



Minnesota Board of Water and Soil Resources.
Minutes.

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**BOARD OF WATER AND SOIL RESOURCES
ROOM 5, STATE OFFICE BUILDING
ST. PAUL, MINNESOTA 55155
SEPTEMBER 23, 1998**

BOARD MEMBERS PRESENT: Kathleen Roer, Barb Uppgaard, Lee Coe, Paul Krabbenhoft, Jim Dahlvang, Darrell Bruggman, Marv Tripp, Ginny Imholte, Kelli Johnson, Wayne Edgerton for Rod Sando, Sharon Clark, Rod Massey, Barb Cobb, Dwain Otte.

BOARD MEMBERS ABSENT:

Jim Anderson, Glenn Annexstad, Allan Oehlke

STAFF PRESENT: Ron Harnack, Jim Birkholz, Doug Thomas, Marybeth Block, Ron Shelito, Dan Steward, Pete Waller, Jeff Nielsen, Tom Fischer, Sara Johnson, Mary Kells, Tabor Hoek, David Sill, Jim Lemmerman, Dale Krystosek, Jim Haertel, Al Kean, Matt Moore, Phil Belfiori, Bruce Sandstrom, Wayne Zellmer, Mary Jo Anderson.

OTHERS PRESENT: See attached listing

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Chair Roer called the meeting to order at 9:10 a.m., and welcomed everyone to the State Office Building for the BWSR meeting and the "Watershed Management - Governance at the Local Level" presentations.

Adopt Agenda - Ron Harnack stated that Jerry Griswold, USDA/NRCS Chesapeake Bay Liaison, from Annapolis, Maryland, will not be on the agenda today due to a family illness. Moved by Sharon Clark, seconded by Ginny Imholte, to approve the agenda as presented. Motion passed on a voice vote.

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98-64

Minutes of August 26, 1998 - Chair Roer made the following corrections to the minutes: On page two, under Chair's Report it should read, "Chair Roer announced the upcoming citizens advisory committee meetings, September 10 in St. Paul, and September 21-22 in Plymouth." On page three corrections include: under agency reports, Kelli Johnson reported that MDH is addressing the food borne "illness" outbreaks statewide." Rod Sando's report, the last sentence should read, "GEIS citizens advisory committee has meetings scheduled in September." On page five, under Soil and Water Conservation Society, it should read, "Allan Oehlke stated that the fall BWSR tour in southeastern Minnesota will focus on land use issues." Moved by Ginny Imholte, seconded by Barb Uppgaard, to approve the minutes of August 26, 1998 as corrected. Motion passed on a voice vote.

**
98-65

Chair's Report - Chair Roer reported that she was on the interview committee for the first board of managers of the Capitol Region Watershed District. Chair Roer attended the environmental cluster meeting, which included a presentation by Bob Wedl, Commissioner of the Department of Children, Families and Learning, on the Administration's environmental education initiative; also, mediation reports were addressed.

Executive Director's Report - Ron Harnack reported that staff are diligently working on the biennial budget.

FY99 BWSR Challenge Grant - Wayne Zellmer presented the allocation recommendations for three individual challenge grant programs: 1) Local Water Plan Challenge Grants; 2) MPCA Feedlot Challenge Grants; and 3) Non Point Engineering Assistance Challenge Grants. Wayne introduced Dave Nelson, MPCA. Mr. Nelson thanked BWSR for assistance on the MPCA feedlot challenge grant. Moved by Marv Tripp, seconded by Barb Uppgaard to accept the recommendation to approve the FY99 BWSR Challenge Grants as presented. Discussion followed. Moved by Paul Krabbenhoft, seconded by Ginny Imholte, to amend the original motion to include \$25,000 for a JPB ISTS technician in the Non Point Engineering Assistance Challenge

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98-66

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Grant. Motion to amend passed on a voice vote. The motion to accept the recommendation to approve the FY99 BWSR Challenge Grants as amended. Motion passed on a voice vote.

Capitol Region Watershed District Establishment - Jim Haertel explained that BWSR received a valid and proper citizen petition for establishment of the Capitol Region Watershed District. The Metro Water Planning Subcommittee presided over a public hearing. The record was held open after the hearing for three weeks. The record contains very strong support for establishing a watershed district, however, opinions varied on the boundary and the number of managers. The Metro Water Planning Subcommittee met and, based on the record for the matter, decided: (1) the watershed district should be established with the boundary being the same as the boundaries of the Central and Southwest Ramsey Joint Power Agreement Watershed Management Organizations, (2) the name should be the Capitol Region Watershed District, (3) the principal place of business should be the Ramsey SWCD, (4) the district should be managed by a board of five managers with areas based on the subwatersheds recommended by the City of St. Paul, (5) the deadline for cities to submit manager nominees, (6) the interview panel members, and (7) the issues identified in the establishment petition should be recommended for addressing by the district. The cities brought forward a sufficient number of manager nominees and 19 interviews were conducted. The interview panel consisted of two Ramsey County Commissioners, the chair of the Ramsey SWCD, one board member from the Metro Water Planning Subcommittee, and one BWSR staff person. Manager nominees being recommended for the first board of managers are Jay Riggs, Marylyn Deneen, Mike Thienes, Jim Leuthner, and Pat Byrne. The Ramsey County Surveyor is in the process of providing the legal description for the watershed district from their county GIS system where the district is defined. A large scale map showing the district boundary was Exhibit 22 at the public hearing. The Metro Water Planning Subcommittee recommends establishment of the Capitol Region Watershed District. Moved by Dwain Otte, seconded by Barb Cobb, to approve the proposed establishment of the Capitol Region Watershed District. Motion passed on a voice vote. Jim announced that the first meeting of the Capitol Region Watershed District will be held on October 1st, at 6:30 p.m. at the Ramsey SWCD office.

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98-67

Ron Harnack gave an overview of the publication "Crosscurrents." Presentations were made regarding "Watershed Management - Governance at the Local Level."
- Bob Doppelt, Institute for Watershed and Community Health, Springfield, Oregon, presented "New Approaches to Managing Valuable Human, Fiscal and Watershed Resources."

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- Dave Fisk, Assistant Executive Director, Suwannee River Water Management District, Live Oak, Florida, presented "Regional Water Management - Florida's Story."
- Dayle Williamson, Director of Natural Resources Commission, Lincoln, Nebraska, presented "Challenges of Consolidation and Modernization and Charting a Course for the Future."
- Dave Jelinski, Director, Land and Water Resources Bureau, Madison, Wisconsin, presented "Wisconsin's Locally Lead Approach."
- Cliff Aichinger, Administrator, Ramsey-Washington Metro Watershed District, Maplewood, Minnesota, presented "New Strategies for America's Watersheds."

Bob Doppelt gave a brief wrap-up of the presentations. A brief question/answer session was held with the presenters.

Chair Roer announced the October 28-29, BWSR tour and meeting in southeastern Minnesota.

Chair Roer announced the Drainage Forum, November 19-20, at the St. Cloud Civic Center; a notice will be sent out next week with details of the drainage forum.

Chair Roer stated that the BWSR will not meet in November, it has been decided to hold the November/December meeting on the third Wednesday in December. The meeting will be held December 16, 1998.

Chair Roer adjourned the meeting at 3:45 p.m.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Kathleen Roer".

Kathleen Roer, Chair

Wrap-Up by Bob Doppelt

- Hydrologic Unit - performance based system
- Subsidiary - no one size fits all
- Desire to create one voice for watersheds

Questions/Concerns by all:

- What's the best strategy to develop relationships?
- Evolve from command and control approach - free riders, maintain regulatory
- How to integrate data and information?
- Can we reduce sources of water quality problems through standards?
- How do we develop and formulate funding? Trust Fund
- How to best integrate social and economic at the local level? "Econoshed" tailor applied, meet both economic and environmental goals

Bob Doppelt stated that Minnesota has five goals listed in "Crosscurrent" that are clearly the key issues across the country. Minnesota will lead the country if Minnesota moves forward on these issues.

BOARD OF WATER AND SOIL RESOURCES
ATTENDANCE ROSTER
SEPTEMBER 23, 1998

	NAME	AFFILIATION	PHONE #
1.	Rita O'Connell	MPCA	296-6784
2.	Shanaz Parlamssee	Environmental Ground Inc	224-8488
3.	Jack Frost	MCEES	602-1078
4.	DAVE FISK	Summer River WMD, FL	904 362 1001
5.	Joel Settles	Hern. Cty DES	348-6157
6.	DAYLE WILLIAMSON	NE NATL. RES. COM LINCOLN,	402-471-3127
7.	Peter Cangialosi	Minnehaha Creek Watersh. Dist.	471-0590
8.	James Haffner	"	"
9.	Bruce Hawthinson	MNDNR - F&W	6-0776
10.	Steve Hansen	Mn River Basin JPB	361-6590
11.	Wyn John	City of Lake Elmo	770-5960
12.	Kurt Deter	Rinke - Noonan	320-251-6700
13.	Chuck Holtman	SMITH PARKER	344-1400
14.	CARL ANNALORA	MASWCD	218 346 3379
15.	TERRY LEE	OLMSTED Co.	507-285-8339
16.	SCOTT ALLEN	SCOTT COUNTY	612-496-8054
17.	Phil Belfiori	BWSR	297-8026
18.	Bill Sands	BWSR	282-3815
19.	Tom Roome	City of Mpls	612/673-5807
20.	Greg Aarnoldt	Carver County	612/361-1800
21.	Molly Shodeen	DNR Waters	772-7915
22.	MARCEL JOUSSEAU	Met. Council	602-1145
23.	Kenneth Korman	WASH. STATE	
24.	Tom Battern	MN Senate Council & Rep	296-3810
25.	Greg Knapp	MN Senate Council & Rep	296-9329

BOARD OF WATER AND SOIL RESOURCES
ATTENDANCE ROSTER

	NAME	AFFILIATION	PHONE #
1.	Cecil Unbrod	Horse	6-4294
2.	STEVEN KLEIN	BARR ENGINEERING	832-2809
3.	Tom Peterson	Kang Suck	408-1426 (W)
4.	Mary Kell	BWSR	
5.	Marilyn Lundberg	ELR	296 0626
6.	Dale Krystofek	BWSR	
7.	JERRY BENNETT	WRWD	28-784-4085
8.	STENGE BOSS	Bonestro + Assoc.	604-4758
9.	Jane Harper	Washington County	430 6011
10.	Richard Caldecott	C/m watershed	439-7385
11.	George Orning	UOFM	625-0081
12.	David Sill	BWSR	
13.	Roland Fryer	Clearwater River WD	320 274 6414
14.	Jack Lavelle	SWWD	651-459-9981
15.	J. Denn	MNTAP	295 2027
16.	PAUL MOLINE	Carver County	381-1825
17.	Lenora Jensen	Mawd	218-776-3530
18.	Tim Gieseke	Carver SWCD	442-5101
19.	Marb Doney	Washington SWCD	430 6826
20.	John Waller	Washington County Board of Supervisors	426 7331
21.	Dee Westerlund	mn DNR waters	651/772-7938
22.	Bill Stokes	NRCS ST. Paul	651-602-7886
23.	Bob Schunicht	Bonestro, Rose, Andalik	651-604-4736
24.	Bob Johnson	RWM Watershed Admins & W Mgr	651 738 3910
25.	Cuff Aukinger	RWMWD	704-2089

Bio and Summary of Presentations

- Bob Doppelt, Institute for Watershed and Community Health, Springfield, Oregon -- " New Approaches to Managing Valuable Human, Fiscal and Watershed Resources"
- Dave Fisk, Assistant Executive Director, Suwannee River Water Management District, Live Oak, Florida -- "Regional Water Management - Florida's Story"
- Dayle Williamson, Director of Natural Resources Commission, Lincoln, Nebraska -- "Challenges of Consolidation and Modernization and Charting a Course for the Future"
- Dave Jelinski, Director, Land and Water Resources Bureau, Madison, Wisconsin -- "Wisconsin's Locally Lead Approach"
- Jerry Griswold, USDA/NRCS Chesapeake Bay Liaison, Annapolis, Maryland -
- "Chesapeake Bay"
- Cliff Aichinger, Administrator, Ramsey-Washington Metro Watershed District, Maplewood, Minnesota -- "New Strategies for America's Watersheds"

PERSONNEL AND QUALIFICATIONS

FACTOR₁₀ Inc. was co-founded by Bob Doppelt and Peggy Bloom. In addition to his work with the firm, Mr. Doppelt is President of the Center for Watershed and Community Health, a non-profit institute at the Mark O. Hatfield School of Government at Portland State University, Portland, Oregon. He is also a Senior Fellow with the Columbia/Pacific Institute and an Adjunct Associate Professor of Government (sustainable development and watershed management) at Portland State University.

Mr. Doppelt has over 14 years experience in sustainable economic development, environmental issues and watershed management. He co-owned a small business for ten years. He developed the "Salmon Safe" program which certifies agricultural practices which conserve water quality and fish habitat. He crafted the Jobs-In-The-Woods program adopted by the Clinton Administration to employ dislocated loggers and fishermen in watershed restoration. He established a Green Business Recognition Program in Hood River, Oregon. He devised a program to recruit, expand and establish waste-based businesses in rural Oregon communities. He also created a program to help non-profit housing groups develop recycling and reuse businesses which employ low income populations.

Mr. Doppelt founded, and for ten years directed, the Pacific Rivers Council. During that time he helped link watershed conservation with sustainable development. He was the lead strategist behind the landmark 1988 Oregon Omnibus National Wild and Scenic Rivers Act, still today the largest river protection act in U.S. history. He was key in establishing the Aquatic Conservation Strategy as part of the Northwest Forest Plan, the largest watershed management and restoration program ever adopted in the U.S.. Under his leadership, various elements of the ACS have been adopted nationwide. He developed the initial proposal which led to the creation of hundreds of local watershed councils across the west. He is also an authority on watershed governance structures.

Mr. Doppelt served on the Western Division of The President's Council on Sustainable Development. He also served on the U.S. EPA National Council for Environmental Policy and Technology. He is a Natural Step Trainer. He has a Professional Sequence Award in ISO 14000 from U.C. Santa Cruz, and is a member of the U.S. Technical Assistance Group to the International Standardization Organization 14000 Environmental Standards. He is also a graduate of the International Program on the Management of Sustainability, Ziest, The Netherlands, and a founding member of the International Green Planners Association, The Netherlands.

Mr. Doppelt is a frequent speaker at conferences and workshops, is lead author of the acclaimed book *Entering the Watershed* (Island Press, 1993) and has authored numerous other articles and publications.

Peggy Bloom has a background in education and computer sciences. She has extensive experience in providing executive support for watershed projects. Ms. Bloom handles the administrative work of the firm. She also provides administrative support for selected watershed projects.



