installation of BMPs and changes in agency decision making.

There is also a limited base of implementation experience because the EPA only approved the TBNEP CCMP in December 1999. However, the TCPP partners have achieved some notable improvements in water quality through past efforts such as the RCWP [Figure 4][130] and the reforestation of the Tillamook State Forest after the Tillamook Burn.[131] For example, as one respondent noted; "We've come a long way. In 1977 there were only two manure stacks under roofing in the basin. Now you won't find any that aren't." The partners have also made some notable progress towards the five strategies adopted by the TCPP [Table 8].[132] Thus, despite the lack of an approved CCMP, the TBNEP partners appear to have already made some notable progress towards the CCMP and TCPP goals during the planning process.

Potential for Short- and Long-Term Gains

It appears that there is a reasonably high probability that the TCPP partners will at least continue their current level of effort represented in Table 8 over the short term (i.e., 3 – 5 years). The ODF has a fairly stable revenue stream from timber sales to fund many of the activities called for in the TCPP's five priority strategies. There are also state-level funding sources for the installation of the BMPs through the OPSW and OWEB. Tillamook County and the actors also have a good track record of leveraging funding [Table 8]. Since the size of the cow and human population is not increasing, a sustained effort of installing BMPs and fixing existing problems such as the roads built to salvage timber from the Tillamook Burn offers some promise of improved environmental outcomes.

It is much less certain what will happen over the long-term (i.e., 5 – 20 years). This uncertainty is the product of many factors. Several respondents suggested that the TCPP may never be able to achieve its goals for bacteria noting that even if you removed all of the people and all of the cows, the heavy rainfall levels combined with the population of birds and other indigenous "critters" were still likely to produce bacteria levels in excess of the FDA standards. Other changes in the population dynamics of cows and humans would also affect the achievement of these goals. The cattle population has remained relatively stable in recent years. If the dairy industry went through another growth period that could impede progress in lowering bacterial counts. Tillamook County's population is also relatively stable and has not had the substantial increase that other coastal areas such as Newport experienced. A substantial change in population demographics could impede progress because the TBNEP has little focus on residential and commercial development issues. As one respondent noted: "The real question is how are we going to link management of the estuary with management of the uplands. We don't have a system to do that." This is a general problem statewide in that even though Oregon has

estuary plans and comprehensive land use plans, they are not required to fit together. Another potential problem would be if environmental groups were successful in limiting harvests from the Tillamook State Forest. This would impede the ODF's ability to practice structure-based management, hurt Tillamook County financially, and cause a significant reduction in funding for BMPs and other restoration efforts on state forest lands.

Perhaps the biggest source of uncertainty is the TCPP itself. It is a new collaborative entity that will continue to evolve and mature. Until it does, it will face the same problems that plague all organizations during its formative years. While it is a promising approach and initial efforts are encouraging, the TCPP still has to survive the test of time and prove that it can maintain a sustained commitment over a long period of time. As one respondent noted: "You have to keep focus, because you can get so wrapped up in the bureaucracy of keeping the staff employed, keeping the GIS stuff up to date, that you begin to lose the real intent. The real intent of the TCPP is to help agencies, land owners, interest groups implement the CCMP and other goals." One of the real dangers is that the TCPP becomes captured by changing political issues and is unable to sustain the necessary commitment to these long-range strategies. One respondent characterized the danger of overwhelming the TCPP staff this way: "What we have to be careful with is it takes twenty seconds to give someone else twenty hours of work." It is also possible that the political pressure to address salmon issues at the federal and state level and flooding at the local level will cause other important problems the CCMP addresses to ignored.

Aside from maintaining its focus, the TCPP will also have to demonstrate it has the ability to garner the resources necessary to survive. As one state official put it: "What it will all depend on is people's budgets. If they don't have the money, all bets are off." It will also be important to manage the expectations of the members of the TCPP and help them to understand that change will not happen over night and reaching these goals will take years of sustained effort. The problems were created through decades of cumulative impacts that will only be reversed through a long series of cumulative benefits. One state official made the following analogy: "It's like a visa bill of $10,000 and a 19 percent interest rate. It takes a long time to pay off. If we continue on for twenty years, we'll see results . . . but twenty years is a lifetime for us." Another local official noted that "[t]here's going to be a fair amount of primitivism as far as coming up with projects that are not grandiose but which can make a difference on the ground. I've really gotten an education through this process. We're going to have to be content with some projects which seem to be relatively small in the cosmos, but which are tangible and make a difference." Accordingly, while the TCPP appears to offer some promise as a collaborative organization, it still has to prove that it has staying power. At this point, it relies heavily on personal commitments and relationships that have yet to become fully institutionalized in formal rules and decision-making processes.

Cost-Effectiveness

Efficiency is an important principle of public administration. We are concerned with the TBNEP's cost-effectiveness, that is it's administrative costs compared to the benefits generated. What complicates the analysis is the wide range of intangible costs and benefits associated with these programs as well as the transaction costs involved with developing and implementing the program.

One of the features of the NEP is that it invests disproportionate amount of its resources in planning activities compared to implementation efforts with a large portion of the planning money used to fund scientific and technical work and public outreach and education. Accordingly, judgements about the cost-effectiveness of the planning process will largely depend on judgements about the cost-effectiveness of these expenditures. In both cases, it is unclear that the TBNEP utilized these resources effectively. The analysis has already noted that some of the funding earmarked for scientific research had little "perceived" return on investment. Other respondents questioned the effectiveness of some public participation efforts. The TBNEP's planning process also incurred significant transaction costs on all that were involved. Staffing problems also prolonged the decision making process, further exacerbating transaction costs. While the planing process was time-consuming, most respondents viewed this investment of time and resources in positive terms and were generally satisfied with the planing process and the resulting CCMP.

The TBNEP receives less funding for implementation. Essentially, it is enough to maintain a small core office staff and undertake a few small projects. In our view, the measure of the TBNEP's cost effectiveness during the implementation process is whether it does more than simply spend EPA's small appropriation of $300,000 per year. To date, the evidence suggests that the TCPP will be utilizing these resources and the staff that it pays for to leverage additional funding [Table 8 and 9]. They have also secured commitments from a number of organizations to participate in the TCPP. These benefits appear to clearly outweigh the higher transaction costs associated with maintaining the TCPP as a collaborative organization and the EPA appears to be receiving a return on its investment.

Predictability of the Process

Institutional performance can also be judged in terms of the predictability of the process. We are concerned with two related questions: 1) the ability of the planning process to produce the intended result; and, 2) whether the program creates predictable conditions or requirements that allows its participants to plan and budget with confidence.

One of the strengths of the NEP is that it employs a predictable process that results in the development of a voluntary CCMP. The TBNEP followed the recommended process and ended up with a CCMP that is similar in form and content to others developed in the NEP. However, the expectations are also low (i.e., voluntary plan). Accordingly, the TBNEP's deviation from the NEP's expectations and movement towards the development of a collaborative organization with shared strategies and commitments towards mutual goals is a notable development. It is possible that the NEP might be more effective in generating CCMPs with binding commitments if it had no norm or expectation for producing a voluntary plan. This "norm" may actually create a disincentive for those who enter the NEP with higher expectations. After all, if the program had no norms or expectations, the worst the EPA would end up with is a voluntary plan with no binding commitments for implementation.

From an implementation standpoint, a clear strength of the TCPP is that it creates a predictable process that allows the TBNEP partners to plan and budget with confidence. This

certainty is the product of the TCPP's shared goals, targets, and strategies and using a five-year timeframe for measuring progress. This creates an element of predictability that gives the partners have the ability to structure their implementation activities around other agency responsibilities and budget priorities. For example, the ODF has a stable source of revenue and can plan and budget implementation activities that are consistent with the TCPP's goals and targets. Conversely, Tillamook County and the TCPP staff's heavy reliance on other federal and state grant programs makes it more difficult for these officials to plan and budget with the same confidence.

Certainty of Effect

One measure of success for any planning effort is whether the "plan" that was produced was actually implemented. This involved making two distinct judgements. First, we determined whether the action plans recommended in the CCMP been implemented or were likely to be implemented in the future. Second, if the recommended actions would not be implemented, we determined whether the participants were likely to be engaged in a substitute set of activities that would achieve the CCMP's goals.