BOB DOPPELT
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**EMERGING APPROACHES TO
WATERSHED GOVERNANCE**

**A Report To
The Minnesota Board of Water and Soil Resources**

**Presented by Bob Doppelt
President, *FACTOR10 INC.*, Springfield, Oregon, and,
Director, Center for Watershed and Community Health
at Portland State University**

EMERGING APPROACHES TO WATERSHED GOVERNANCE

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THE AUTHOR

Bob Doppelt is President of *Factor 10 Inc.* a consulting firm which assists business, government and communities to adopt concrete approaches to sustainable development through increased environmental productivity. The firm has a special expertise in designing sustainable watershed and fisheries management and governance programs. Mr. Doppelt is also the Director of the Center for Watershed and Community Health, an institute in the School of Government at Portland State University, Portland, Oregon. He is also a Senior Fellow at the Columbia/Pacific Institute for Energy and the Environment at Portland State University.

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EMERGING APPROACHES TO WATERSHED GOVERNANCE

INTRODUCTION

The United States has spent decades creating and recreating governance systems and institutions to manage economic and social well-being in changing environments. This has not been the case for environmental issues in general, and watershed issues in specific. Over thirty years ago, we adopted the command-and-control approach as our primary environmental governance system, and a set of fragmented institutions emerged to administer it. Despite the notable successes that this system can claim, the type, scale and complexity of environmental issues have changed dramatically since then, as have the economy and the public's views of how resource issues should be managed. Yet, most of our watershed governance systems and institutions have remained relatively static.

The challenges faced by many watershed programs and institutions today - including those in Minnesota as described in the excellent 1996 report entitled *Crosscurrents* - should, therefore, be viewed as part of a natural evolution from our early-stage command-and-control system to more integrated approaches to watershed governance. Research on organizational change shows that sound, effective and efficient management systems often emerge only after many years of ad hoc confusion and piecemeal efforts. This underscores that the search for new governance systems is a natural outgrowth of our increasing knowledge about the way watersheds function, the management of complexity, and the design of high performance organizations.

During this natural yet sometimes frustrating period of piecemeal change, important lessons have been learned and some common characteristics of the more successful governance systems and institutions have been observed. This report describes some of these lessons and characteristics. They are offered to help foster and support the development of more effective and efficient watershed governance systems in Minnesota.

The document is written in four parts. In Part I the forces which are generating change in watershed governance structures and institutions are discussed. In Part II, a variety of approaches to watershed governance are discussed. In Part III, the characteristics of some of the more effective and efficient watershed governance approaches are discussed. In Part IV, some of the key issues of watershed stewardship and governance mentioned earlier in the document are discussed in greater detail.

The information included in this report are excerpted from *Emerging Approaches to Watershed Stewardship and Governance*, Doppelt et al., (In Press: full document available Spring, 1999). Apologies are due in advance for our failure to include all of the examples, citations and supportive documentation included with this report. They will be available when the final report is completed.

PART I: THE FORCES OF CHANGE IN WATERSHED GOVERNANCE

Why the search for new approaches to watershed governance? Changing any governance system is extremely time, energy and resource intensive, and politically risky. It makes little sense, therefore, to adopt new systems unless they can address the problems that have generated the search for new approaches substantially better than do current approaches. Hence, it is very important to understand the forces that have converged to stimulate the search for new governance systems. Some of these forces are:

Changing Population and Development Pressures: Population is rapidly growing in some areas while declining in others. The population mix is also changing, as new immigrants arrive (e.g. retirees, high tech industries) while long time residents leave. These changes generate a new mix of business, jobs, housing and recreational demands which compete with or replace traditional users. Most watershed-based laws were enacted for historical uses, some of which are now in conflict with new users and demands. This tension has led watershed programs to seek governance approaches which can better balance the old and the new.

Environmental Issues Have Grown More Complex: Most environmental programs were established in response to single-source, localized pollution problems, such as smokestack emissions and discharges from water-pipes. Most watershed and fisheries agencies still reflect this single-media approach (e.g. water quality, water quantity, fish and wildlife, polluted runoff etc.). When problem sources are fairly obvious and limited in number, the command-and-control system can be effective. Most of today's watershed problems, however, involve non-point pollution, pollution prevention and complex endangered ecosystem issues resulting from the cumulative effects of many diffused sources spread over long time periods and wide geographic ranges. This has stimulated a search for more integrated governance systems that can better manage complex ecological issues.

Legal, Management and Governance Structures Have Grown More Complex: As new environmental laws were enacted in response to each new problem that arose, our legal and institutional structures became characterized by layer upon layer of bureaucracy, conflicting legal requirements, and perverse or competing incentives. The result is that federal, state and local programs are not coordinated and have different legal requirements, planning assumptions, timetables and geopolitical boundaries. The situation is further complicated when single watersheds have intermingled federal, state, local, private and tribal lands. The complexity of the current system has led many to conclude that we must rethink the entire structure to revitalize the resources and establish more effective and efficient governance systems.

Economies are Rapidly Changing: Increased competition and new technologies have accelerated the speed of change in the production of goods and services far beyond the ability of our regulatory system to keep pace. Given the complexity and rapid change in today's economies, those most familiar with it would seem best equipped to devise methods to prevent or resolve environmental problems that result. Yet, our current system

still requires government to establish the practices that individual firms or landowners must use to control their impacts. The scale and scope of this oversight makes permitting, monitoring and enforcement extremely slow, expensive and inefficient. It also stifles creativity needed to develop new pollution prevention methods or the will to go beyond minimum standards. This has stimulated a search for governance systems that can better manage and respond to rapidly changing economic conditions, in cost-effective ways.

Laws and Programs Target "Symptoms" at The End of the Cause-and-Effect Chain:

Most watershed programs seek to identify and resolve problems which show up in-stream (water pollution, endangered fish). In fact we spend millions and send our best and our brightest - scientists etc. - out to study the conditions of our streams. Yet, in-stream problems are often just the end-result - the symptoms - of problems throughout an entire watershed, not the sole problem per se. They are caused by activities in the upstream, mid-stream, and downstream components of the entire economic value-chain. Assessments and interventions aimed solely at the end of the cause-and-effect chain (e.g. add-on and clean-up technologies, minimum riparian buffers) therefore often fail to prevent continued problems. This leads to growing frustration as valuable time and fiscal resources are spent with little gained in return. The failure of our current approaches to address root-causes has led to a search for more effective governance systems. **Table A (1 & 2) outlines this issue.**

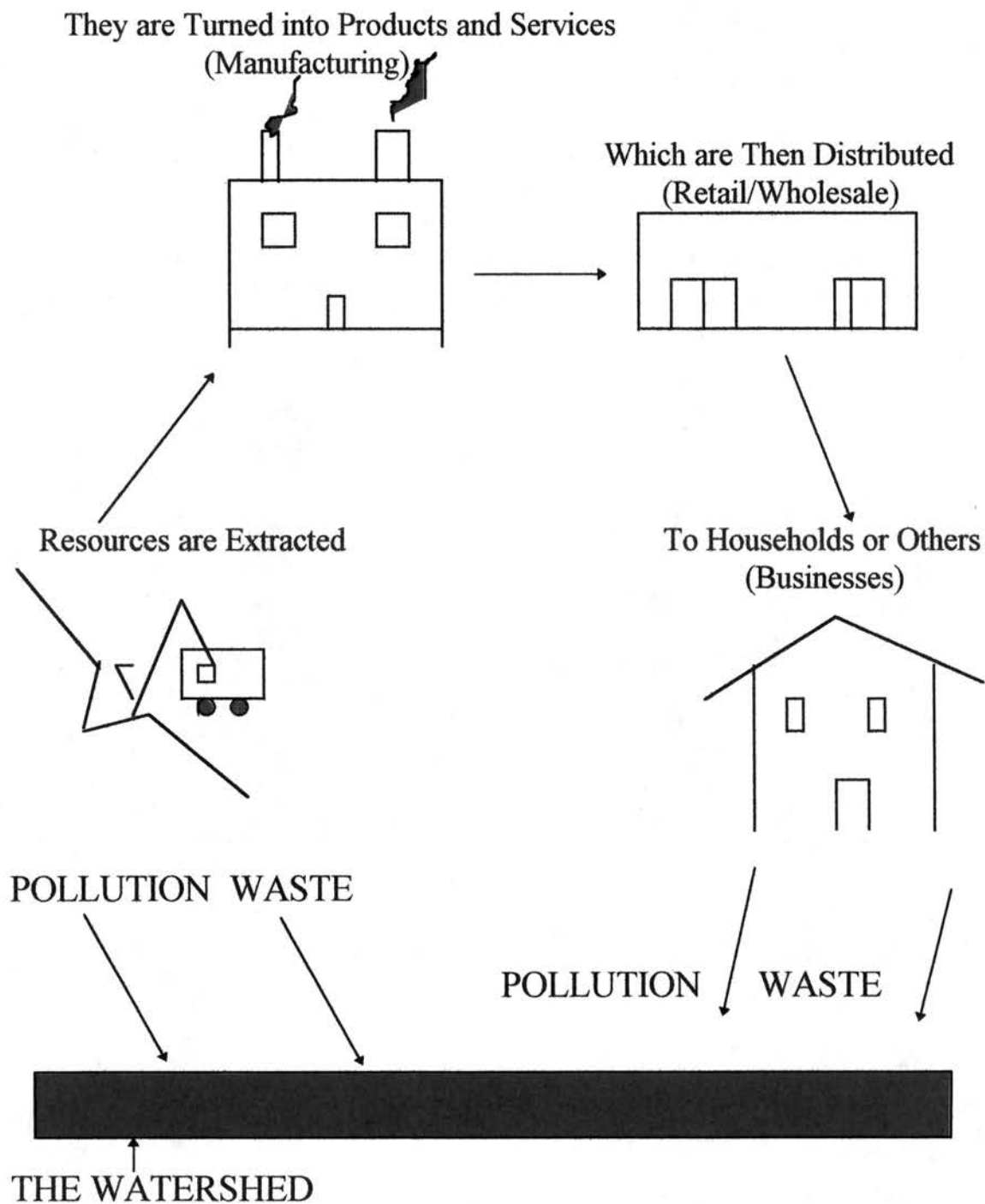
Public Resources Are Declining: Our existing governance system places the responsibility primarily on government to conserve the environment. However, the public resources needed to provide these services are declining, just as the awareness of multiple sources of pollution, the effects of changing population and development patterns, and the pace of economic change increase. This has forced watershed programs across the nation to seek ways to do more, and do it better, with fewer resources.

The Public is Growing More Sophisticated and Demanding: The public increasingly expects more from government. The public has witnessed the changing nature of environmental issues and expects government to make the transitions needed to respond in a fair and balanced manner. They see the private sector adding increased value, quality, innovation and customer service in leaps and bounds, and demand this from the public sector as well. While many watershed programs have successfully reduced management problems such as permitting delays, the public still believes that government is inefficient and does not provide good service or top value for the investment. We live in a world where information, services and products can be exchanged in the blink of an eye. The public wants government to provide these same types of services as effectively and efficiently as does the private sector.

In sum, many forces have conspired to stimulate the search for new approaches to watershed governance. When designing new approaches, it will be important to ensure that any new systems effectively addresses the issues described above. Failure to do so may result in even greater inefficiency, squandered public resources, agency burn out, increased cynicism and decreased performance. **Table B provides a checklist to follow.**

TABLE A (1)

**TO UNDERSTAND THE FORCES FOR CHANGE IN WATERSHED
GOVERNANCE SYSTEMS, IT IS IMPORTANT TO UNDERSTAND HOW OUR
ECONOMY WORKS:**



**(A-2) WHERE DO MOST EXISTING WATERSHED LAWS AND PROGRAMS
COME INTO PLAY? ...
AT THE END OF THE CAUSE-AND-EFFECT CHAIN!**

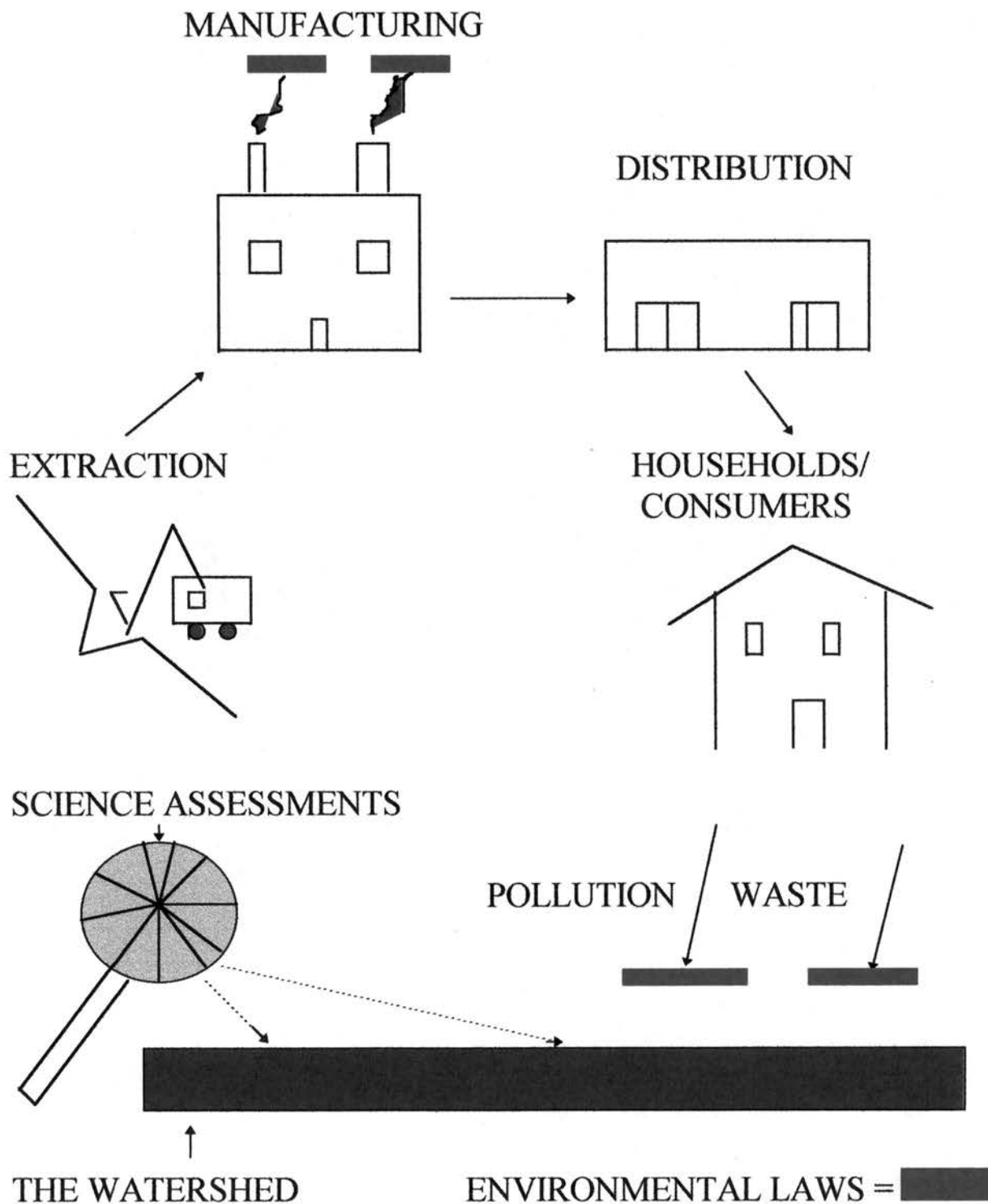


TABLE B

**CHECKLIST OF FUNCTIONAL QUESTIONS TO ASK WHEN DESIGNING
NEW WATERSHED GOVERNANCE SYSTEMS**

Does The Proposed New System Establish More Effective and Efficient Means to Address The Following Issues?		
	Yes/No	Explain
Changing Mix of Population, Development and User Demands		
Increasing Complexity of Environmental Issues		
Increasing Complexity of Legal Management and Governance Structures		
Rapidly Changing Mix of Technologies, Products and Services		
Problems At Many Stages of The Cause-and-Effect Chain		
Decreasing Public Resources		
Increased Public Sophistication and Demands		

PART II: APPROACHES TO WATERSHED GOVERNANCE

A. Policy Instruments and Governance Systems

It is important to make careful distinctions between policy instruments and governance systems. Confusion over these issues can muddle discussions about new watershed governance systems. Taxes, fiscal incentives, specific water or riparian policies, technical assistance programs etc. are *policy tools or instruments* that are used within the context of an overall *governance system*. They are not governance systems themselves.