One of the downsides of the NEP's emphasis on producing voluntary "plans" is that there tends to be little certainty that the specific actions recommended in a CCMP will be implemented. This also appears to be the case in the TBNEP. While one of the objectives of the TCPP is to implement the CCMP, there is no requirement to implement the specific actions recommended in the CCMP. Rather, the expectation is that the partners will use the actions as suggestions to guide their own efforts. There only appears to be a high certainty that the TCPP's priority strategies, which are also CCMP priorities, will be implemented.

While there is little certainty that the provisions of the action plans will be followed, there is much more certainty that actions will be taken to address the CCMP's goals. The TBNEP and the TCPP have developed clear and measurable targets that specify a particular set of activities [Table 5 and 8]. The partners are also working on a monitoring and tracking system that would display the progress towards these goals and targets on a WWW site. This would also appear to improve the certainty that actions are taken to advance these goals and targets. Moreover, given the presence of a relatively stable source of implementation funding for forest lands, one would expect that the goals and targets pertaining to activities on state forest lands have the highest certainty for implementation.

Accountability

It is important that there are mechanisms to hold officials accountable for their actions and the allocation of scarce resources. A wide range of accountability mechanisms were used by the TBNEP and the TCPP, some of which have already been noted:

- Political accountability is enhanced through provisions such as having the TBNEP and TCPP meetings are subject to Oregon's open meeting laws

- Executive Board and Performance Partnership meetings have an open public comment period and distribute minutes to whomever wants them to enhance political accountability
- The TCPP creates a peer pressure mechanism that allows its members to monitor the behavior of other members
- Professional accountability was enhanced during the planning process by having the Policy Committee defer to the Management Committee who often deferred to the STAC. However, no similar provision exists in the TCPP.

In addition, the EPA holds the TBNEP accountable for its activities through the development of annual workplans. The EPA also evaluates the TCPP's implementation efforts through its biennial review process. Every two years the EPA will review the TCPP's activities, issue a pass or fail judgement, and then make recommendations for changes that should be made by the next biennial review.

The main accountability problem appears to be the lack of accountability for TBNEP staff. During the early years of the TBNEP the Policy Committee, EPA, and OSU all failed to take an active role in supervising the TBNEP's staff. It also appears that a similar problem may exist in the TCPP as their staff appear to be accountable to both the county (i.e., hiring entity) and the Executive Board. Another potential accountability problem concerns the commitment to the CCMP's goals and targets. The CCMP's goals and targets are much broader than the TCPP's [See Tables 5 and 8]. While the TCPP partners committed to implement the CCMP, there is also a great deal of flexibility within the TCPP structure that would permit the partners to focus their attention elsewhere. Despite these problems, the TBNEP and the TCPP do appear to have some significant accountability mechanisms.

Equity

Another useful criterion for examining institutional performance is equity or fairness. There are many ways to view equity. Fiscal equivalence holds that those who benefit from a service should bear the burden of financing it. Thus, those who derive greater benefits are expected to pay more. Redistributional equity concerns structuring program activities around differential abilities to pay. Considerations about the equality of the process and the equality of the results are also important. Overall, the TBNEP and the TCPP appear to have done a good job of minimizing equity problems.

Two equity issues emerged from our analysis. The first concerns the use of watersheds as a unit of analysis. The TCPP operates countywide. This was done, in part, because of equity concerns since many public officials thought it would be inappropriate to ignore the environmental problems located in other watersheds within the County. The use of a county-level collaborative organization also helped generate additional public and political support for the TCPP. The second issue concerns the structure of federal environmental grant programs such as Section 319 that treat all grant applicants the same. Accordingly, Tillamook County has to meet the same cost-share requirements as Portland. Clearly, the two applicants are in different financial situations. The EPA's implementation formula for the NEP also makes no provisions

for treating watersheds differently in terms of their differential abilities to satisfy cost-share requirements of to fund implementation efforts.

Adaptability

Unless institutional arrangements have the capacity to respond to their ever-changing environments, performance is likely to suffer. Reflected here are concerns similar to those who argue for adaptive approaches to ecosystem-based or community-based management. The TCPP is relatively informal and is designed to encourage flexibility and adaptation. The TCPP has developed measurable goals and targets based on a five-year time frame. This will encourage the actors to revisit these goals and targets periodically, although there is no requirement to do so. The actors are also planning to develop a monitoring and tracking system and will work towards linking these actions to changes in environmental outcomes. This will help encourage learning about the effectiveness of their implementation efforts and should encourage policy-oriented learning. However, the nature of the water quality problems and the salmon's life cycle will make it difficult to link actions to environmental outcomes over the short-term. Accordingly, as one respondent observed: "The lifecycle of these fish and the timing of people's expectations are so out of whack." Therefore, adaptive management is likely to be more of a philosophical approach that encourages policy-oriented learning over long time periods rather than explicit policy experiments.

If there is a concern about adaptability, it is that the TCPP will prove too adaptive and be captured by changing political conditions such that it does not sustain the long-term commitment necessary to meet specific goals and targets. The TCPP also relies heavily on personal relationships that still need to be fully institutionalized. Accordingly, while the TCPP may encourage learning, it may be more at the individual level rather than the institutional level. This has the potential to hinder policy-oriented learning, particularly if staff turnover remains a problem.

Capacity Building

The final criterion used to assess the performance of the watershed management programs is whether they were effective at building capacity for solving complex environmental problems. We concluded that the TBNEP was effective at building the capacity of different institutions. The effort developed Tillamook County's capacity for addressing environmental problems. The TCPP is largely oriented towards addressing local problems inside and outside of the watershed. This new institution should improve the county's capacity for addressing environmental problems in the future. The TBNEP and the TCPP also legitimize and encourage collaboration at both the project and program level. This improved the capacity for the actors to engage in restoration efforts. For example, when the ODF hired an ODFW biologist to work in their office it improved both agencies capacity for habitat restoration. The CCMP and TCPP's development of shared goals and strategies also helped coordinate the efforts of the different actors. This is particularly important since many of the local governments rely on the county to address these issues. The TCWRC also has the promise of further improving local problem solving capacity by training participants involved in watershed councils developed to implement the OPSW.

Summary and Conclusions

The TBNEP certainly experienced its share of problems during the planning process. It had difficulty in keeping its scientific research nested within the decision-making process. As a result, the program did not fill some important gaps in information. The program also had some difficulty with its public participation efforts, many of which appear to be due to the challenges of working in a rural area. Moreover, the program experienced some significant personnel and management problems.

Despite these problems, the TBNEP developed a CCMP that received broad public and institutional support. The relative absence of any major conflict surrounding the CCMP's development and approval suggests that the TBNEP was effective in building consensus for the plan. Moreover, it appears to be a good plan from the standpoint that it's goals are clear and it has measurable targets for evaluating progress towards the goals. It is also clear what is recommended and who is responsible for these actions. But perhaps the TBNEP's greatest accomplishment to date is the development of the collaborative organization, the Tillamook County Performance Partnership (TCPP) used to implement the CCMP. The preliminary evidence also suggests that the TCPP may be able to leverage many of the resources necessary to make significant progress towards many of these goals and targets [Table 8].

While the development of the TCPP is a major accomplishment, a number of potential issues surround its design and structure. These include: the supervision of the TCPP staff; the large size of the Performance Partnership; its open access rules; the use of an undefined decision rule (i.e., consensus) for making decisions; and, the unclear roles and relationships between the Executive Board and Performance Partnership. The TCPP also has a great deal of flexibility and adaptability built into its structure. However, the danger may be that it proves too adaptive, is captured by changing political issues, and is unable to sustain the effort necessary to make significant progress towards the specific goals and targets. The TCPP is also relatively informal and appears to rely more on personal relationships and commitments. While many of these issues will no doubt be resolved as the TCPP continues to evolve, we believe the TCPP would benefit by formalizing and institutionalizing current norms, values, expectations, and personal relationships.

Despite these challenges, our analysis of the TBNEP using criteria provided by the Academy suggests that the TBNEP represents an effective watershed governance program. However, the most important measure of effectiveness for a collaborative effort may be how the collaborators view the program and whether they believe that the effort adds value and is worth their continued investment in time and resources. When viewed from this perspective, the TBNEP is a resounding success. Almost all of the respondents, particularly the state and local officials who comprise the TCPP, overwhelmingly supported the CCMP and the TCPP. Accordingly, we believe that the TBNEP's accomplishments are notable and that much can be learned from their efforts to develop their CCMP and its implementation through the TCPP.

Endnotes

[1] The EPA identifies nationally significant estuaries threatened by pollution, development, or overuse and assists estuary projects with the preparation of a Comprehensive Conservation and Management Plan (CCMP). The NEP currently has 28 estuary projects in 18 states and the commonwealth of Puerto Rico. The estuaries comprise a diverse set of ecosystems including both heavily urbanized and rural watersheds. The TBNEP entered in the Fourth Tier of programs in 1992. The latest group of programs (Tier Five) entered the program in 1995. For more information on the governors nomination process see: EPA, *The Streamlined National Estuary Program: Instructions on the Preparation of a Governor's Nomination* (Washington, DC: Environmental Protection Agency, Office of Water, December 1994); and, EPA, *The National Estuary Program: Final Guidance on the Contents of a Governor's Nomination* (Washington, DC: EPA, Office of Water, January 1990).

[2] For more information on the history of the NEP and its development see: Mark T. Imperial, *Developing Integrated Coastal Resource Management Programs: Applying the NEP's Experience to Developing Nations* (Kingston, RI: University of Rhode Island, Coastal Resources Center, July 1995); Mark T. Imperial, *Public Participation in the National Estuary Program: A Descriptive and Empirical Analysis*, Masters Thesis (Kingston, RI: Department of Marine Affairs, University of Rhode Island, May 1993); Mark Imperial, Timothy Hennessey, and Donald Robadue, Jr., "The Evolution of Adaptive Management for Estuarine Ecosystems: The National Estuary Program and its Precursors," *Ocean and Coastal Management* 20 (no. 2, 1993): 147-180; Mark T. Imperial, Donald Robadue, Jr., and Timothy Hennessey, "An Evolutionary Perspective on the Development and Assessment of the National Estuary Program," *Coastal Management* 20 (no. 4, 1992): 311-341; EPA, *The National Estuary Program After Four Years: A Report to Congress*, EPA 503/9-92/007 (Washington, DC: EPA, Office of Water, April 1992); EPA, *Progress in the National Estuary Program: Report to Congress*, EPA 503/9-90-005 (Washington, DC: EPA, Office of Water, February 1990).

For more information on the development and implementation of individual estuary programs see: Renu Khator, "Networking to Achieve Alternative Regulation: Case Studies from Florida's National Estuary Programs," *Policy Studies Review* 16 (no. 1, Spring 1999), 66 – 85; Katrina Smith Korfmacher, "Invisible Successes, Visible Failures: Paradoxes of Ecosystem Management in the Abermarle-Pamlico Estuarine Study," *Coastal Management* 26 (no. 3, 1998): 191 – 211; Ames Borden Colt, "The First Step in Comprehensively Evaluating Implementation of an Integrated Estuarine Management Plan: Developing Evaluation Criteria," *Ocean and Coastal Management* 24 (1994): 85-108; Michael Healey and Timothy M. Hennessey, "The Utilization of Scientific Information in the Management of Estuarine Ecosystems," *Ocean & Coastal Management* 23 (1994): 167 – 191; W. S. Touhy, "Neglect of Market Incentives in Local Environmental Planning: A Case Study in the National Estuary Program," *Coastal Management* 22 (1994): 81 – 95; W. S. Touhy, "Characterizing the San Francisco Estuary: A Case Study in Science Management in the National Estuary Program," *Coastal Management* 21 (1993): 113 – 129; Katherine Fletcher, "Protecting Puget Sound: An Experiment in Regional Governance," *Washington Law Review* 65 (1990): 359 – 375; and, Thomas M. Leschine, "Setting the Agenda for Estuarine Water Quality Management: Lessons from Puget Sound," *Ocean and Shoreline Management* 13 (1990): 295 – 313.

[3] Since the program's inception, the EPA Headquarters office has devolved a great deal of the day to day responsibility for supervising the individual programs to the EPA's Regional offices.

[4] Each estuary program is required to address three management areas: water and sediment quality; living resources; and, land use and water resources. Each CCMP also addresses other problems, as appropriate. See: EPA, *The National Estuary Program After Four Years*; and, EPA, *Progress in the National Estuary Program*.

[5] 33 U.S.C.S. § 1330 et. seq.

[6] Mark T. Imperial and Timothy M. Hennessey, "An Ecosystem-Based Approach to Managing Estuaries: An Assessment of the National Estuary Program," *Coastal Management* 24 (no. 1, 1996): 115 – 139.

[7] 33 U.S.C.S. § 1330 (c).

[8] The members of this committee are the ultimate signatories of the CCMP and direct the activities of the management conference (Imperial and Hennessey, "An Ecosystem-Based Approach.").

[9] While the policy committee oversees management conference activities, it is the management committee, which is the focal point for consensus building. The members of the management committee represent state water quality and natural resource management agencies, members of the regulatory community, as well as representatives of the general public and interest groups. Some of the typical responsibilities of the management committee include: the identification and definition of environmental problems in the estuary; advising the policy committee on major decisions such as funding priorities and the development of annual work plans; and, guiding the development and approval of the CCMP. The management committee also supports and monitors activities of the other standing committees or work groups which reflect the local jurisdictional conditions, attitudes, and requirements of individual estuary programs (Imperial and Hennessey, "An Ecosystem-Based Approach.").

[10] Imperial and Hennessey, "An Ecosystem-Based Approach."

[11] Ibid.

[12] For more discussion of the EPA's requirements see: EPA, *National Estuary Program Guidance: Base Program Analysis*, EPA 842-B-93-001 (Washington, DC: EPA, Office of Water, March 1993); EPA, *Comprehensive Conservation and Management Plans: Content and Approval Requirements*, EPA 842-B-92-002 (Washington, DC: EPA, Office of Water, October 1992); EPA, *The Economics of Improved Estuarine Water Quality: An NEP Manual for Measuring Benefits*, EPA 503/5-90-001 (Washington, DC: EPA, Office of Water, September 1990); EPA, *Saving the Bays and Estuaries: A Primer for Establishing and Managing Estuary Programs Appendices G, H, and I*, EPA 503/8-90-005 (Washington, DC: EPA, Office of Water, September 1990); EPA, *Saving the Bays and Estuaries: A Primer for Establishing and Managing Estuary Projects*, EPA/503/8-89-001 (Washington, DC: EPA, Office of Water, August 1989); and, EPA, *Guide for Preparation of Quality Assurance Project Plans for the National Estuarine Program*, Interim Final, EPA 556/2-88-001 (Washington, DC: EPA, Office of Marine and Estuarine Protection, June 1988).

[13] 33 U.S.C.S. § 1330 (b).

[14] The EPA defines seven key activities and products of a management conference: 1) Identification of priority problems based on public or other input; 2) An inventory of applicable federal programs that identifies potential conflicts with the CCMP; 3) An analysis of the scope and effectiveness of existing federal, state, and local resource management programs to evaluate gaps, target opportunities, and have the potential to be leveraged as part of the effort to develop and implement the CCMP; 4) A financing plan based on state and public input that considers the costs ad benefits of pollution control options and identifies how the options will be financed; 5) Final reports on the estuary's status and trends, probable causes of environmental problems, and pollutant loadings; 6) A Draft CCMP that includes a federal consistency report and plans for its coordinated implementation and monitoring; and, 7) A final CCMP that identifies action plans for implementing the CCMP including a discussion of their likelihood for success, lead implementation agencies; funding required and the sources of this funding, and a schedule for implementation (TBEP, *Tampa Bay National Estuary Program Management Conference Agreement* (St. Petersburg, FL: TBEP, March 25, 1991), 4).

[15] For more discussion of the NEP's public participation requirements and the effectiveness of these efforts see: Imperial, *Public Participation in the National Estuary Program*.

[16] Imperial and Hennessey, "An Ecosystem-Based Approach." For more information on the use of these demonstration projects see: EPA, *A Summary of Implementation and Demonstration Projects in Bays and Estuaries* (Washington, DC: EPA, Office of Water, November 1992).