A governance system involves a complex set of laws, institutions, programs and tools designed to, in concert, achieve a specific outcome. A clear understanding of the outcome desired is important to choosing an effective governance system. The governance system used determines who makes final decisions, how the decisions are made, the role of the public in the decision making process, what entity or actors should communicate with others (i.e. what type and scope of information is needed, who is required to share it with other entities etc.), how decisions are enforced and which entity enforces them.

Effective watershed governance can only be achieved if the system nurtures a balance between the often contrasting right to protect a place in which one can live as one wants, with the need to cooperate with others to achieve a safe and harmonious society and a healthy environment.

This requires a combination of:

- Formal mechanisms (laws and regulations)
- Informal mechanisms (social norms focused on stewardship)
- Interpersonal mechanisms (communication systems)
- Networking mechanisms (exchange systems)

In relatively cohesive societies laws function largely to support social control mechanisms and to fill in the gaps where informal and networking mechanisms fail. Most rules common to a territory cannot be found in any written code. Instead, they are found in the informal social norms about what is required to be good-neighbors and good stewards.

The structure and content of our governance systems therefore reflects the process by which they are made and the depths of our beliefs, principles and vision of how we see the world. Every governance system is a manifestation of our ideas about community. Consequently, the success of any governance system depends more on the clarity and level of support of the shared purpose, principles, goals and vision, than it does on specific management practices and resources, per se, as important as they may be.

It is important to note that watershed governance systems have a number of characteristics that set them apart from other governance systems. For one, they often seek to give prominence and priority to non-human beneficiaries, such as plants and animals. In

addition, watershed governance systems often seek to bank (save) and redistribute environmental benefits to future generations of people. Further, unlike many other policy arenas (including issues such as health care), they typically give science a strong voice in agenda setting and evaluation. Finally, they tend to require more comprehensive and integrated responses than other policy issues because watershed health is typically threshold bound and not attainable through incremental steps (e.g. achieving 90 percent of what is necessary to avoid contaminated drinking water or to prevent fish extinctions still may constitute failure).

B. Five Approaches to Watershed Governance

There are five general approaches to watershed governance. Each addresses "the commons" in different ways, places government in different roles along a continuum, and each affects interest groups in different ways. One the one end, there is total government control over environmental policy, and, at the other end, there is virtually no government involvement and the free market and voluntary efforts control activities. In between, there are combinations of the various approaches, some of which can be very effective.

This continuum provides a framework for assessing existing approaches and developing more effective and efficient watershed governance systems. There is no one-size-fits-all formula. Different combinations and approaches work best based on the geography, ecology, history, politics and issues relevant to the particular region, state or community.

1. Total Government Control "Feudal" Approach

In this system, the government has the total responsibility for environmental protection and management. Command flows downward and information and results flow upwards to the few who make the decisions. The government determines what the appropriate level of a particular pollutant or environmental impact should be, sets the standards, and establishes a way to enforce the standards and gather information about compliance. The government and the property system are basically synonymous - government is both the supreme sovereign and the owner of the environment. Only rarely in this country has this approach been used (for example, when regulating nuclear power). Some could argue that the Endangered Species Act falls into this category, although it does allow for states and local entities to develop recovery plans to meet ESA requirements.

2. Government Controlled "Standards and Enforcement" with Local Implementation

This is a variation of feudal approach, with some very important differences. Beginning in the early 1970s, environmental regulations in this country were formulated by the national government and implemented primarily by state and local governments. State governments also set policies that were to be implemented by local counties or municipalities. In this system, a government body determines what the appropriate level of a particular pollutant or environmental impact should be, and sets a standard. State and local governments

adopt rules, issues permits, and establishes a way to enforce the standards and gather information about compliance. On occasion, some substances may be banned outright or constrained to specific zones.

In this approach, property is separate from government. In fact property rights are seen as a bulwark against government intrusion. Laws are passed and enforced as a buffer between government and property (a "government of laws, not men"). Society is viewed as a group of semi-autonomous individuals which means property owners have the right to do what they want on their lands except for general laws applicable to all.

While this approach has been responsible for major environmental improvements since the 1960's, as previously discussed, it has a growing number of limits. For example, as laws were established to address new problems as they emerged, a tangled web of policies and hierarchical bureaucracies emerged to manage them. The mechanistic command and control approach seeks to manage for constants, uniformity and efficiency from the top down. However, our greatest need when dealing with watershed issues is to coordinate variability (every watershed is different), complexity (ecosystem function does not follow a linear cause and effect chain) and sound performance by multiple sources (desired outcomes).

3. Performance-Based Within Carefully Monitored Framework

This is a combination of the other approaches. It emphasizes horizontal and vertical alliances and partnerships to achieve coordinated action. Many of the new and emerging local watershed programs fall into this category. They focus is on using the best combination to achieve outcomes, not on dogmatic adherence to any particular hierarchical process. Yet, they also seek to provide assurances that "the commons" are protected for all.

These programs often adopt governance principles that are fundamentally different than the traditional "standards and enforcement" approach. For example, they seek to *reverse the burden of responsibility* for sound environmental management from government to those contributing to environmental problems. Government becomes a partner in the management process, playing multiple roles, yet serving as the final quality control arbitrator of stewardship issues. The principle of *subsidiarity* is also followed - keeping the locus of decision making as close to the people and appropriate scales as possible. There is a heavy reliance on communication and information flow, and an emphasis on local networking, flexibility, and adaptation.

The emergence of this approach tends to strain traditional watershed programs which stress hierarchy and control, fixed jurisdictions, and reliance on formal rules. It also can elicit strong objections from those who believe that only clear government mandates and regulation can protect the environment, especially when "the commons" is involved.

4. Market and/or Voluntary Approaches with Some Government Controls

In this approach government is involved with environmental management, but only to the extent that it establishes taxes or affluent charges or some other type of monetary measure to provide polluters with an incentive to find the most cost efficient means to limit their environmental effects. The approach is based on the assumption that the payment of high enough fees will prevent the discharge of pollutants above specific standards set by government.

One of the problems with this approach is that appropriate environmental costs are very difficult to calculate. They also can have adverse or unintended consequences, or effect specific populations unfairly. This approach is also fraught with the limits described in approach #5 below.

5. Complete Voluntary and/or Market-Based Approach

This is essentially the free-market option. It relies on individual self-interest to provide the necessary environmental safeguards, and on volunteerism. No government intervention is involved to correct for problems related to "the commons." In some ways it runs counter to the view that laws serve as a buffer between government and property by establishing a "government of individuals, not law."

One version of the free market approach is to establish property rights in "the commons." This, in theory, gives individuals a stake in the appropriate management of the now private resources. For example, the "privatization" approach has often been promoted as a means to forest management. Another recent example is the Oregon Coastal Salmon Restoration Initiative, which (until the recent ESA listing of coho salmon) almost completely relied on the volunteer efforts of landowners to restore coastal watersheds and endangered salmon.

As many watershed problems cannot be regulated, volunteerism is a vital component of any effective watershed governance system. The reliance on appropriately set prices and market mechanisms can also be important contributors to effective watershed stewardship and governance. However, full environmental costs are seldom internalized in market prices and environmental property rights are rarely - and are very difficult - to define. Government subsidies and other market distortions often encourage environmentally harmful practices such as oversupply or overconsumption of non-renewable resources. Decades of experience across the globe, therefore, underscores that the free-market and volunteer approach alone is not a reliable solution to problems related to "the commons."

Table C provides a comparison of the approaches to watershed governance.

TABLE C: Comparative Approaches To Environmental Governance

<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
Complete Voluntary or Market-Based Approach	Market and Voluntary Approaches W/Some Gov't Controls	Performance- Based Within Carefully Monitored & Regulated Framework	Government Controlled With Local Implementation	Total Regulatory Approach

C. Many Watershed Programs Today Focus on Two Extremes (Approaches #1-2 and/or #5)

As previously discussed, our primary watershed governance system remains approaches #1-2. In these programs, the Clean Water Act, Endangered Species Act and other federal or state laws dictate the governance systems. Increasingly, many regions have begun to adopt components of a governance system which could be considered at the opposite end of the scale - #5 free market volunteerism. Conservation efforts are done opportunistically by those who need regulatory approval for new activities or are willing to voluntarily participate.

While these programs can claim many notable successes, our research has found that the more effective programs have adopted systems that fit between the two extremes. The next section discusses the characteristics of these systems.

Table D provides a checklist to assess existing or emerging watershed programs against the various governance options.

TABLE D

**CHECKLIST TO HELP DETERMINE THE TYPE OF EXISTING OR
PROPOSED WATERSHED GOVERNANCE SYSTEM**

Which Approach To Governance Does Your Existing or Emerging Watershed Program Employ?		
	Yes/No	Explain
Complete Market and Voluntary Based System		
Market and Voluntary Approach With Some Government Controls		
Performance-Based Within A Carefully Monitored and Regulated Framework		
Government Controlled With Local Implementation		
Total Regulatory Approach		

PART III: CHARACTERISTICS OF MORE EFFECTIVE AND EFFICIENT WATERSHED GOVERNANCE SYSTEMS

What are the characteristics of some of the more effective and efficient watershed governance systems? How do they differ from those that exist today? The answers to these questions can help guide the development of local programs.

Our research indicates that there are three primary components of the emerging more effective and efficient watershed governance systems:

- Scientifically sound sideboards to guide stewardship of watershed resources, particularly those associated with "the commons."
- Real-time integration of economic and environmental objectives within the watershed context; and,
- The effective and efficient delivery of those services through the development of high-performance organizational structures.

Each watershed governance system differs due to historical, cultural, political, economic and environmental traits. While we found no program that provides each of the three components state above perfectly or completely, many have adopted ways to deliver one or more components very effectively.

A. Scientifically Sound Sideboards to Guide Watershed Stewardship:

The concept of stewardship is often difficult to define. Few government bodies have clear stewardship mandates. Even fewer private landowners have been required by law to practice stewardship. In fact, our understanding of watershed stewardship is not very concrete. Most watershed-based laws simply *constrain* what can be done or identify the most obvious good and bad actions in relation to stewardship. But a majority of activities that effect watersheds fall in the middle ground, which is often very muddled.

There is an old saying, "If you don't know where you are going, any path will get you there." Without clear stewardship guidelines, it should be no wonder that many watershed governance systems and institutions seem to struggle to be efficient and effective.

While the particulars of stewardship may be difficult to define, one universally agreed upon purpose is to conserve "*the commons*." This means conserving the "ecological services" that all of society depends on, yet no one entity can own in entirety, such as clean water, clean air, productive soils, fish and wildlife etc.

Conserving "the commons" seems to involve, at a minimum, three components:

- Establishing management *goals* that are consistent with *scientifically sound stewardship principles* within a watershed.
- Making the *management goals* consistent *across territorial (land ownership) boundaries*:
 - between public-private landowners
 - between public land management agencies
 - within each public land management agency
- Developing consistency between *management actions* and *stewardship goals* across administrative boundaries throughout a watershed.

Effective stewardship requires that scientifically sound management goals be aligned *between* and *within* territorial boundaries (land ownerships). Incongruent management goals are *more important* in causing ecological harm than incongruity between administrative and ecological boundaries. Said differently, even if administrative and ecological boundaries are perfectly aligned, different management goals within different land units will still cause ecological harm.

Therefore, while it may help to adjust agency jurisdictions to better align with ecological boundaries, or to merge agencies or agency offices, *the most important need is to make management goals compatible across territorial boundaries.*

Characteristics of Effective Watershed Stewardship Systems

Our review of programs in this nation and across the globe found that programs that do the best job of operationalizing the three overall components of sound watershed stewardship have some or all of the following characteristics. They:

- ***Establish Clear Vision and Goals for the Watershed:*** Traditionally, watershed programs focus on *what* to do, and not on *why* to do it. The most advanced programs realize that the most important initial step is to clarify the strategic goals and overall vision of a watershed plan. The type of stewardship plan developed will hinge on the vision and goals. Government, fully informed by the public, establishes the vision and goals. In contrast, failure to do this is a common problem with many programs (e.g. many federal agencies have a difficult time clearly stating their goals and objectives).
- ***Develop Credible Scientific Analysis of Baseline Conditions and Needs:*** A "credible story" is developed about the problems, causes and solutions to motivate people to adopt new behaviors. This begins with a credible scientific assessment of baseline conditions, trends and risks. Government (or its delegates) establishes the means to continually generate credible scientific information and to monitor progress, subject to a thorough scientific peer review process.

- **Establish Measurable Objectives.** Once credible baseline information exists, the best programs translate national, regional, state and local water resource goals into measurable objectives. These are the quantification of macro level goals. Where knowledge is incomplete, the best available data or science assessments are used within a framework of careful monitoring and adaptive management.

Measurable objectives: a) provide the best assessment of what is needed to achieve an acceptable level of improvement; b) send clear messages to all contributors; c) stimulate a better, more focused debate; d) focus attention on outcomes, not the process and instruments; e) focus attention on the portions of contributions required per sector or actor; f) allow businesses to incorporate changes into their normal planning and investment processes; g) help all parties monitor progress and provide trigger points to adjust strategies when needed.

- **Identify All Priority Issues and the Effects Which Must Be Changed:** Rather than focusing just on the easy to identify or control problems, all the priority issues are identified. Clear priorities helps business, communities and government develop specific implementation steps and to measure the progress. This also help government monitor progress, which satisfies legal requirements and the needs of the public.

The traditional single-issue approach to watershed management often leads to the transference of impacts from one environmental media to another to resolve a problem (e.g. pushing water emissions into the air). To avoid this, the more advanced programs seek to address all priority environmental issues simultaneously, which leads to an integrated and comprehensive stewardship program.