[17] Imperial and Hennessey, "An Ecosystem-Based Approach"; and, EPA, *Saving the Bays and Estuaries*.

[18] For the EPA's guidance on monitoring implementation activities see: EPA, *Measuring Progress of Estuary Programs: A Manual*, EPA 842-B-94-008 (Washington, DC: EPA, Office of Water, November 1994); EPA, *Volunteer Estuary Monitoring: A Methods Manual*, EPA 842-B-93-004 (Washington, DC: EPA, Office of Water, December 1993); and, EPA, *Monitoring Guidance for the National Estuary Program*, EPA 842-B-92-004 (Washington, DC: EPA, Office of Water, September 1992).

[19] The choice of strategies is left up to the estuary programs. Many states are attempting to leverage existing Clean Water Act (CWA) grants (e.g., §104(b)(3), 604(b), and §319(h)) to implement CCMP recommendations. Others have used new taxes to help finance water pollution control efforts. For example, a cigarette tax finances the implementation of the Puget Sound Water Quality Management Plan (Puget Sound's CCMP). Finally, estuary projects could design their CCMP such that it is implemented through existing programs. For more information see: Imperial and Hennessey, "An Ecosystem-Based Approach."

[20] For EPA's guidance on financing and organizing implementation activities see: EPA, *Beyond SRF: A Workbook for Financing CCMP Implementation*, EPA 842-B-96-002 (Washington, DC: EPA, Office of Water, August 1996); EPA, *Case Studies: Organizational Structures Relevant to Implementation of Comprehensive Conservation and Management Plans*, EPA 842-B-95-003 (Washington, DC: EPA, Office of Water, July 1995); EPA, *Using Nonprofit Organizations to Advance Estuary Program Goals*, EPA 842-B-093-008 (Washington, DC: EPA, Office of Water, November 1993); and, EPA, *Financing Marine and Estuarine Programs: A Guide to Resources*, EPA 503/8-88/001 (Washington, DC: EPA, Office of Marine and Estuarine Protection, September 1988).

[21] The Oregon Watershed Enhancement Board (OWEB) was established in 1987. Originally, it was called the Governor's Watershed Enhancement Board (GWEB) but was renamed OWEB in July 1999. For simplicity sake we refer to the program by its new name.

[22] Qualitative research employs an intense investigative process that contrasts, compares, replicates, catalogues, and classifies objects and events to provide decisionmakers with the information necessary to improve program performance. For more information on approaches to qualitative analysis see: Norman K. Denzin, and Yvonna S. Lincoln (eds.), *Strategies for Qualitative Inquiry* (Thousand Oaks, CA: Sage Publications, 1998); Norman K. Denzin, and Yvonna S. Lincoln (eds.), *Collecting and Interpreting Qualitative Materials* (Thousand Oaks, CA: Sage Publications, 1998); Joseph A. Maxwell, *Qualitative Research Design: An Interactive Approach* (Thousand Oaks, CA: SAGE Publications, 1996); Sharon L. Caudle, "Using Qualitative Approaches," in Joseph S. Wholey, Harry P. Hatry, and Kathryn E. Newcomer (eds.) *Handbook of Practical Program Evaluation* (San Francisco, CA: Jossey-Bass Publishers, 1994); Matthew B. Miles and Michael A. Huberman, *Qualitative Data Analysis: An Expanded Sourcebook*. Second Edition (Thousand Oaks, CA: SAGE Publications, 1994); Mary Ann Scheirer, "Designing and Using Process Evaluation," in Joseph S. Wholey, Harry P. Hatry, and Kathryn E. Newcomer (eds.) *Handbook of Practical Program Evaluation* (San Francisco, CA: Jossey-Bass Publishers, 1994); Anselm Strauss and Juliet Corbin, *Basics of Qualitative Research: Grounded Theory Procedures and Techniques* (Newbury Park, CA: SAGE Publications, 1990); and, Michael Quinn Patton, *Qualitative Evaluation and Research Methods*, Second Edition (Newbury Park, CA: SAGE Publications, 1990).

[23] Maxwell, *Qualitative Research Design*; Miles and Huberman, *Qualitative Data Analysis*; Scheirer, "Designing and Using Process Evaluation"; and, Patton, *Qualitative Evaluation and Research Methods*.

[24] Mark T. Imperial, "Analyzing Institutional Arrangements for Ecosystem-Based Management: The Institutional Analysis and Development Framework," *Environmental Management* 24 (1999): 449 – 465.

[25] For some discussion of the IAD framework and its application in environmental settings see: Elinor Ostrom, Roy Gardner, and James Walker, *Rules, Games, & Common-Pool Resources* (Ann Arbor, MI: The University of Michigan Press, 1994); Elinor Ostrom, Larry Schroeder, and Susan Wynne, *Institutional Incentives and Sustainable Development: Infrastructure Policies in Perspective* (Boulder, CO: Westview Press, 1993); Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (New York, NY: Cambridge University

Press, 1990); Elinor Ostrom, "An Agenda for the Study of Institutions," *Public Choice* 48 (no. 1, 1986): 3 – 25; Mark T. Imperial, "Analyzing Institutional Arrangements for Ecosystem-Based Management: The Institutional Analysis and Development Framework" *Environmental Management* 24 (1999), 449 –465; Mark T. Imperial, "Analyzing Institutional Arrangements for Ecosystem-Based Management: Lessons From the Rhode Island Salt Ponds SAMP," *Coastal Management* 27(no. 1, 1999): 31 – 56; Sue E. S. Crawford, and Elinor Ostrom, "A Grammar of Institutions," *American Political Science Review* 89 (no. 3, September 1995): 582 – 600; Timothy M. Hennessey, "Governance and Adaptive Management for Estuarine Ecosystems: The Case of Chesapeake Bay," *Coastal Management* 22 (1994): 119 – 145; Mark H. Sproule-Jones, *Governments At Work: Canadian Parliamentary Federalism and Its Public Policy Effects* (Toronto, Canada: University of Toronto Press, 1993);William Blomquist, *Dividing the Waters: Governing Groundwater in Southern California* (San Francisco, CA: ICS Press. 1992); and, Larry L. Kiser and Elinor Ostrom, "The Three Worlds of Action: A Metatheoretical Synthesis of Institutional Approaches," in Elinor Ostrom (ed.) *Strategies for Political Inquiry* (Beverly Hills, CA: Sage, 1982), 179 – 222.

[26] Triangulation involves using independent measures derived from different sources to support, or at least not contradict, a research finding. For more information see: Miles and Huberman, *Qualitative Data Analysis*; and, Robert K. Yin, *Case Study Research: Design and Methods*, Second Edition (Thousand Oaks, CA: SAGE Publications, 1994).

[27] Miles and Huberman, *Qualitative Data Analysis*.

[28] Ibid.

[29] Triangulation is one of the recommended strategies when using quantitative research methods (Yin 1994; Rossi and Freeman 1993; Singleton, et al. 1993). Triangulation involves using independent measures derived from different sources to support, or at least not contradict, a research finding (Miles and Huberman 1994; Yin 1994; and, Singleton, et al. 1993).

[30] Yin, *Case Study Research*.

[31] Thomas D. Cook and Donald T. Campbell, *Quasi-Experimentation: Design and Analysis Issues for Field Settings*. (Boston, MA: Houghton Mifflin Company, 1979).

[32] Tillamook Bay National Estuary Program (TBNEP), *Tillamook Bay Environmental Characterization: A Scientific and Technical Summary* (Garibaldi, OR: TBNEP, July 1998), 1-2.

[33] TBNEP, *Tillamook Bay Environmental Characterization*, 1-1.

[34] For more discussion of the watershed see: TBNEP, *Tillamook Bay Environmental Characterization*; Coulton, Kevin G., Williams, Philip B., and Patricia Benner, *An Environmental History of the Tillamook Bay Estuary and Watershed* (Garibaldi, Oregon: Tillamook Bay National Estuary Project, June 1996); and, Plummer, George, *Inventory of the Management Framework for Tillamook Bay National Estuary Project Priority Problems: Phase I of the Base Programs Analysis* (Garibaldi, OR: TBNEP, June 1995).

[35] Ibid.

[36] Gale, J. A., D. E. Line, D. L. Osmond, S. W. Coffey, J. Spooner, J. A. Arnold, T. J. Hoban, and R. C. Wimberly, *Evaluation of the Experimental Rural Clean Water Program* EPA-841-R-93-005, (Raleigh, NC: National Water Quality Evaluation Project, NCSU Water Quality Group, North Carolina State University, May 1993).

[37] TBNEP, *Tillamook Bay Environmental Characterization*, 3-1

[38] For more discussion of these habitats see: TBNEP, *Tillamook Bay Environmental Characterization*.

[39] Department of Land Conservation and Development, State of Oregon (DLCD), *Oregon's Statewide Planning Goals and Guidelines* (Salem: OR: DLDC, 1995).

[40] For more discussion on the state planning process and Oregon's federally approved coastal zone management program see: DLCD, *Oregon's Statewide Planning Goals*; Department of Land Conservation and Development, State of Oregon (DLCD), *Oregon's Coastal Management Program: A Citizen's Guide* (Salem, OR: DLCD, Undated); Department of Land Conservation and Development, State of Oregon (ODLCD), *The Oregon Estuary Plan Book* Salem: OR: ODLDC, 1987; Good, James W., Weber, John, W., and James W. Charland, "Protecting Estuaries and Coastal Wetlands through State Coastal Zone Management Programs," *Coastal Management* 27 (1999): 139-186; Good, James W, "Shore Protection Policy and Practices in Oregon: An Evaluation of Implementation Success," *Coastal Management* 22 (1994): 325-352; and, Good, James W, "Mitigating Estuarine Development Impacts in the Pacific Northwest: from Concept to Practice," *Northwest Environmental Journal* 3 (no. 1, 1987): 93 – 111.

[41] Gaquin, Deirdre A., and Mark S. Littman, *1998 County and City Extra: Annual Metro, City, and County Data Book* (Lanham, MD: Bernan Press, 1998). See also: http://www.econ.state.or.us/NWCEITI.HTM (May 31, 2000).

[42] Association of National Estuary Programs (ANEP). *Tillamook Bay National Estuary Project* (Annandale, VA: ANEP, Undated).

[43] Plummer, *Inventory of the Management Framework*, 5.

[44] Gaquin and Littman, *1998 County and City Extra*. See also: http://www.econ.state.or.us/NWCEITI.HTM (May 31, 2000).

[45] Trenholm, Mark, *Summary of the Tillamook County Performance Partnership* (University of Oregon, RARE Program, July 1998).

[46] Gaquin and Littman, *1998 County and City Extra*

[47] Ibid.

[48] TBNEP, *Tillamook Bay Environmental Characterization*, 2-9.

[49] Plummer, *Inventory of the Management Framework*, 5.

[50] ANEP, *Tillamook Bay National Estuary Project*.

[51] For more discussion on the reforestation efforts see: Wells, Gail, *The Tillamook: A Created Forest Comes of Age* (Corvallis, OR: Oregon State University Press, 1999).

[52] Plummer, *Inventory of the Management Framework*, 5.

[53] Ibid., 8.

[54]Ibid., 8.

[55] Ibid.

[56] Gale, et al., *Evaluation of the Experimental Rural Clean Water Program*

[57] For more information on the water quality problems associated with the dairy farms see: TBNEP, *Tillamook Bay Environmental Characterization*.

[58] Busse, Katherine M., "Water Quality and Shellfish Management in Tillamook Bay, OR," *Coastal Management* (26, 1998): 291 – 301.

[59] Plummer, *Inventory of the Management Framework*, 8.

[60] TBNEP, *Tillamook Bay Environmental Characterization*; and, Tillamook Bay National Estuary Program (TBNEP), *EPA/State Management Conference Agreement* (Garibaldi, OR: TBNEP, Undated).

[61] TBNEP, *Tillamook Bay Environmental Characterization*, 4-1

[62] The watershed contains three incorporated communities and is served by six wastewater treatment plants and an unknown number of households on septic systems.

[63] For more discussion of the Bay's bacterial problems see: TBNEP, *Tillamook Bay Environmental Characterization*; Busse, "Water Quality and Shellfish Management"; Plummer, *Inventory of the Management Framework*; and, Moore, et al., "Keeping Bacteria Out of the Bay: The Tillamook Experience".

[64] Busse, "Water Quality and Shellfish Management."

[65] Plummer, *Inventory of the Management Framework*, 12.

[66] TBNEP, *Tillamook Bay Environmental Characterization*, 4-1

[67] For more information on the causes and impacts of sedimentation see: TBNEP, *Tillamook Bay Environmental Characterization*.

[68] TBNEP, *Tillamook Bay Environmental Characterization*, 5-5

[69] Ibid.

[70] Ibid.

[71] Ibid.

[72] Ibid.

[73] Ibid.

[74] Ibid.

[75] For more information on these problems see: TBNEP, *Tillamook Bay Environmental Characterization*.

[76] For a more detailed discussion of the human activities that have altered salmon habitat see: TBNEP, *Tillamook Bay Environmental Characterization*.

[77] For more information on some of the problems affecting the salmon and efforts to improve the management of these stocks see: Nehlsen, Willa, Jack E. Williams, and James A. Lichatowich, "Pacific Salmon at the Crossroads: Stocks at risk from California, Oregon, Idaho, and Washington," *Fisheries* 16 (no. 2, April 1991): 4 – 21.

[78] Revenues from timber sales (after operation expenses of ODF) are allocated as follows: 51.3 percent goes to school districts where timber is harvested; 22.3 percent goes to all county schools; 21.6 percent goes to the county general fund; 4.8 percent is divided among all other taxing districts.

[79] Department of Forestry, State of Oregon (ODF), *Northwest Oregon State Forests Management Plan*, Draft (Salem, OR: ODF, April 1998).

[80] Department of Forestry, State of Oregon (ODF), *Western Oregon State Forests Habitat Conservation Plan*, Draft (Salem, OR: ODF, April 1998).

[81] ODF, *Northwest Oregon State Forests Management Plan*.

[82] Ibid.

[83] ODF, *Western Oregon State Forests Habitat Conservation Plan*.

[84] Oregon is the only state in the U.S. without a disaster relief fund in place for its counties to match. As a result, it is difficult for counties such as Tillamook to apply for federal funds.

[85] These policies form the foundation of Oregon's federally approved Coastal Management Program, which is administered by the Oregon Department of Land Conservation and Development (ODLCD). Based primarily on ORS 197, this program is also inclusive of several state laws for the management of coastal resources. These include the Removal-Fill Law, which regulates alterations to estuaries, lakes and other waterways, and the Oregon Beach Bill, which regulates uses and alterations along the shore of the ocean.

[86] For more information on the RCWP and the Tillamook Bay program see: Gale, et al., *Evaluation of the Experimental Rural Clean Water Program*; Coffey, S.W., J. Spooner, D. E. Line, J. A. Gale, D. L. Osmond, and F. J. Humenik, "Elements of A Model Program for Nonpoint Source Pollution Control," in *Proceedings. The National RCWP Symposium. 10 Years of Controlling Agricultural Nonpoint Source Pollution: The RCWP Experience*, EPA/625/R-92/006 (Washington, DC: Environmental Protection Agency, August 1992), 361 - 374; United States Department of Agriculture (USDA), *Tillamook Rural Clean Water Project: 10-year Progress Report Tillamook County, OR* (Tillamook, OR: USDA, September 1991); Maas, Richard P., Brichford, Sarah L., Smolen, Michael P., and Jean Spooner, "Agricultural Nonpoint Source Control: Experiences from the Rural Clean Water Program," *Lake and Reservoir Management* 4(no. 1, 1988): 51-56; Osmond, D.L., Spooner, J., Coffey, S. W., Gale, J. A., Line, D. E., and J. A. Arnold, "The Rural Clean Water Program: A Voluntary, Experimental Nonpoint Source Pollution Control Program and its Relevance to Developing Nations," in the *American Society of Agronomy Special Publication no. 60*. (1995): 75-92; Meek, James, Carl Meyers, Gordon Nebeker, Water Rittall, and Fred Swader, "RCWP – The Federal Perspective," in *Proceedings. The National RCWP Symposium. 10 Years of Controlling Agricultural Nonpoint Source Pollution: The RCWP Experience*, EPA/625/R-92/006 (Washington, DC: Environmental Protection Agency, August 1992), 287 – 293; and, Moore, J. A., R. Pederson, and J. Worledge, "Keeping Bacteria Out of the Bay: The Tillamook Experience," in *Proceedings. The National RCWP Symposium. 10 Years of Controlling Agricultural Nonpoint Source Pollution: The RCWP Experience*, EPA/625/R-92/006 (Washington, DC: Environmental Protection Agency, August 1992), 71 – 76.