Priority Setting Through a Watershed Problem and Solution Matrix

Table E outlines a way to approach priority setting and responsibility identification using a sector-based approach. This matrix links problems with solutions. For example, if a sector contributes 20% of water quality or riparian habitat problems, they must be 20% of the solution. The key question to start with is what is the approximate individual contribution of every key sector or actor to each environmental problem area. They need to add up to 100%.

Rarely will the ultimate end goals be known initially. The initial focus must not be on the specific end-points (e.g. 59 or 65 degree water temps), but on the *direction*, *degree* and *speed of change needed* (e.g. the approximate percentage of reduced municipal runoff required within 5 years). Over time, as more information is known, the specific levels of change can be quantified. If you add up all the costs and find that some sectors or actors contributions are too expensive, the matrix provides a way for sectors to make trades within and between sectors. The trade-offs can be measured against risk factors.

TABLE E

SAMPLE ISSUE AND SOLUTION MATRIX

KEY ISSUES	KEY CONTRIBUTORS (KEY GROUPS)										
		Industries	Agriculture	Transport	Pulp and Paper	Construction	Forestry	Municipal	Dams	Fishing	100%
	Riparian Habitat Loss	2.5%	25.0%	15.0%	2.5%	20.0%	20.0%	10.0%	5.0%	0.0%	100%
	Point Source Contamination	30.0%									
	Stream Bank Erosion	2.5%									
	Non-Point Source Contamination	20.0%									
	Stream Chanel Modif.	10.0%									
	Genetic Diversity Loss	20.0%									
	Groundwater Polution	10.0%									
	Fish Passage	5.0%									
	Other										
	TOTAL \$	\$	\$	\$	\$	\$	\$	\$	\$	\$	

THE PERCENTAGES ARE SAMPLES ONLY. THIS MATRIX SYSTEM CAN BE USED TO IDENTIFY CONTRIBUTIONS AND POTENTIAL SOLUTIONS WITHIN A SPECIFIC SECTOR OR SUB-SECTORS. IT CAN ALSO HELP IDENTIFY POSSIBLE TRADES AND EXCHANGES BETWEEN SECTORS.

Follow The Principle of Subsidiarity. Once the priority issues are identified, they emphasize action at every level needed to resolve problems. Yet, they also emphasize devolving decision making down to the most appropriate level possible. This means that emphasize local implementation, innovation and responsibility wherever possible. This also means giving responsibility for the development of stewardship strategies to those who know their industry or economic sector best, with monitoring and enforcement provided by government. Flexibility is provided to encourage innovation, yet a carefully monitored framework is developed to ensure accountability.

Table F describes the levels needed for action.

TABLE F

WATERSHED ISSUES DIVIDED INTO SIX SPATIAL SCALES AS A BASIS FOR ACTION	
Effective Watershed Stewardship Requires Action At All Levels:	International
	National
	Regional
	State
	Watersheds (Sub-State Eco-Regions)
	Local

- **Organize Around "Nested" Hydrologic Units (Watersheds) For the Development of Coordinated, Integrated Management Plans.** Natural hydrologic units are used as the focal point in which federal, state, local, private and other entities develop integrated and coordinated management plans. Steering and coordination methods are established to accomplish this. While many agencies often feel constrained by existing mandates from full cooperation and integrated planning with other agencies, in reality this is more a matter of organizational history, culture and mindset than legislative constraints. A nested approach is used to build planning and management up or down from first to third or fourth order watersheds.
- **Establish Clear, Easy to Understand, Policy Relevant Scientific Principles to Guide All Levels of Management.** The basic principles of aquatic ecology, the first and second laws of thermodynamics, and other scientific principles are used to guide planning and management. They are stated in clear, easy to understand terms which are translated into how the principles relate to outcomes on the ground (for firms, landowners and communities).

- ***Seek to Align Management Goals Within, and Between, Territorial Boundaries (Land Ownership/Management Units) in a Watershed.*** Rather than placing a major emphasis on aligning administrative and ecological boundaries, emphasis is placed on developing consistency between the management goals practiced on the land ownership units within watersheds. Watershed level goal identification and alignment fosters the development of well defined stewardship strategies.
- ***Develop Integrated Basin Level Budget Coordination Processes.*** Federal, state and local agencies coordinate and display their budget proposals to show how they achieve the stewardship goals within a watershed. Full public disclosure and public comment on the activities and budgets which agencies propose have been found to be one of the best means to develop scientifically sound, integrated watershed management plans.
- ***Clearly Identify Responsibility By Reversing the Burden of Responsibility.*** There are simply too many sources of non-point pollution or endangered ecosystem problems for government to regulate (i.e. all of us). This requires a fundamental change in governance systems. Those that know their industry best are best able to develop scientifically sound and cost-efficient strategies to prevent and resolve environmental problems. This awareness has led to a variety of strategies to place responsibility on the primary contributors of environmental problems to develop strategies to achieve the management objectives.
- ***Use Outcome or Performance-Based Management Systems.*** The traditional government focus on rules and procedures serves many purposes, but experience in watershed management clearly shows they are an inadequate substitute for results. To reverse the burden of responsibility, government changes its role from strict adherence to rules and procedures to setting environmental performance objectives and then helping the key contributors of environmental problems develop their own, least-cost path to achieve these goals. Government then reviews, monitors and enforces the plans. Permitting flexibility, priority for technical assistance, fiscal support and other incentives and benefits are provided to those that develop and abide by their own conservation strategy. Measurable objectives are needed to transition to a performance-based system. If performance objectives are established, the specific instruments used don't matter as much.
- ***Maintain the Regulatory System But Use It Differently.*** Rather than using regulation as the sole or dominant management tool, it is used primarily to establish baseline conditions, as a back-up to regulate "free-riders", to assure a level playing field for all actors, and to monitor efforts and provide feedback for adaptive management.
- ***Move Upstream in the Cause and Effect Chain To Prevent and Solve Problems at Their Source.*** Rather than focusing solely on solutions applied at the end of the cause-and-effect-chain (e.g. add-on or clean-up technologies or minimum riparian standards), prevention at the source of the problem is pursued. For example, toxic substances may be phased out in favor of bio-products rather than investing in expensive and less

effective collection ponds or scrubber technologies. This requires that issues be address as far upstream in the cause-and-effect chain as possible.

- ***Use Inter-Linked "Horizontal-Vertical" Problem-Solving Strategies Involving Sector-Based and Place-Based Solutions.*** Most watershed problems are the result of business decisions made in response to the economic and political pressures within the economic sector in which a business operates (firms or landowners). The more innovative programs develop public-private partnerships to help local businesses identify, prioritize and develop effective responses to these economic forces. These can include sector-wide strategies, exchanges between sectors (e.g. emissions trading, land purchases or exchanges), or exchanges between major players within a sector.

Table G provides a schematic overview of how these characteristics can fit together in a comprehensive program.

It is important to remember that the characteristics described above will change over time as new ideas and methods emerge. They are provided simply to provide a form of benchmarking to help existing programs evaluate their current and proposed methods and directions.

Table H provides a checklist to help determine the extend to which an existing or emerging watershed program includes the characteristics describes above.

TABLE G

**SCHEMATIC VIEW OF COMPREHENSIVE
WATERSHED STEWARDSHIP PLAN**

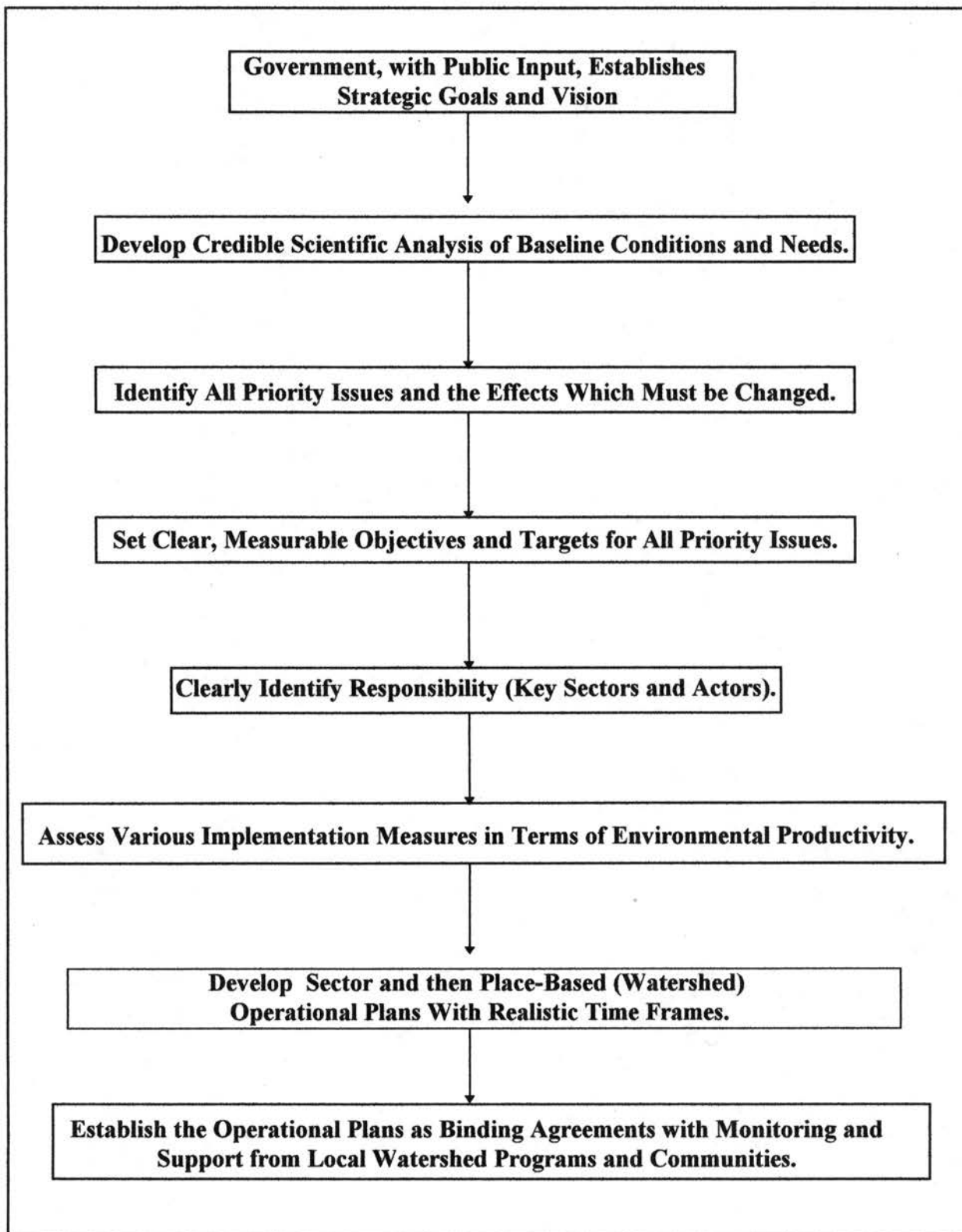


TABLE H
CHECKLIST TO DETERMINE THE CHARACTERISTICS OF WATERSHED
STEWARDSHIP PROGRAMS

Which of the Following Stewardship Plan Characteristics Does Your Watershed Program Include?		
	Yes/No	Explain
Clear Visions and Goals Have Been Established for the Watershed		
A Credible Scientific Analysis of Baseline Conditions and Needs Has Been Completed		
Measurable Objectives Have Been Established.		
All Priority Issues Have Been Identified		
The Principle of Subsidiarity is Followed		
Coordinated, Integrated Multi-Agency Management Plans Are Organize Around "Nested" Hydrologic Units		
Clear, Policy Relevant Scientific Principles Exist Which Guide All Levels of Management		
Management Goals Are Aligned Within, and Between, Territorial Boundaries in the Watershed		
Integrated Basin Level Budget Coordination Processes Are Used		
Responsibility Has Been Clearly Established By Reversing the Burden From Government to Key Contributors		
Performance-Based Management Systems Are Used.		
The Regulatory System Is Maintained But Used Differently		
Problems are Resolved At Their Source Where Possible		
Inter-Linked "Horizontal-Vertical" Problem-Solving Strategies Are Used When Possible		

B. Real-Time Integration of Economic and Environmental Goals

The most advanced watershed governance systems seek to explicitly link economic and environmental goals. This is sometimes called sustainable development. Another way of saying this is to help business, communities and households to *increase* their *environmental productivity* by *decoupling* economic productivity and competitiveness from environmental effects.

The last century witnessed huge increases in labor productivity. As market pressures and environmental concerns increase, the future is more likely to be characterized by substantial increases in environmental productivity. This means increased economic growth and profitability coupled with dramatic reductions in energy and raw material consumption, pollution, habitat impacts and waste generated per unit of product or GNP.

As with labor productivity, the growth in environmental productivity will be largely based on technical and management advances which reshape the way business, government and communities function. Efforts to increase environmental productivity are fundamentally different from the traditional watershed focus of trying to minimize the economic impacts of environment policy. They generally require a concerted effort on the part of a blue ribbon team of economists, scientists, policy analysts, business leaders, bankers, government officials and key members of each economic sector involved.

One way to begin the process of increasing environmental productivity is to calculate (even through rough estimates on the "back of the envelope") the current amount of soil runoff per farm, or per unit of farm product by sector, or the current amount of polluted urban storm water runoff per unit of GNP in a community or statewide. Once these rough estimates are determined, establish programs to examine a variety of options to decouple these variables by increase profitability or competitiveness while decreasing emissions per unit or product of GNP.

Four approaches can be pursued:

1. Government Led Initiatives
2. Combined Actions by Key Sectors and Government
3. Key Sector Led Initiatives
4. Early Adopter Individual Actor (Firm or Landowner) Initiatives

Some questions that may help steer the investigation of means to increase environmental productivity:

- What actions can *firms and land owners* take to increase productivity or competitiveness within a watershed while reducing their contribution to watershed problems? (e.g. efficiency measures, new technologies, Strategic Environmental Management, Value-Chain Programs).

- To what extent are problems the result of factors within the economic sector in which a firm or landowner operates? Could sector-based problem-solving be a more effective and efficient means to help the firms or landowners resolve their problems? How would sector-based initiatives be organized?
- What actions can *government and communities* take to help foster increased productivity or competitiveness while helping to reduce their contribution to problems? (e.g. infrastructure investments, technology transfers, fiscal incentives).
- Which actions are clearly necessary and which are more uncertain to meet the environmental quality standard needed or to reduce known problems ?
- Which actions can contribute most cost-effectively today to solving the problems, and what would a step-wise phase-in look like? (Short term "low hanging fruit").
- What actions may take more time to phase-in but provide potential great returns? (i.e. what new technologies or process oriented abatement measures could be phased in during normal business investment cycles?)

Table I provides a means to assess existing or emerging sustainable development programs.

TABLE I

**CHECKLIST TO ASSES HOW YOUR WATERSHED PROGRAM LINKS
ECONOMIC AND ENVIRONMENTAL GOALS**

Which of the Following Watershed-Based Sustainable Development Initiatives Does Your Program Include?		
	Yes/No	Explain
Government Led Initiatives		
Combined Actions by Key Sectors and Government		
Key Sector Led Initiatives		
Early Adopter Individual Actor (Firm or Landowner) Initiatives		

C. High Performance Organizational Structures Which Facilitate Efficient and Effective Delivery of Products and Services

To effectively and efficiently deliver the services requires to guide sound watershed stewardship and to link economic-environmental goals, public agencies reinvent themselves into what some have called "high performance organizations." This means they carefully evolve from hierarchical, centralized, command-and-control oriented organizations to flexible, dynamic, outcome and performance-based entities. In short, they recreate themselves in the image of the changing nature of watershed issues and the environmental productivity services that they have chosen or been mandated to deliver.

Our review of many programs identified several common characteristics regarding efficient and effective *high performance organizations*. They:

- ***Are Clear About Their Missions and the Changes They Need to Make to Achieve It.*** They are mission oriented, not program or project oriented. The mission is developed through a comprehensive diagnostic process involving stakeholders and employees which honestly examines all aspects of past, current and potential future activities. It is used to set the framework for future activities and for assessing future watershed stewardship and/or sustainable development organizational performance.
- ***Use Performance-Based Systems and Are Results Oriented.*** As with the stewardship strategy, they phase out prescriptive, rule based management and adopt performance-based organizational systems that define the specific outcomes the organization will achieve to accomplish its mission. The performance measures are tools the organization uses to focus on results.
- ***Focus on Continual Improvement.*** They know that achieving their missions will require continued effort. They set interim benchmarks to guide their progress and seek to consistently improve their organizational performance.
- ***Fully Involve Stakeholders and Employees in Defining Their Goals.*** The development, measurement and application of performance goals requires the full involvement of stakeholders, employees and leadership.
- ***Unleash the Creativity of Their Workforce.*** Traditional organizational boundaries are removed. Employees are empowered to form alliances, collaborate across work groups and departments and between agencies to develop new decentralized approaches that help them best meet the outcomes and mission of the organization.
- ***Develop Protocols to Allow For Quickly Adjustments to Changing Circumstances.*** Just as watershed conditions change in rapid and unpredictable ways, high performance organizations develop internal protocols that allow them to quickly adjust to change.

- ***Are Committed to Reaching Out and Involving Customers and Stakeholders.*** They emphasize quality, value, customer satisfaction and results rather than compliance with rules and regulations. They fully involve their stakeholders - whether perceived to be adversaries or friends - in the process. Clear and efficient communication systems are developed within the agency and between the agency and stakeholders and customers.
- ***Employ Participatory Decision Making.*** They encourage, not fear, contrary or adversarial public comment and participation. They realize that the plurality of positions and ideas (from agencies, citizens, economic interests) helps to make better decisions. It also reinforces democratic values and helps establish trust and faith in government. They therefore encourage meaningful participation to develop the information needed for better decision making. This also helps generate the support of key constituencies.

Table J provides a checklist to assess the high performance characteristics of existing or emerging organization structures.

Table K provides a comparative assessment of traditional and emerging watershed governance structures and institutions.

TABLE J

**CHECKLIST TO ASSES THE HIGH PERFORMANCE
CHARACTERISTICS OF YOUR ORGANIZATION**

Which of the Following Characteristics of High Performance Organizations Does Your Agency Include?		
	Yes/No	Explain
We Are Clear About Our Missions and the Changes Needed to Achieve It.		
We Use Performance-Based Systems and Are Results Oriented.		
We Focus on Continual Improvement		
We Fully Involve Stakeholders and Employees in Defining Our Goals.		
We Promote Creativity of Our Workforce		
We Have Developed Protocols to Allow For Quick Adjustments to Changing Circumstances		
We Are Committed to Reaching Out and Involving Customers and Stakeholders		
We Employ Participatory Decision Making		

TABLE K
COMPARATIVE DESIGNS OF TRADITIONAL AND EMERGING
WATERSHED GOVERNANCE SYSTEMS

Components	Traditional Systems	Emerging Systems
Basic Perspectives	Priority on Industrial Economy Program & Project Oriented Single Media Focus (Air, Water) Rigid Procedure and Rules	Focus on Increasing Economic & Environmental Well Being Systems Oriented Coordinated Ecosystem Focus Outcome Based
Resource Orientation	Minimize Damage Minimum Impact Standards "Near Stream" Environment	Prevent Problems at Source Scientifically Sound Sustainability Principles Watershed Perspective
Intervention Focus	End of Cause-and-Effect-Chain Add-on or Clean-up Technology Political Conservation Strategies General Narrative Standards	Up and Mid-Stream in Cause-and-Effect-Chain Process Oriented Abatement Strategies Scientific Conservation Approach Measurable Goals and Objectives
Economic-Enviro Focus	Prevent Economic Impacts Assess Economic Effects of Environmental Policies	Increase Environmental Productivity Seek Approaches that Enhance Both Economic and Environmental Well Being
Structure	Rigid, Hierarchical Segmented Media Specific Programs Functional Departments	Flat, Flexible Integrated Programs Multi-Level Departments
Decision Systems	Centralized Hierarchical Closed	Dispersed Flat or Flexible Hierarchy Open
People	Narrow Expertise Reductionist Viewpoints	Multi-skilled Focused on Wholeness and Issue Connections
Values	Compliance Oriented Routine Behaviors	Involvement Oriented Promote Innovation, Cooperation

PART IV: FURTHER DISCUSSION OF SOME KEY ISSUES IN WATERSHED STEWARDSHIP AND GOVERNANCE

A. Principles and Strategies For Designing More Effective And Efficient Watershed Stewardship and Governance Systems

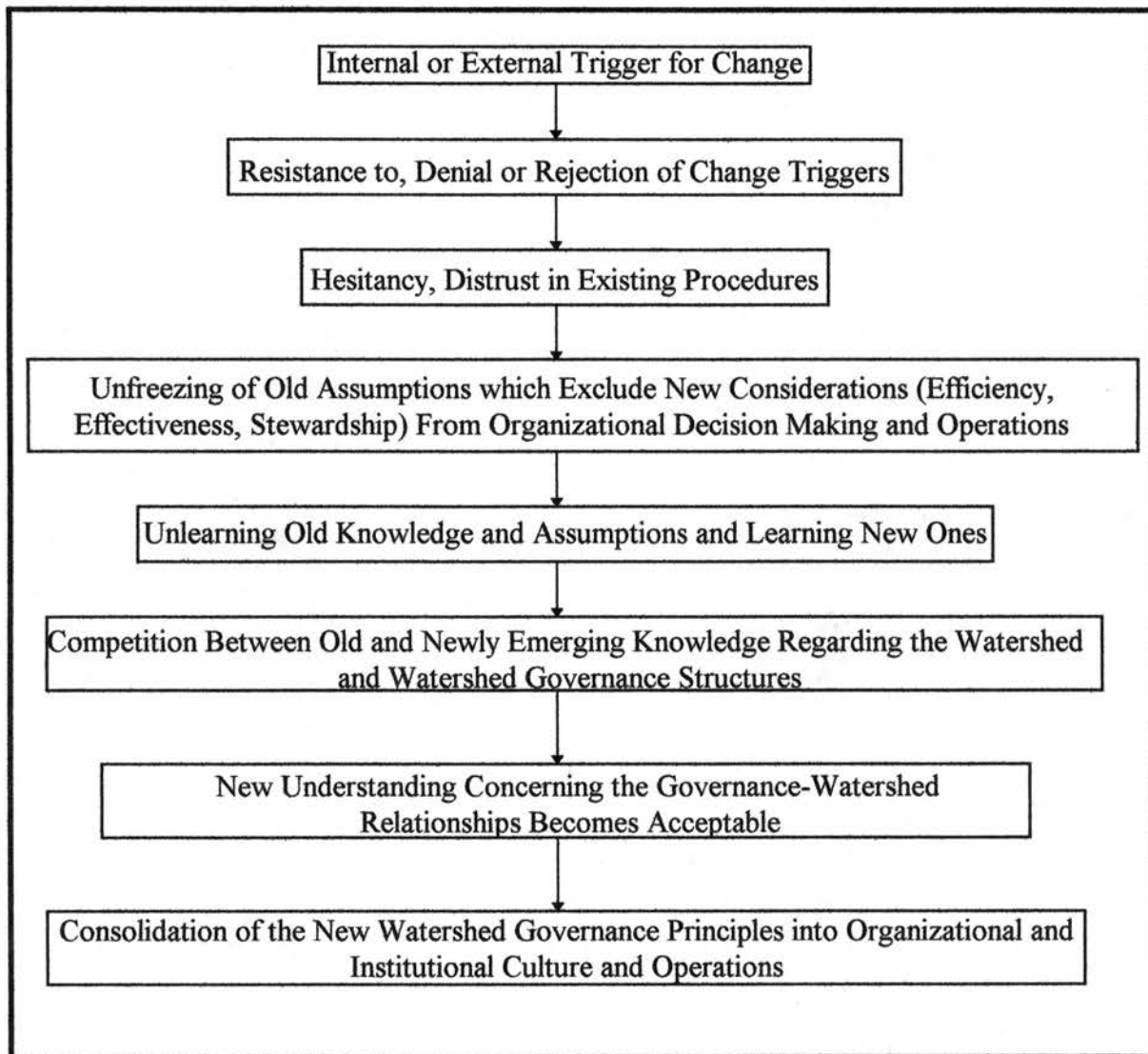
1. The Importance of Careful Diagnosis

Shifting from a traditional watershed governance system towards new approaches requires that certain assumptions and customs that exclude the new approaches be unlearned. It also requires that new assumptions and customs be learned and incorporating into the very heart of the management and governance system. While the specifics change organization to organization, it is possible to distinguish different phases of this change process within many organizations. **Table L** illustrates the organizational change process.

The following principles are offered to help guide the process:

- To develop more effective and efficient watershed governance systems, a major initial emphasis must be placed on the *diagnosis* of obstacles and constraints.
- The diagnosis stage must include an assessment of the *human, social* and *institutional* obstacles and constraints - not just programmatic or financial issues.
- All employees and stakeholders that are affected by a governance system should participate in the *diagnosis* stage, as the diagnosis must be grounded in the experience and perceptions of the entire organization and its members.
- The more fundamental the change required and more deep rooted the obstacles, the more important the diagnosis stage is at all levels.
- Research shows that when employees and stakeholders are involved with the diagnosis of environmental problems, they become more invested and committed to participating in solutions than to almost any other type of work they do.
- Asking questions about obstacles and solutions is implicitly a *change inventory* - once you start asking questions, changes are likely to occur, even without specific directives.
- Be prepared for organizational *tension and discomfort* in the change process. You only learn about systems when you try to change them - the perceived threat mobilizes forces that otherwise lay dormant or are covert in their influence.

TABLE L
PHASES OF ORGANIZATIONAL CHANGE



2. Tools For Diagnosing Watershed Stewardship Problem Areas

Organizational management theorists have developed a range of models for diagnosing organizational and governance problems. Only rarely have they been applied to watershed stewardship and governance. Yet, in depth analysis of organizational culture and operations is essential to identify the underlying factors that give rise to unsustainable watershed management practices and to inefficient and ineffective governance. Indeed, the diagnosis process is an important component of any change process.

When diagnosing organizational operations, it is important to take a broad *systems approach* rather than seeing each and every problem as requiring a specific solution. A review of the research on organizational diagnosis indicates the need for a thorough, holistic and historical organizational diagnosis *before* any new systems are designed.

Table M provides one way to approach watershed problem diagnosis.

TABLE M

A BASIC WATERSHED PROBLEM ANALYSIS FRAMEWORK

Step #1: Assess Physical Symptoms
Step #2: Identify All Potential Actions Causing the Symptoms
Step #3: Assess Problems In Terms of Consequences for Watershed Ecosystems
Step #4: Assess Problems In Economic, Political and Social Terms Throughout The Entire Cause-and-Effect Chain.

A medical analogy may be useful to demonstrate how to use this problem analysis framework. At Step #1 (symptoms) we may find a tired, overweight patient with digestive problems. At Step #2 (behaviors) an investigation reveals that the patient consumes eight units of hard alcohol a day. At Step #3 (natural consequences) the diagnosis may be sclerosis of the liver. At Step #4 (entire cause-and-effect chain) a prediction is made that given the current pattern, a variety of the patients organs and functions may be damaged, but the exact form of the problem and the timespan of the growth of the disease is difficult to predict. At some point, which cannot be easily predicted, the damage will go beyond the point of no return.

Sclerosis of the liver is a good analogy for watershed problems. They both are often caused by the cumulative impacts of activities spread over long time periods, the precise consequences of any one action is difficult to predict, and the timing of the consequences cannot be accurately known. The analogy also illustrates the limits of purely physical symptoms diagnosis, which just measures the results of *past* activities at the end of the cause-and-effect chain. Further, economic and social factors (Step #4) can get in the way of even symptom diagnosis (Step #1) such as when a patient denies physical problems, as well as to barriers to cure (such as a refusal to get treatment). Thus, it is important to explore why the patient drinks so much (or in the case of watersheds to examine the causal factors at the upstream and mid-stream components of the economic value chain)..

Lets now apply the model to watersheds using point source chemical pollution as an example. At Step #1, the physical symptoms in the form of ecological damage may be difficult and take years for humans to detect. It is possible that the consequences, such as deformed fish or contaminated drinking water, may be imperceptible in the short run, with no perceivable effects on existing living stakeholders. They may only show up when a major incident occurs or after many years of systematic discharges.

At Step #2, action diagnosis, a detailed assessment may approximate the number, quantities, sources and historic time frame of chemical inputs into a watershed (e.g. 20 major industries have discharged approximately 10 tons of X number of chemicals each for the past 10 years).

It is then a relatively straightforward process to predict the potential, if not the precise, ecological consequences (Step #3) of these activities from scientific knowledge (e.g. research shows that an accumulation of X chemical at Y concentration levels will cause fish deformities in Z numbers of aquatic species).

It may then take hard work to identify the economic, political or social forces that influenced those decisions and which may be influenced by the ecological consequences (Step #4). For example, pressure from "upstream" chemical suppliers may have led to the use of excessive amounts of particularly toxic solvents. Pressure from "downstream" distributors to keep final sales cost competitive with foreign competitors may have led many firms to delay investments in new technologies intended to phase out old inefficient equipment. As a consequence, the fishing industry, municipal water supply authorities, the tourism operators and other recreational businesses may be directly affected for long time periods, while taxpayers may pay for clean-up and restoration and may face swimming, fishing and drinking restrictions for many years.