[87] For progress on the TMDLs for Tillamook Bay see: http://waterquality.deq.state.or.us/wq/TMDLs/TMDLs.htm (May 31, 2000).

[88] For more information on the Oregon Plan for Salmon and Watersheds see: Governor's Natural Resource Office (GNRO), *1998 Annual Report Summary* (Salem, OR: Governor's Natural Resource Office, Undated); Governor's Natural Resource Office (GNRO), *The Oregon Plan 1997: Executive Summary and Overview.* Salem, OR: Governor's Natural Resource Office, Undated); Governor's Natural Resource Office (GNRO), *Supplement I Steelhead: Executive Summary* (Salem, OR: Governor's Natural Resource Office, February 1998); Maleki, Sussanne, *The Oregon Plan for Salmon and Watersheds Annual Progress Report: Watershed Restoration Inventory*

August 1998 (Salem, OR: GWEB, August 1998); Oregon, State of, *Oregon's Riparian Enhancement Initiative* (Salem, OR: GWEB, September 1998); Governor's Natural Resource Office (GNRO), *Oregon Aquatic Habitat: Restoration and Enhancement Guide* (Salem, OR: Governor's Natural Resource Office. May 1999); and, Oregon State University Extension Service, *A Snapshot of Salmon in Oregon* (Corvallis, OR: Extension and Experiment Station Communications, Fall 1998).

[89] For more information on the Governor's Watershed Enhancement Board (GWEB) see: Governor's Watershed Enhancement Board (GWEB), *Program Status 1995-1997* (Salem, OR: GWEB, Undated).

[90] For more discussion of the effectiveness of the RCWP see: Gale, et al., *Evaluation of the Experimental Rural Clean Water Program*; Coffey, et al., "Elements of A Model Program for Nonpoint Source Pollution Control"; USDA, *Tillamook Rural Clean Water Project*; Maas, et al., "Agricultural Nonpoint Source Control"; and, Meek, et al., "RCWP – The Federal Perspective".

[91] Plummer, *Inventory of the Management Framework*, 15.

[92] Gale, et al., *Evaluation of the Experimental Rural Clean Water Program*.

[93] Busse, "Water Quality and Shellfish Management".

[94] Ibid.

[95] This turned out to be a good decision as these disagreements were ultimately worked out and the Lower Columbia River entered the NEP in 1995.

[96] EPA, *The Streamlined National Estuary Program: Instructions on the Preparation of a Governor's Nomination* (Washington, DC: Environmental Protection Agency, Office of Water, December 1994); and, EPA, *The National Estuary Program: Final Guidance on the Contents of a Governor's Nomination* (Washington, DC: EPA, Office of Water, January 1990).

[97] TBNEP, *EPA/State Management Conference Agreement*.

[98] Ibid.

[99] Ibid.

[100] Ibid.

[101] For more discussion on the flooding issues and their linkage to the TBNEP's priority problems see: TBNEP, *Tillamook Bay Environmental Characterization*, 6-1

[102] Imperial and Hennessey, "An Ecosystem-Based Approach."

[103] Coulton, et al., *An Environmental History of the Tillamook Bay*.

[104] TBNEP, *Tillamook Bay Environmental Characterization*.

[105] Tillamook Bay National Estuary Program (TBNEP), *Preliminary Comprehensive Conservation and Management Plan*, Working Draft (Garibaldi, OR: TBNEP, July 1996).

[106] This finding was similar to Khator's finding with respect to the Tampa Bay Estuary Program. See: Khator, "Networking to Achieve Alternative Regulation."

[107] A performance partnership is intended to be used when: 1) the federal government delivers services to local and state authorities; 2) all parties agree on desired outcomes; and, 3) progress is measurable. For more information see: Trenholm, *Summary of the Tillamook County Performance Partnership*, 1; and, TBNEP, *Comprehensive Conservation and Management Plan Draft*, 6-1 - 6-2.

[108] *Memorandum of Understanding between State of Oregon, USDA Forest Service Region 6, USDI Bureau of Land Management – Oregon, USDI Fish and Wildlife Service – Oregon, USDC National Marine Fisheries Service, USDI Bureau of Indian Affairs, Environmental Protection Agency, USDI Bureau of Reclamation, US Army Corps of Engineers, and USDI National Park Service*, 1997.

[109] *Oregon Watershed MOU Reinvention Laboratory Agreement*, July 1998.

[110] *Memorandum of Understanding between State of Oregon, USDA Forest Service Region 6*, 1997.

[111] Ibid.

[112] Trenholm, *Summary of the Tillamook County Performance Partnership*, 3; and, Tillamook Bay National Estuary Program (TBNEP), *Comprehensive Conservation and Management Plan Draft* (Garibaldi, OR: TBNEP, September 1998), 6-3 - 6-4.

[113] Trenholm, *Summary of the Tillamook County Performance Partnership*, i; and, TBNEP, *Comprehensive Conservation and Management Plan Draft*, 6-1 - 6-2.

[114] Tillamook County Performance Partnership (TCPP), *The Tillamook County Performance Partnership Bylaws*, Draft, (Tillamook, OR: TCPP, June 1, 1999), 1.

[115] Ibid., 6.

[116] Ibid., 1 – 2.

[117] Ibid., 3.

[118] For more information on the Oregon Benchmarks see: Oregon Progress Board and the Department of Administrative Services, *1999 Benchmark Blue Book: Linking Oregon Benchmarks and State Government Programs* (Salem, OR: Oregon Progress Board and the Department of Administrative Services, May 1999); ad, Oregon Progress Board, *Achieving the Oregon Shines Vision: The 1999 Benchmark Performance Report*, Report to the Legislative Assembly (Salem, OR: Oregon Progress Board, March 1999).

[119] TBNEP, *Comprehensive Conservation and Management Plan Draft*, 6 – 6

[120] Trenholm, *Summary of the Tillamook County Performance Partnership*, 4; and, TBNEP, *Comprehensive Conservation and Management Plan Draft*, 6-6.

[121] Trenholm, *Summary of the Tillamook County Performance Partnership*, 5 – 9.

[122] Ibid., 11 – 12.

[123] For more information on the implementation activities related to implementing the TCPP see: Trenholm, *Summary of the Tillamook County Performance Partnership*.

[124] Timber sale revenue in the Tillamook State Forest is projected to increase greatly now that the forest has begun to fully recover from the series of devastating fires.

[125] The county also tends to vote democratic for federal and state-wide offices.

[126] TCPP, *The Tillamook County Performance Partnership Bylaws*, 5.

[127] Gale, et al., *Evaluation of the Experimental Rural Clean Water Program*; Coffey, et al., "Elements of A Model Program for Nonpoint Source Pollution Control"; USDA, *Tillamook Rural Clean Water Project*; and, Maas, et al., "Agricultural Nonpoint Source Control".

[128] The best discussion of these issues can be found in the Delaware Inland Bays technical report.

[129] Imperial, "Analyzing Institutional Arrangements for Ecosystem-Based Management: Lessons"; and, Imperial, "Analyzing Institutional Arrangements for Ecosystem-Based Management".

[130] Gale, et al., *Evaluation of the Experimental Rural Clean Water Program*; Coffey, et al., "Elements of A Model Program for Nonpoint Source Pollution Control"; USDA, *Tillamook Rural Clean Water Project*; Maas, et al., "Agricultural Nonpoint Source Control"; TBNEP, *Tillamook Bay Environmental Characterization*; Busse, "Water Quality and Shellfish Management"; and, Moore, et al., "Keeping Bacteria Out of the Bay: The Tillamook Experience".

[131] Wells, *The Tillamook: A Created Forest Comes of Age*; and, TBNEP, *Tillamook Bay Environmental Characterization*.