Our research on watershed stewardship and governance found that there are few watershed studies and projects that do thorough jobs of searching the entire cause and effect chain to identify the economic, human and social level root causes (Step #4). Many assessments focus on prioritizing the most obvious problems that can be addressed through "practical" solutions (Step #1: symptoms). Some go beyond this to identify the

obvious or significant causes of the most significant ecological problems (Step #2: behaviors). Few go beyond this in any meaningful way to fully assess Steps #3 or #4. This suggests that many watershed management programs may be somewhat selective in their problem analysis. Organizations seem to define the problems that do not question the fundamental nature of their business. Yet, to develop truly effective and efficient watershed stewardship and governance systems, the assessment of ecological consequences (Step #3) must involve asking questions about the total consequences of activities on ecological life support symptoms, and must seek to address root causes. The assessment of causes and effects throughout the entire economic value-chain is vital.

3. Organizational Diagnostic Tools

Watershed stewardship problems must be diagnosed within the context of the organizational and institutional structures that administer the programs. This usually requires a comprehensive organizational diagnosis. Table N describes the elements of this type of diagnosis.

TABLE N

ORGANIZATIONAL DIAGNOSTICS FROM DIFFERENT FRAMEWORKS

The Structural Framework
The Human Resource Framework
The Political Framework
The Symbolic Framework

It is important to diagnose issues from multiple perspectives such as:

- *The Structural Framework:* An analysis of the effect of how the organization is divided into smaller units, the number and layers of management, reporting relationships etc.
- *The Human Resource Framework:* The skills and motivation of people and the interdependence of the organization and staff.
- *The Political Framework:* The distribution of power among individuals and groups in the organization and the use of that power in competition for resources.
- *The Symbolic Framework:* How people create and use symbols to bring meaning out of relative chaos and clarity out of confusion.

4. Ten Key Principles of Adopting Performance-Based Systems

Once a careful diagnosis of the stewardship and organizational issues has been completed, a strategy can be developed to move towards performance-based organizational systems. To help facilitate this, the following principles are offered:

- *The goal of performance-based systems is to generate information that supports and enhances continuous improvement in watershed stewardship and governance.* The purpose is to improve future performance of both employees and stakeholders, not just to evaluate past efforts.
- *Measurement tools are just one component of a complete performance-based management system.* Measurement itself does not itself have enough power to create fundamental change in an organization. Some organizations have measured performance for years with little impact. Measurement systems are one of a number of important competencies that organizations need to use a performance-based system.
- *The audience and purpose of the performance measurements must be clearly defined.* You must carefully determine who the customers and end-users of the measurement system are. What do they think they need from measurement to help them do a better job of watershed planning, problem solving, decision making and governance?
- *Acceptance of the measurement process is essential to its use as a performance improvement tool.* Do not worry about finding the "perfect measurement." Instead, it is the process by which you involve others to determine what to measure, how to measure, and how to utilize the measures to assist employees and stakeholders to continually improve their watershed stewardship and governance that is important.
- *As with organizational diagnosis, the more participation in the process of creating and using the performance measures, the greater the resulting changes.* Full involvement of management, employees and stakeholders is vital. Measurement must be seen to have value well not only as an accountable tool, but as a valuable tool to the entire operation.
- *Drive out fear in your measurement system.* Measurement is often resisted due to perceptions of negative consequences. Start with an experimental approach. Eliminate work quotas and have fun with measurement approaches. Strive to measure and improve things that will make a difference (those with large costs, large customer value, greatest environmental consequences etc.) and are most strategically important, not what is just easy to measure or already being measured.
- *Measure group, team and sector-based outputs, not individual outputs.* Individual performance cannot be measured except over the very long run. Have the team that produces the results develop the measures, perform the measurements, and report the results.

- *Use the adoption of performance systems to make a commitment to service delivery by adding new and deleting old (even if they may sometimes be favorite) activities. Measure what employees can translate into direct corrective actions.*
- *Don't rely just on measurement. Analyze changes in actions and behaviors, take time to communicate results, reward employee initiatives which are not adopted as well as those that are. Remember, it is the overall process, culture and organizational structure which generates continuous improvement, not just the measurement systems.*
- *Finally, adopting performance-based systems is hard and complex work and a complete and effective system will require years to achieve. One of the reasons for this is that the information needed is not readily available and the resulting uncertainty can dampen enthusiasm for some. As more and better information is generated, the performance system will improve.*

Other Things to Remember:

- "End of the cause-and-effect chain" measurement at its best only tells you something about *past* performance. The greatest need within watersheds and organization is to develop systems to measure current and future activities for their ability to achieve desired outcomes.
- No matter how well an employees work is planned, managed and measured, the outcome will depend much more on how passionate the employee is concerning their job. The spirit, shared vision and sense of purpose within the organization is the most important part of any successful organizations plans.
- Problems related to an organizations efficiency and effectiveness are more often related to poor management of the systems than to poor individual performance. An excellent managers superior skills are much more important in fostering continuous improvement than measurement performance.
- Outstanding performance must make a difference in recognition. If everybody is treated the same when all is said and done, then in the long run performance will never become outstanding.
- Successful management: a) completes the right task on time and within budget; b) builds and strengthens the team; c) develops the individual; and d) fosters continuous improvement.

5. Performance-Based Budgeting

There are five characteristics of performance-based budgeting that set the process apart from existing approaches:

- **Accountability:** Rather than focusing on "bean counting" a performance-based system allows responsibility for some fiscal decisions to occur at the most appropriate levels. In return, those who are given this responsibility are held strictly accountable for producing results (rather than for following rules and procedures that may or may not be liked with results). Developing accountability requires careful priority setting and clearly defined performance goals and objectives. Incentives are also needed throughout the organization to ensure that everyone focuses on results.
- **Consequences:** To develop effective accountability systems, there must be consequences to motivate organizations. Linking budget decisions to performance measurement creates a better system of accountability and consequences. Good performance should be rewarded within the budgeting process, and poor performers identified and a process established to improve operations and outcomes.
- **Flexibility:** The system of accountability and consequences provides the opportunity for devolving decision making down from a centralized source to other levels that are responsible for program or organizational outcomes. The system should encourage innovation and experimentation, and the budgeting process must support this. Midlevel staff and those in the trenches are often in the best positions to decide how to achieve an outcome, and they need the flexibility to pursue these options.
- **Longer Time Frame:** While most government agencies operate within a one to two year budget cycle, watershed stewardship and effective organizational performance often take much longer. Strategies to plan and budget over longer time periods are pursued when possible.
- **Strategic Insights:** Watershed programs in specific, and public agency programs in general, are faced with complex issues, lack of good information, conflicting goals and objectives, and other problems that making planning and management challenging. The budgeting process should help provide insights into these issues. The process should help clarify which agency or entity may be best able to deliver needed services, what program goals should be emphasized, how they should be used, what the key elements are of successful programs which should be funded etc. This type of information can help an agency plan and deliver services more strategically.

6. Issues to Consider in Organizational Or Administrative Mergers

There have been few studies of the benefits or drawbacks to organizational mergers or of merging district offices of various agencies. Therefore, only anecdotal information exists. However, there are at least three important issues to keep in mind when assessing these options:

- As discusses elsewhere in this document, from a watershed stewardship perspective, the most important task is to identify and align management goals between territorial boundaries within a watershed. Many believe that the diverse legislative mandates of public agencies prohibit them from aligning management goals. If merging agencies or agency offices can assist in this process, all the better. However, administrative mergers without legislative changes may not solve the basic problem. There are also a number of ways to identify and align goals that do not require agency mergers.
- One of the most important ingredients of good decision making is to obtain a wide range of views and an assortment of information. Competing - even adversarial - viewpoints are therefore vital to sound decision making. Great care must be taken to ensure that agency or office mergers do not eliminate or stifle advocacy and information sharing from different agencies or departments which may hold different views and important data.
- In addition, each agency or department tends to represent a different public constituency. These groups want assurances that some entity is representing and advocating for their best interests at all times. Great care must be taken to ensure that this occurs whenever agency mergers are considered.

B. The Importance of Developing Governance Systems Which Align Goals Between Territorial Boundaries Within Watersheds

To develop more effective watershed stewardship systems, it is important to understand the ecological effects of territorial (land ownership) boundaries within a watershed. Property lines and boundaries are not just lines on maps. They mark division of control and responsibility for resources among individuals, organizations and governments. The administrative lines are therefore the demarcation of areas of change, and of interaction. They are governed by rules and conventions that define the terms of engagement between the actors and organizations. Legal/social boundaries can reshape and sometimes even create ecological boundaries:

Some problems associated with territorial boundaries:

- Territorial boundaries within watersheds make it difficult to coordinate goals and actions among individuals, organizations and communities. Lack of coordinated goals and actions leads to inefficiencies, inconsistencies, and even destructive management.
- Boundaries can impede and disrupt the flow of information among land owners and organizations. This makes it difficult to understand the conditions of the overall system or its likely future, and hence makes it difficult to act intelligently.
- Territorial boundaries can encourage organizations and communities to externalize their activities to other land units (hence, environmental impacts are often placed next to boundaries so that outsiders bear some of the costs, and, contrarily, people cluster near borders of wilderness areas or parks to reap some of the "goods" of other boundaries).
- Territorial boundaries have intended and unintended, short and long-term ecological effects on surrounding lands. A distinct ecological zone is created when different land use practices are applied on both sides of a boundary line. The new ecological zones can block, filter or concentrate the movement and functions of ecological processes and elements such as water, soil nutrients, animals, fire, wind, seeds etc. This can separate and isolate land areas from each other which can have synergistic, long term, unintended effects.

These problems often lead people to conclude that territorial boundary lines must be removed. Yet, boundaries provide some useful functions as well. Many of the positive functions are the converse of the problems that boundaries can create:

- Territorial boundaries can slow the movement of ecological disturbances or misguided policies from one ownership to another.
- They can provide time for adaptive and corrective responses.
- They can facilitate the efficient flow of resource information within organizations and within communities by delineating who is required and who is permitted to know specific information.
- Boundaries can facilitate clear allocation of management control and responsibility - connecting all actors to the consequences of their acts.

Hence, effective watershed governance and stewardship will not be as simple as eliminating or redrawing boundary lines, or merging agencies, to correspond better to ecological boundaries. Rather, it requires new governance systems that reflects these realities.

1. Understanding the Ecological Effects of Boundaries

A territorial boundary is an invisible wall that creates sometimes profound changes in ecological processes and elements within a watershed. When seen on a map, the lines may seem to simply reflect political or ownership demarcations. However, from the perspective of ecological processes and species, a very different picture emerges. Almost all aquatic and terrestrial ecosystems require a continual flow and interchange of energy and matter. From the perspective of the plants, animals and nutrients within the system, differences in management goals and actions on either side of a boundary inevitably disrupt the flows and change the ecological conditions.

a. Boundaries Create Structural Changes to Habitat:

Over time a territorial boundary may change the structure of habitat on either side of the boundary line. The area of habitat on either side of a line can be altered by changes in temperatures (when cover is removed or added), humidity, moisture, vegetation density and diversity, species abundance and diversity, porosity, seeds and other factors. These can lead to sometimes profound ecological changes.

The amount of structural change to habitat associated with boundary lines varies based on many factors. Areas with high contrasts and high rates and degrees of change likely create the greatest changes in habitat structure. Areas with lower rates of change are likely to create less structural changes.

b. Boundaries Create Functional Changes to Ecological Processes:

Boundaries and their different land use patterns can block or disrupt the vital ecological flows of materials and energy across the landscape. Movement across landscapes occurs in two primary ways: locomotion (e.g. animals) or through the mass flow of water or air (e.g. nutrients, seeds, spores). Different management goals on either side of a boundary may impeded, accelerated, or concentrated these flows as they encounter the different areas. This can be detrimental to one or another side of the border. For example, when a road serves as a boundary it can lead to the discharge of pollutants into one territorial unit, allow entry of exotic species etc. Forest edges caused by boundary changes (e.g. between timbered and non-timbered areas) effect the movement of deer and other animals, shifting the population from one area to another. Roads may also change the hydrologic system of a watershed by acting as conduits and intensify water runoff at high flows in one area while blocking natural run-off elsewhere. Hence, boundaries act as a selective filter, altering flows across it.

Summary: These effects suggest that:

- Incongruent management goals and actions between boundaries are the primary cause of the disruption of ecological functions and structure within most watersheds. These factors are more important than the incongruity between administrative and ecological borders in determining watershed health.
- Buffer zones may alleviate some, but not all, of the ecological effects of territorial boundaries. They may reduce the contrast or the rate of change between adjacent areas, but buffers also may exacerbate the width of the altered habitat zones, potentially creating even more ecological problems. Their benefits may also simply be overwhelmed by the degree of change in the balance of the landscape.
- Watershed governance systems that reinforce management approaches focused solely on parcels of land in isolation others are likely to exacerbate ecological problems and fail to foster sound watershed stewardship. This is because the health and productivity of all ecosystems depend on the larger ecological landscape of which they are but a part.

2. Understanding Territorial Goals

Given the important of territorial boundaries, one of the most important steps towards achieving effective watershed stewardship and governance is to determine:

- Who holds territorial claims to the landscape (who owns or controls the land)?
- What are their management goals and actions?
- What is the effect of these patterns on an overlay of ecosystem structure and function?

- What formal, informal and interpersonal mechanisms exist to support or prevent sound watershed stewardship?

Answering these question is often difficult for many public agencies. Most natural resource managers are trained primarily to recognize the importance of non-human ecological functions and elements and are less able to identify the full range of human territorial claims. Clarity over the goals of various land owners may help the process.

a. Boundaries Between Private Owners

Private land ownership goals vary. Each private land owner operates under a different set of legal and organizational capacities.

- Corporate landowners: Generally have the capacity to pool large sums of investment capital. They often have the greatest capacity to define goals and implement stewardship activities. However, they also operate under a perceived duty or desire to maximize profits and returns for investors, which can constrain their stewardship efforts.
- Non-corporate landowners: Also have the pressure to generate revenue but generally have no legal duty to maximize profits for investors. They can enjoy more flexibility to pursue stewardship goals.
- Non-profit landowners (trusts etc.): Generally can manage for stewardship goals, but sometimes they need to generate revenue to manage the land.

b. Boundaries Between Public-Private Entities

When watershed governance involves landscapes owned by both public and private entities, the issue of property rights becomes particularly important. Partnerships and cooperation are vital to good stewardship. Clarity over who has the responsibility for stewardship - government, or all parties - is vital to good partnerships. Cooperation by private landowners depends on their willingness to cede some control over their defended territories to the larger partnership. This depends on their attitude towards stewardship objectives, towards public agencies in the partnership, as well as the importance they place on the values of cooperation and environmental stewardship.

c. Boundaries Between Public Agencies

Cooperation and the alignment of management goals and actions *between* public agencies is also vital for effective watershed stewardship and governance. Yet, this is often difficult. Government ownerships can include local, state, regional, federal and tribal lands. Each has different policies that vary by law and tradition.

In general, public agencies will often publicly committed to cooperate across their boundaries, but the relationships between the agencies may be strained. Their "territorial defenses" may not be directed towards the maintenance of agency jurisdictional boundaries per se, but towards adopting an approach to management that is most consistent with each agencies culture.

d. Territorial Boundaries Within Public Agencies

Aligning management goals and actions *within* government agencies is also very important, yet difficult. All public agencies use some form of "internal zoning" to allocate lands under their management to special functions. Sometimes internal agency zones are marked on maps, other times they are not. Some public agencies have the authority to do landscape level planning and management, and others do not. Some implement relatively broad scale, long-term management, others do not.

Effective watershed governance and stewardship within agency boundaries can be difficult because people, including top managers, may not understand that there are internal zoning differences within their own agency.

3. Summary

Only some public landowners and few private landowners have the mandates to practice effective watershed stewardship. However, most *do have* the capacity to do it. Whether they do will depend on the type of governance systems and institutions that are created and the relationships they have with others in their watershed.

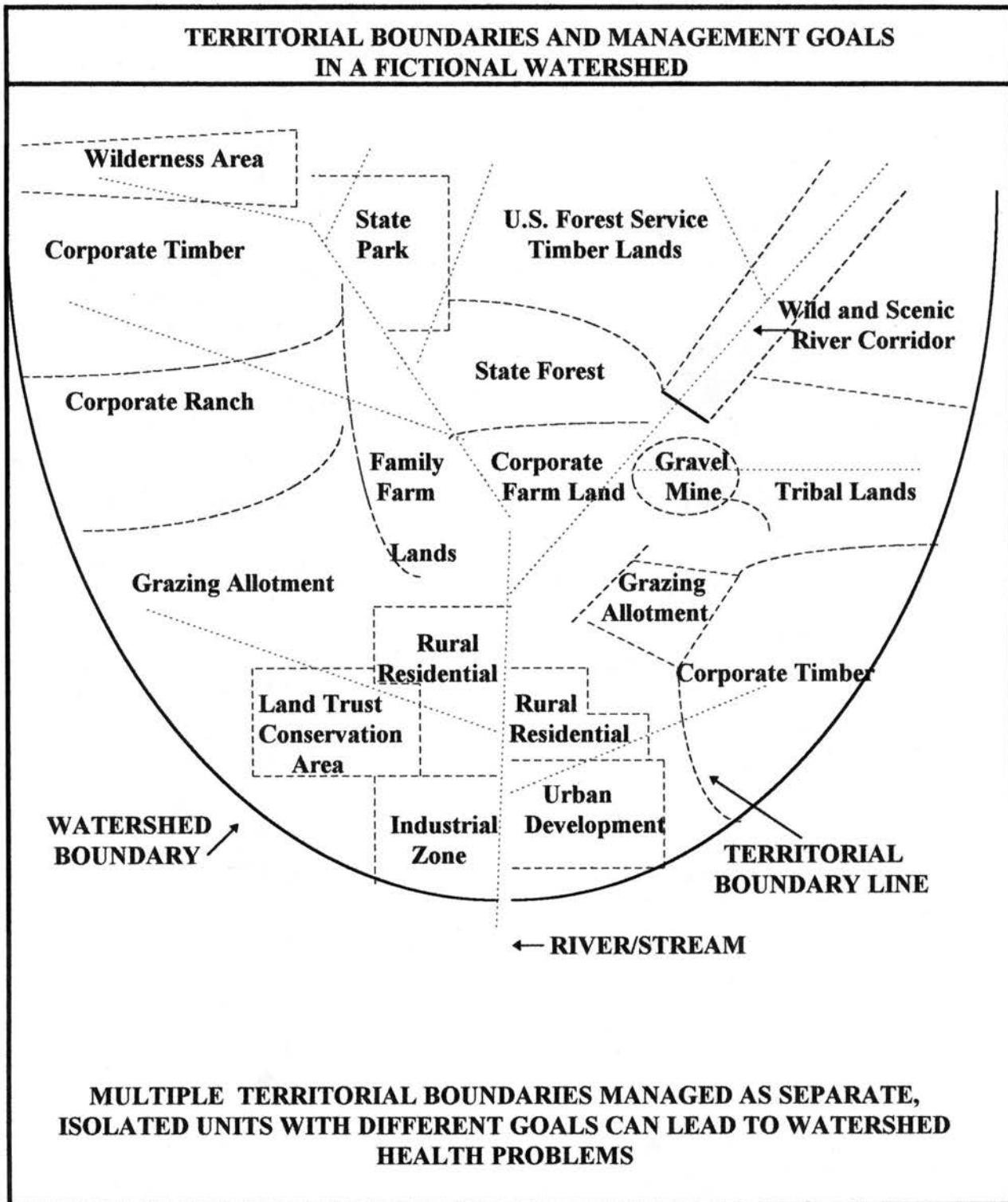
We live in a territorial society. Effective watershed governance and stewardship must acknowledge this, recognize the various mechanisms of defense that each territorial owner may employs, and craft ways to allow the owners to maintain an acceptable level of control while providing for the goals of stewardship of the commons.

Our traditional command-and-control prescriptions that *impose* control on boundary issues can have unintended consequences. Instead, effective watershed stewardship and governance requires a system that *yields* control to the territorial owners by reversing the burden of responsibility for good stewardship from government to the landowners.

We are in the midst of the first wave of new approaches to watershed governance and stewardship nationwide. We need to learn from these initial programs, cross pollinate, and develop more effective approaches.

Table O shows how multiple territorial boundaries managed as separate, isolated units with differing management goals, can lead to watershed health problems.

TABLE O



C. Governance Systems to Facilitate Integrated Sector-Based and Place-Based Watershed Stewardship Programs

To address watershed problems early in the cause-and-effect chain, new approaches are needed to facilitate the development of intra and inter-sector based watershed conservation initiatives.

It is often difficult for businesses (firms or landowners) to improve the environmental performance without commensurate changes throughout the entire economic sector in which they operate, or without trades between sectors or key actors. Hence, the best watershed stewardship and governance systems seek to use some form of an integrated sector-based and place-based strategy. This means that government links the identification and prioritization of environmental risks (the traditional focus of watershed programs) with the prioritization and resolution of the key drivers that influence business decisions regarding the environment within each economic sector that effect watershed resources.

Many activities that effect watershed conditions are the result of business decisions that are driven by real or anticipated economic and political forces. The pressures are almost always the result of trends within the economic sector in which a business operates. The pressures may come from many points in the economic value-chain. For example, upstream suppliers may stimulate changes downstream throughout entire economic sectors by changing the type, cost or availability of key feedstocks. Downstream distributors may drive changes upwards through entire sectors by demanding new products, improved product quality, or reduced per unit costs to remain competitive.

These forces drive many of the business decisions that influence their environmental performance. It should be no surprise that businesses resist facility or land unit specific changes, or respond to problems with end-of-the-cause-and-effect-chain solutions, rather than implementing changes which can prevent problems at their source. Significant changes in business operations that fail to account for the trends and forces within the economic sector in which they compete may put a business at significant competitive disadvantage. The means that intervention points of the regulatory system are too far down the cause and effect chain to stimulate process oriented abatement solutions.

In addition to the limits of the current regulatory system, other economic factors prevent businesses from making appropriate change. For example, many small and mid-sized firms, or older facilities, do not have the expertise or resources needed to implement sophisticated process oriented changes. They need help from larger pools of expertise. Individual firms alone also cannot obtain the new technologies needed to reduce environmental problems at their source. Their equipment suppliers will not retool to produce new technologies until there is sufficient demand from customers. This often requires demand from large segments of an economic sector. The decisions that lead to these types of large investments require some predictability in the marketplace. Further,

businesses hesitate to make investments in structural changes unless their competitors are making similar investments (i.e. they fear the effects of free-riders).

It is for these and others reasons that it is often helpful to develop a governance system which supports and facilitates strategy development within and between sectors and then applies those strategies through tailored "place-based" programs within in a watershed. As economic sectors cross numerous watersheds, the sector-based process works best when organized at a state or regional (or even national) levels. But it can be used, or at least stimulated by, watershed specific programs.

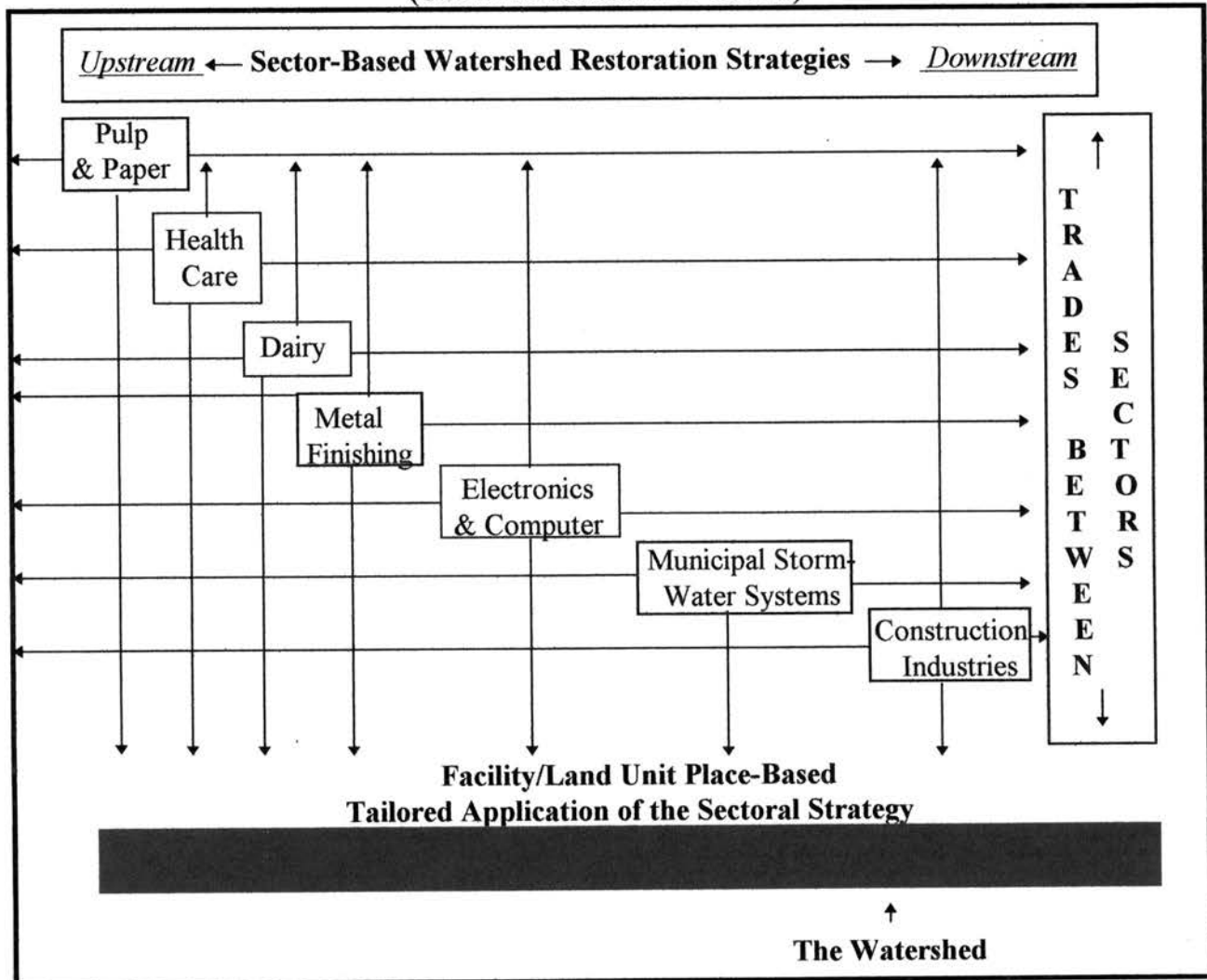
Government can stimulate sector-based change through policy reform. For example, a state forestry policy may mandate changes within the entire forest products industry. However, this approach often fails to address the upstream and downstream pressures within the economic sector, and fails to spur trades and exchange between sectors or key actors. It therefore often meets with intense opposition and still results in end-of-the cause-and-effect-chain responses, rather than to solutions which can resolve problems at their source. It is best to engage industry through other governance approaches.

Table P provides a schematic view of how integrated horizontal-vertical initiatives operate.

Table Q provides a schematic view of how the Metal Finishing industry, for example, may apply the approach.

TABLE P

**INTEGRATED HORIZONTAL AND VERTICAL WATERSHED INITIATIVES
(USED AS EXAMPLE ONLY)**



Sample Process:

The following provides a way to think about developing integrated sector-based, place-based initiatives. It is adapted from the *Backward Mapping* method developed by U.S. EPA and Richard Elmore, and the Sector-Based work of the Dutch Government. It is important to involve stakeholders from the economic sectors in the entire effort. All other stakeholders must be informed and involved in appropriate ways, including relevant government agencies, NGOs, elected officials etc. At the same time, great care must be taken to ensure business confidentiality and that proprietary information is protected.

1. *Thoroughly Understand the Watershed Issues.* The factors within the watershed that may effect ecological health need to be understood. Some type of systematic, basin level watershed analysis must be completed.
2. *Thoroughly Understand the Characteristics of the Sectors and Key Actors Relevant to the Issues.* Once the factors are known, the potential sources of the problems must be mapped. Once identified, the characteristics of the sector in which they operate must be understood. This includes the industrial process, specific economic, institutional, technical, regulatory and environmental factors that influence their environmental performance. For example, the industry history, current and projected market trends, technology changes, consumer issues, environmental profiles, policy constraints, financial history, R & D methods, key contacts, and other potential strategic issues must be understood.
3. *Map the Economic Value-Chain.* Once the industry is understood, it should be possible to develop a rough map of the economic value-chain. This means mapping the process from the upstream resource extraction phase through the mid-stream manufacturing and delivery of goods and services, to the downstream discharge and disposal of pollution and waste. For example, identify and map the primary types, concentrations and sources of raw materials, the transportation processes, and all other relevant steps in the process of producing, delivering and disposing of goods and services.
4. *Identify Key Drivers, Constraints and Barriers.* Once the industry value-chain is understood, the key forces and drivers effecting the industry can be diagnosed. All key drivers and constraints must be understood: upstream and downstream economic forces, regulatory factors, business culture, financial conditions (insurance, banking, investor needs), technology, changing competition etc.
5. *Prioritize Business Decision Factors.* The major incentives and constraints within the economic sector must then be determined. These factors represent the key leverage points for an industry in terms of their willingness and ability to improve environmental performance. For example, what key factors may encourage or discourage decisions to invest in new pollution prevention or more efficient manufacturing equipment, in non-toxic feedstocks such as biofuels or bio-solvents etc.? What may influence whether a firm can obtain necessary financing, or insurance?

6. *Develop Sector-Based Solutions Which Help Address Key Drivers.* An understanding of the key decision making drivers that influence environmental performance within an industry can serve as a platform to design solutions to these factors. This can be achieved through industry led initiatives, public-private partnerships, or through government driven regulatory strategies.