[132] Trenholm, *Summary of the Tillamook County Performance Partnership*; and, TBNEP, *Tillamook Bay Environmental Characterization*.

Appendix A

Additional Environmental Innovations of Interest to the Academy

Our investigations uncovered a number of other innovations, several of which are watershed-based, that might also be of interest to the Academy in this or future projects. These included: 1) Oregon Plan for Salmon and Watersheds (OPSW); 2) Oregon Watershed Enhancement Board (OWEB); 3) Oregon's Benchmarks and their relationship to the TBNEP; and, 4) Oregon's designation as a reinvention lab under Vice President Al Gore's National Partnership for Reinventing Government (NPRG). Each of these initiatives is described briefly in the following sections.

Oregon Plan for Salmon and Watersheds

Oregonians have witnessed water quality degradation and the loss or decline of many native fish species. Over 13,000 miles of streams fail to meet the water quality standards necessary to support their beneficial uses. Several native species of fish are now listed as threatened or endangered under the Endangered Species Act (ESA) (e.g., coho, steelhead, and bull trout) while others are candidates for listing (e.g., chum, chinook, and cutthroat trout). The origins of the Oregon Plan for Salmon and Watersheds (OPSW) date back to October 1995 when the National Marine Fisheries Service (NMFS) proposed that coastal populations of coho be listed as endangered under the ESA. Governor Kitzhaber then asked that state agencies develop a salmon recovery plan. This resulted in a series of efforts that included public and legislative input as well as input from the NMFS. The product of these efforts was the development of the Oregon Plan for Salmon and Watersheds (OPSW) that was submitted to the NMFS in March 1997. The OPSW was then used by the NMFS in making its decision on whether to list the coastal coho salmon under the ESA. Initially, the OPSW and resulting Memorandum of Agreement (MOA) resulted in the NMFS's decision not to list the coho. However, as a result of a lawsuit, the NMFS was forced to list the coho under the ESA in October of 1998. The Governor has since withdrawn the MOA and replaced it with an Executive Order that is now a crucial part of the OPSW.

The OPSW is a statewide, public-private partnership designed to recover native salmon populations and water quality in Oregon.[1] Strong enforcement of existing laws and regulations are a foundation upon which voluntary and cooperative actions are built. The focus is on blending scientifically sound actions with local watershed-based public support. As a result, it is heavily dependent on partnerships among various levels of government and is dependent upon monitoring and the development of accountability mechanisms necessary to ensure long-term implementation success. The OPSW's mission is:

- To restore our native fish populations – and aquatic systems that support them – to productive and sustainable levels that will provide substantial environmental, cultural, and economic benefits.

To achieve this mission, the OPSW has four components. First, the plan emphasizes *community-based action* and recognizes that communities and landowners with local knowledge of problems

and ownership solutions must plan restoration efforts. The vehicle for doing this are the local watershed councils developed pursuant to the OWEB. Second, the plan emphasizes *government and stakeholder coordination* and relies on an unprecedented level of interaction among government agencies and various stakeholder groups. Third, the plan relies on *monitoring and accountability* with results reported on an annual basis and regular meetings of state agencies and the Governor to report on progress. Finally, the plan recognizes that there are no quick fixes and emphasizes *improvements over time*, learning from experience, exploring alternative approaches, and making modifications to existing programs.

The effort has received considerable support from federal and state agencies. Nine federal agencies (U.S. Forest Service, EPA, U.S. Fish and Wildlife Service, NMFS, NRCS, Bureau of Reclamation, Bureau of Land Management, COE, and National Park Service) have estimated that they spend close to $75 million annually on activities in support of the OPSW while the state contributes approximately $32 million. In addition, Oregon's timber industry has committed to spending $130 million over a ten-year period. While the effort is only a few years old, progress has been made. Eighty-five local volunteer watershed councils have been created. More than 1,200 on the ground projects were started or completed in 1996 – 1997. Over 300 miles of streambanks were fenced. Conifers were retained along streams in excess of state Forest Practices Act requirements at 204 sites. Fifty-six projects for improved livestock grazing management were completed. Forest landowners completed over 800 projects to address sediment or fish passages. Culvert upgrades restored fish passage to approximately 400 miles of streams. While efforts to restore the Salmon are likely to take decades of sustained effort, the OPSW does appear to have already achieved some notable accomplishments. In recognition of these efforts, the OPSW was recently selected as one of 25 finalists for the Ford Foundation's Innovations in American Government award.

Oregon's Watershed Enhancement Board (OWEB)

The Oregon Watershed Enhancement Board (OWEB) was established in 1987. Originally, it was called the Governor's Watershed Enhancement Board (GWEB) but was renamed OWEB in July 1999. For simplicity sake we refer to the program by its new name.

OWEB was created in response to the growing concern expressed by various organizations, agencies, and private citizens over the loss of water quality and the degradation of fish habitat, forests, and range lands state-wide. The board includes both federal and state officials and has active technical and education advisory committees. The original focus of the OWEB was to serve as a source of seed money for projects done at the local level, which demonstrate innovative or well as established restoration and enhancement techniques. It also encouraged cooperation between the private sector, nongovernmental organizations (NGOs) and state and federal agencies. Over the last decade, OWEB activities increased dramatically with its budget expanding from $500,000 for 1987 – 1989 to $21,85,310 for the 1997 – 1999 budget.

This expansion coincides with the development of the OPSW and OWEB is now the main source of state funding for restoration projects. In 1995, the legislature expanded OWEB's activities by authorizing the establishment and recognition of local, voluntary watershed councils throughout the state. The OWEB was directed to support the councils by providing technical

assistance and grant funds for the councils' operations. Today there are 85 watershed councils statewide at various stages of development. Some have been formed recently, others are completing watershed assessments, and others have been implementing projects for several years. In many respects, the development of these councils is an experiment in watershed governance that has greatly expanded civic engagement in decisions regarding the health and future of the watersheds. The watershed councils also represent the main avenue for public and local government involvement in OPSW implementation efforts. While our research team did not examine the efforts of the watershed councils directly, it was clear in talking to our respondents that the success varies greatly across the councils. It is also clear that capacity problems are hindering the effective use of the watershed councils since the large number of councils and their geographic dispersion makes it difficult for state and federal agency officials to give the councils the support they need. Despite these problems, the efforts of these watershed councils are notable and merit future inquiry.

Oregon's Benchmarks

Oregon Shines is the state's 20-year strategic plan. It includes 92 indicators known as Oregon Benchmarks that are designed to help achieve the state's goals.[2] The benchmarks are divided into seven categories: Economy; Education; Civic Engagement; Social Support; Public Safety; Community Development; and, Environment. The Oregon Progress Board (OPB) was established to develop the plan and to monitor progress for each of the 92 measures and evaluate progress towards the plan's 2000 and 2010 performance targets. In many respects, the OPB has been a catalyst for change and has worked extensively with a range of state and local government partners to gather and distribute data on the benchmarks. By 1999, the OPB had developed linkages between many of the benchmarks and various state agencies that either collect data on the progress towards the benchmarks or are directly responsible for achieving the performance targets.[3] The OPB also issues a biennial report that examines the progress towards each benchmark. Generally, the overall grades in the 1999 report were quite low with a "C+" being the highest overall grade for any category and grades for individual benchmarks ranged from A to F.[4]

Oregon Shines includes 14 environmental benchmarks in a number of areas. Progress towards these benchmarks is similar to that of other policy areas with an overall grade of "C+" and other measures ranging from A to F.[5] While the environmental benchmarks tend to be more contentious than those for other policy areas, they do appear to have influenced the development of the TBNEP's CCMP. As previously noted, the CCMP contains goals similar to the Benchmarks [Table 6] while the TCPP and the CCMP emphasize using measurable targets to help monitor whether or not the goals are achieved [Table 5 and 8]. Accordingly, the two efforts have a lot in common and the TCPP's efforts to monitor and track progress could help the OPB to further refine some of its environmental benchmarks and targets in the future.

As a result of Oregon's Benchmarks and its accomplishments in the area of performance measurement, the federal government and Oregon entered into a Memorandum of Understanding (MOU) known as the "Oregon Option" in 1994.[6] The MOU was designed to encourage and facilitate cooperation among federal, state, and local entities to redesign and test an outcomes

oriented approach to service delivery. While progress appears to have been made in other service areas, there appears to be no linkage to the environmental programs.

Reinvention Lab

The OPSW, the efforts of OWEB, and Oregon's Benchmarks provided the foundation for designating the state's watershed-based efforts as a "reinvention lab" pursuant to Vice President Al Gore's National Partnership For Reinventing Government (NPRG).[7] The Reinvention Lab designation was intended to ensure a focus on outcomes and increased local flexibility rather than on inputs and mandated processes from the federal level.[8] Projects such as the Tillamook NEP are deemed experiments in environmental management because devolution of authority is passed to the local level, and increased accountability then ensures that local performance meets national standards. However, we were unable to identify any examples of instances in which the TBNEP was granted flexibility by the EPA or treated any differently than other estuary programs. We were also unable to identify any examples of where the TCPP benefited from "increased flexibility" as a result of the MOUs. This could be due to the recent nature of the designation. However, it could also be the case that the federal agencies are effectively ignoring or are unaware of the designation.

More troubling is the fact that there are clearly areas where the federal agencies could be experimenting and providing watershed-based programs such as the TBNEP with increased flexibility. For example, the EPA could have provided the TBNEP some flexibility and not threatened to penalize the program when they were late in submitting a travel report, considering that the delay in hiring the current director caused the reports to be submitted late. They could have streamlined the CCMP approval process and waived some requirements to help get the project back on schedule. Instead, TCPP staff spent several months after the CCMP was approved at the local level (i.e., June 1999) completing the work necessary to meet EPA's CCMP approval requirements (i.e., EPA approved the CCMP in December 1999). The EPA could also experiment with multi-year funding commitments to provide more stability to the program operations and helped to avoid the staff turnover that resulted as the planning effort winded down. Moreover, during our interviews with EPA officials, there was no indication that the agency had ever considered using this designation to experiment with altering the NEP requirements. Rather, the TBNEP was treated the same as all of the other estuary programs.

Endnotes

[1] For more information on the Oregon Plan for Salmon and Watersheds and their activities see: GNRO, *1998 Annual Report Summary*; GNRO, *The Oregon Plan 1997: Executive Summary and Overview*; GNRO, *Supplement I Steelhead: Executive Summary*; Maleki, *The Oregon Plan for Salmon and Watersheds Annual Progress Report*; Oregon, *Oregon's Riparian Enhancement Initiative*; GNRO, *Oregon Aquatic Habitat*; and, Oregon State University Extension Service, *A Snapshot of Salmon in Oregon*. Given the length of the plan, it is available on line at: http://www.oregon-plan.org.

[2] For more information on *Oregon Shines* and the Benchmarks see: Oregon Progress Board and the Department of Administrative Services, *1999 Benchmark Blue Book*; Oregon Progress Board, *Achieving the Oregon Shines*

Vision; and, Macy, Christina H., *The Oregon Option: A Federal-State-Local Partnership for Better Results* (Baltimore, MD: The Annie E. Casey Foundation, Undated).

[3] Oregon Progress Board and the Department of Administrative Services, *1999 Benchmark Blue Book*.

[4] Oregon Progress Board, *Achieving the Oregon Shines Vision*.

[5] Ibid., 61.

[6] For more information on the Oregon Option see: Macy, *The Oregon Option*.

[7] For more information on Al Gore's National Partnership for Reinventing Government (NPRG) see: http://www.npr.gov/ (May 31, 2000).

[8] *Oregon Watershed MOU Reinvention Laboratory Agreement*, July 1998; and, *Memorandum of Understanding between State of Oregon, USDA Forest Service Region 6*, 1997.

About the Contributors to the Report

Mark T. Imperial graduated with a Master of Arts in Marine Affairs from the University of Rhode Island in 1993. From 1991 to 1994, Imperial worked as a policy analyst with the Rhode Island Coastal Resources Management Council. Mark is currently a Ph.D. candidate in the Public Affairs program at the School of Public and Environmental Affairs, Indiana University. His concentrations are Public Management and Policy Analysis with a minor in Environmental Science. His dissertation research focuses on collaboration in the development and implementation of watershed management programs. In addition to these activities, Mark has had articles published in the journals *Coastal Management*, *Ocean and Coastal Management*, *Environmental Management*, and *Public Works Management and Policy*.

Timothy M. Hennessey is a Professor of Political Science and Marine Affairs and the Associate Director of the Rhode Island Public Administration Program at the University of Rhode Island. He has over twenty years of experience studying the management and governance of coastal and estuarine ecosystems. In 1985, he and his colleagues at the Coastal Resources Center at the University of Rhode Island conducted a five-year Sea Grant funded comparative analysis of the governance structure and process in five estuaries; Narragansett Bay, Galveston Bay, San Francisco Bay, Albermarle-Pamlico Sound, and Puget Sound. More recently, Hennessey conducted a major study of the Chesapeake Bay Program and worked with Mark Imperial on a research project examining the National Estuary Program. He has also studied the role of science in the management of estuaries through a comparative analysis of Puget Sound and the Fraser River Estuary in Canada. Professor Hennessey has published numerous articles in journals such as *Marine Policy*, *Coastal Management*, and *Ocean and Coastal Management* as well as chapters in edited books.

Derek Kauneckis received a Masters of Science degree in International Development with an emphasis on Natural Resource Management and Policy in 1997 from the University of California, Davis. Currently he is a Ph.D. student in Public Policy at the Department of Political Science and the School for Public and Environmental Affairs at Indiana University, Bloomington. Derek's professional experience includes working with the US Forest Service in Alaska on Cultural Resource Management and Community Development programs, the Division of Natural Resources at Winrock International Institute for Agricultural Development and various environmental consulting firms in the Western United States. Derek's dissertation research uses a comparative approach to examine the effect of political decentralization on local public policy decision-making regarding natural resource management.

Leslie Koziol graduated Magna Cum Laude from Northland College, Ashland, Wisconsin, with a Bachelors of Science degree. Leslie has received numerous awards and achievements including the Aldo Leopold Award in Environmental Ethics, The Northern States Power Environmental Achievement Award, and Distinction in the Social Sciences. Leslie is currently pursuing a Masters degree in Environmental Science at Indiana University. Her

research interests include Wetland Ecology and Environmental Policy and she has worked as an assistant instructor and a lab assistant at Indiana University for the Indiana Clean Lakes Program. Prior to her graduate work, Leslie conducted research on acid mine drainage sites in Southwest Colorado. In particular, the research focused on the philosophical underpinnings of science and its role in policy formulation. Leslie has also worked as an Assistant Environmental Specialist at the Bad River Department of Natural Resources, Odanah, Wisconsin.

Katheryn Summers received a Bachelor of Science degree, with a concentration in Zoology and a minor in Wildlife Ecology, from the University of Florida in 1994. From 1994 to 1995, she conducted research University of Florida's Neurobiology Lab and provided staff support at the National Biological Survey-s Sirenia Project. Katheryn then worked for The Nature Conservancy's in Gainesville, Florida where she produced the 1995 Eglin Air Force Base Annual Research Report, a compilation of inventory, monitoring and research conducted in support of ecosystem management. She also participated in the development of an agreement to conduct joint ecosystem management on 750,000 acres near Eglin Air Force Base. In 1996, she began her graduate studies at Indiana University and graduated in May 1999 with a Master of Environmental Science and a Master of Public Affairs, concentrating in Environmental Policy and Natural Resource Management. Katheryn is also working as a research assistant at the Center for the Study of Institutions, Population, and Environmental Change (CIPEC) on a project examining the private ownership of forested lands in Indiana.

Sally McGee is a graduate of Smith College where she received her B.A. in economics in 1989. She lived in Washington, DC for several years, working with environmental groups including Greenpeace and Conservation International. This work inspired her to experience the marine environment first hand, so she left Washington to study and then work for Sea Education Association in Woods Hole, MA. Sally has worked aboard a number of traditionally rigged sailing vessels and has sailed the eastern seaboard of the US and Canada, the Caribbean, and in the North and South Pacific. She returned to the US in 1997 and worked for Mystic Seaport (Mystic, CT) before entering the Marine Affairs Program at the University of Rhode Island in the Fall of 1998. The focus of her studies at URI is environmental conflict resolution.