For example, by following the principle of *reversing the burden of responsibility* from government to those that are the key contributors to environmental concerns, an industry may be given the responsibility to develop their own strategy to meet specific environmental objectives set by government. Government provides specific parameters and time frames for the make-up and delivery of the plan, reviews the resulting industry strategy for its ability to achieve the performance goals, then monitors and enforces the implementation of the strategy at the facility and land unit level to ensure it is followed. The industry can work through existing trade associations or can organize ad hoc work groups to achieve this.

A variation of this approach is to develop public-private partnership to achieve the same results. Government serves as partners with the private sector to provide technical assistance and support for industry developed environmental strategies. Yet, those who know their industry the best - the industry itself - are involved with developing the change strategy.

Government can also take the lead, complete the diagnosis and mandate industry specific changes through the regulatory process. If the industry is not a willing participant, this is obviously a less desirable approach.

No matter what approach is used, an industry-wide strategy will often involve organizing coordinated programs upstream and downstream within the entire economic sector, and exchanges between sectors or key actors within different sectors. Hence, suppliers and distributors may be asked to become involved to develop complete value-chain solutions.

The recommendations that may result from sector-based strategies include new policies, financial incentives, emissions trading programs, funding help for capitalization programs, land trades, buy outs, and other strategies to foster and support environmental improvements within the entire sector.

7. *Implement the Sector-Based Strategy Thorough Locally Tailored Facility and Land Unit Programs.* The sector-based programs are then implemented by each individual firm and landowner within the sector through tailored strategies to fit the needs and conditions of in local watersheds. Public agencies provide technical assistance and public recognition, when appropriate, to support these efforts. They would also seek to link each firm or landowners improvement strategies with those of other economic interests within the watershed to develop a comprehensive and integrated watershed stewardship program.

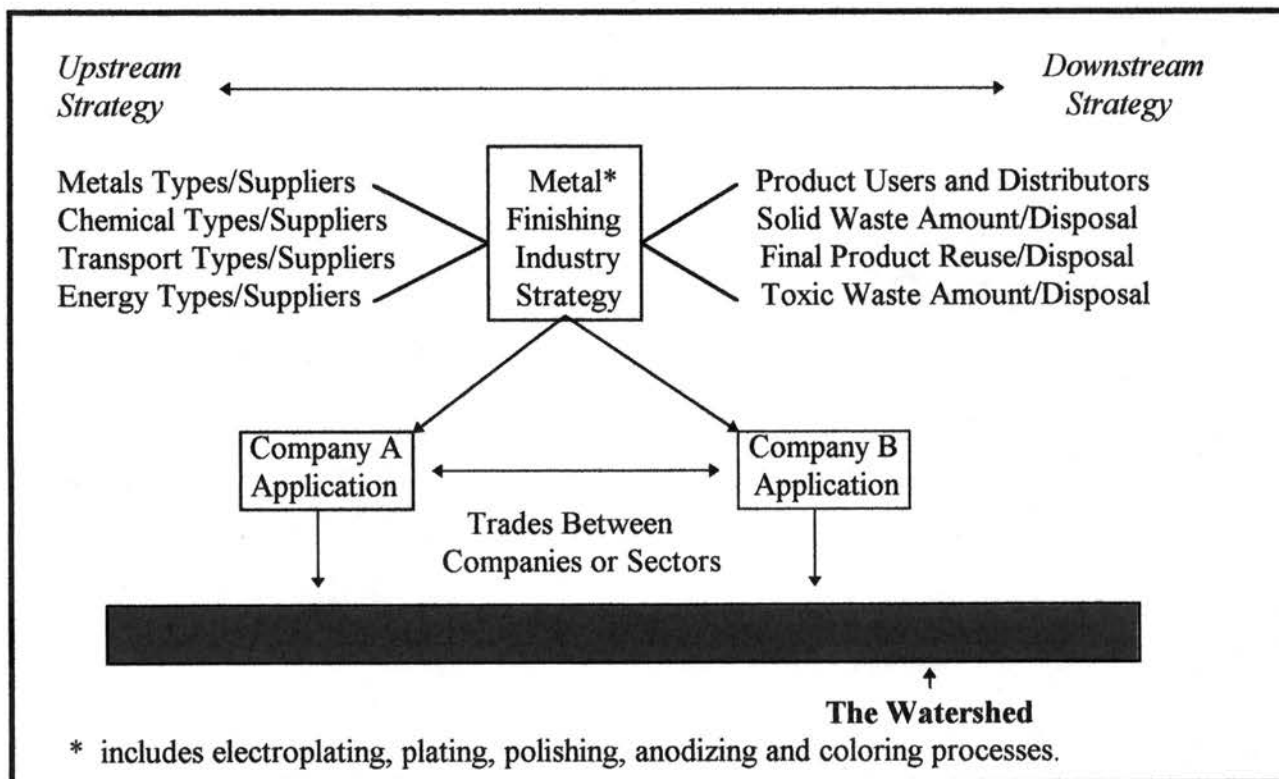
This type of approach is a relatively new. It is a performance-based system that is time and energy intensive. It requires personnel that can develop partnerships with and understand economic processes - not just natural resource or biological issues. As such, it takes watershed governance agencies far from their normal focus on the stream itself. Yet, when used effectively, this approach provides one of the best means to develop truly effective watershed stewardship and governance systems and institutions.

There are a number of examples of sector-based programs in this country and globally. Perhaps the most advanced approach is the comprehensive sectoral program initiated by the Dutch government as part of their National Environmental Policy Plan. The Clinton Administration recently unveiled an initiative with the U.S. construction industry to reduce energy needs in response to global climate change issues. U.S. EPA has initiated a number of sector-based programs, such as the Sustainable Industries Project of the Office of Policy, Planning and Evaluation, and the Sector Notebooks project of the Office of Compliance. These programs are developed within a regulatory context. Many states and regions have used versions of sector-based programs to address numerous issues over the years.

The difference between these efforts and the approach described here is the need to apply sector-based programs on a comprehensive and integrated scale, and to then integrate them with place-based watershed stewardship and governance programs.

TABLE Q

**EXAMPLE OF INTEGRATED SECTOR-BASED, PLACE-BASED APPROACH
WITHIN THE METAL FINISHING INDUSTRY**



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Over 30 different local, state and regional watershed programs were also examined.

DAVID W. FISK "DAVE"
ASSISTANT EXECUTIVE DIRECTOR

Dave has been with the District since June 1975. Starting as a geologist, his responsibilities have been the management and administration of technical and regulatory staff conducting groundwater and surfacewater research and monitoring projects as well as regulatory programs.

Dave has worked on the development and implementation of the comprehensive Environmental Resources Permit program, agricultural, and forestry surfacewater management, water use permitting and underground injection control permitting regulation, and water well construction permitting regulations. He has also been involved in establishing the District's land acquisition and management programs, ambient groundwater monitoring program, Surface Water Improvement and Management (SWIM) program, establishment of minimum flows and levels, and ecosystem management activities.

Dave's present position includes broad managerial, personnel, budget, legislative, and local government coordination responsibilities.

He earned his B.S. in Geology from the University of Florida in 1975 and is a professional geologist registered with the state of Florida. Dave enjoys fishing, sailing, and skiing, and working on his family's cattle farming operations. He and his wife, Diann, have two sons.

Regional Water Management

Florida's Story



Creation of Water Management Districts

- Model Water Code (Maloney, et al.)
- Water Resources Act of 1972 (Chapter 373, Florida Statutes)
 - Based on watersheds, not political boundaries
 - Organic state statutory authority, not limited federal program delegation
 - Broad authority, funding and implementation tools

WMD Governance & Oversight

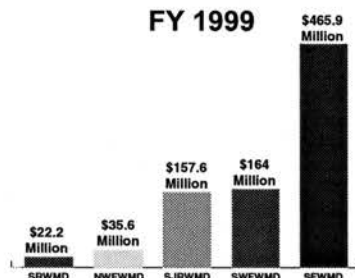
- Governing Board and Basin Boards
 - Appointed by Governor, confirmed by Senate
 - 4-year terms
- Executive Directors
 - Appointed by Governing Boards
 - Confirmed by Senate
- Authority Delegated by Legislature
- Budget Approval/Veto by Governor
- General Supervision/Oversight by Department of Environmental Protection

WMD Funding - Revenue Sources

- Ad Valorem Taxes
- State General Revenue Grants
- Save Our Rivers & Florida P2000
- Surface Water Improvement and Management (SWIM) Act
- State & Federal Grants
- Other Sources

WMD Funding - Budgets by WMD

FY 1999



WMD Duties and Responsibilities

- 5-Year Water Management Plans
- Water supply
 - Flood protection
 - Water quality management
 - Natural systems management

Implementation Tools

- Planning
- Monitoring & Applied Research
- Regulation
- Acquisition & Management
- Public Works Projects
 - Water supply
 - Water quality
 - Flood control
 - Restoration

Disadvantages of a Regional Approach

- Inequities in Fiscal Resources
 - Property (ad valorem) tax revenue
 - Percentages of other funds
- Inequities in Staff Resources
- Interdistrict Issues
- Varying sets of rules, permitting procedures, etc.

Advantages of a Regional System

- Address Specific Needs of Each Region
 - Regional water supply plans
 - Urban v. rural
- Interdistrict Cooperation
- Greater Citizen Involvement at Local Level
 - Taking care of problems in own back yard
 - Drink out of your own well (local sources first)

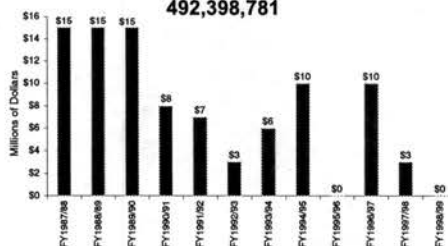
Save Our Rivers & Florida Preservation 2000 Act(s)

- Save Our Rivers (SOR)
 - 1981 - Legislature created trust fund to acquire land for water management purposes
 - Revenue from documentary stamp taxes on statewide real estate sales
- Preservation 2000 (P2000)
 - 1990 - created to augment SOR
 - Revenue from bond sales
 - Will expire in 2000 unless extended by Legislature

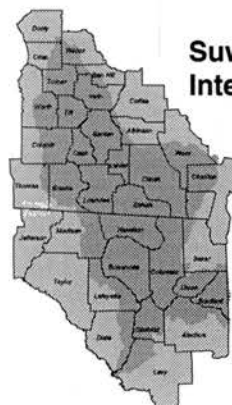
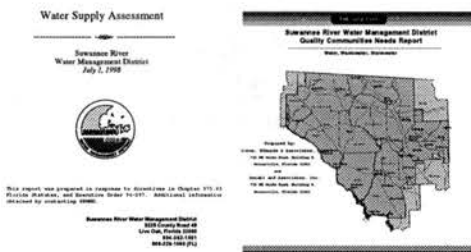
Surface Water Improvement and Management (SWIM) Act

- 1987 - Enacted by Legislature
- Purpose
 - Preserve water bodies in good condition
 - Restore priority water bodies in poor condition
- Year-to-year Legislative Funding
- Future Funding Uncertain

Total SWIM Fund Appropriations from
FY 1997 to 1999
492,398,781



Water Resource & Water Supply Development



Suwannee Basin Interagency Alliance

- Suwannee River Water Management District
- FL Dept. of Environmental Protection
- GA Dept. of Natural Resources
- U.S. Fish and Wildlife Service (Okefenokee Natl. Wildlife Refuge - GA)

Suwannee River Basin Nutrient Management Initiative

- Address Water Quality Issues Basin-wide
- Partners/Stakeholders
 - State, federal agencies
 - Local governments
 - Farmers, educators, environmentalists, citizens
- Solutions
 - Non-regulatory
 - Incentive-based
 - Education/outreach

Cooperative Relationships

- Quality Communities Program
- Suwannee River Basin Nutrient Management Initiative
- Suwannee Basin Interagency Alliance
- Levy County Water Plan
- SRWMD/SJRWMD/GRU
 - Acquire land for conservation easement for wellfield



History of Florida Water Management

1845-1971

- 1850 - Swamp and Overflowed Land Grant Act
- 1881 - 5 million wetland acres sold, drained for agriculture
- 1893 - FL passes 1st swamp drainage law
- 1903 - U.S. gives Everglades to FL
- 1907 - Everglades Drainage District Created
- 1913 - General Drainage Act (Ch. 298 F.S.)
(created drainage districts)
- 1942 - Cross Florida Barge Canal authorized
- 1948 - Congress passes Flood Control Act
- 1949 - Central & Southern Flood Control District created
- 1956 - Watershed Protection and Flood Prevention Act (PL-566)
- 1967 - Florida Air and Water Pollution Control Commission established
- 1971 - Governor's Conference on Water Management in South Florida

History of Florida Water Management

1972-Present

- 1972 - Water Resources Act
- 1975 - Constitutional Referendum
- 1981 - Save Our Rivers Program
- 1986 - Surface Water Improvement and Management Program
- 1990 - Preservation 2000 Program
- 1994 - Environmental Resource Permitting (ERP)
- 1997-98 - Water Resource Development (HB 715)

DAYLE E. WILLIAMSON

BIOGRAPHICAL SKETCH

SEPTEMBER, 1997

Dayle Williamson, Director of Natural Resources, has been associated with the Nebraska Natural Resources Commission since 1958. He has headed the agency since 1970, and was reappointed by Governor Nelson on January 11, 1991.

As the Commission agency head, Williamson directs a staff of 45 employees and manages an annual budget of 12 million dollars. Included in the budget, is a 3.5 million dollar annual appropriation to place soil and water conservation practices on Nebraska farms and ranches.

He serves on a number of statewide groups, including the Nebraska Water Conference Council, and the Nebraska Grasslands Institute. He was appointed by Interior Secretary Manuel Lujan to serve as a member of the Niobrara Scenic River Advisory Commission. He is also a member of the Nebraska Environmental Trust Board.

Mr. Williamson also maintains an active role in national water resources issues. He is presently serving as a member of the Natural Resources Conservation Service National Employee Development Committee and served as President of the National Association of State Conservation Agencies. He served with the National Association of Conservation Districts to streamline the association for the 21st Century and is currently working with an NACD Operations Team to develop a business operation plan. Williamson is also the Vice Chairman of the Groundwater Foundation.

He received the 1992 William C. Ackermann Medal for excellence in Water Management, and the Interstate Conference on Water Policy Leadership Citation. He also was a 1992 Honoree in the Nebraska Hall of Agricultural Achievement.

Williamson is a graduate of the University of Nebraska-Lincoln and was a county agricultural agent before joining the Commission staff. He served with the U.S. Army for two years and was a member of the Nebraska National Guard for 30 years. During his final military assignment, he served as the Commanding General of the 67th Separate Infantry Brigade, Mechanized. He retired from military service in 1985 with the rank of Brigadier General.

Challenges for Consolidation and Modernization and Charting a Course for the Future

Dayle Williamson
Director of Natural Resources
State of Nebraska

Watershed Management – Governance at the Local Level Forum

**St. Paul, Minnesota
Room 5, State Office Building
September 23, 1998**

*The attached information is a summary of a Power Point presentation
prepared for the forum.*

The Nebraska Approach to Watershed Management

The State Water Planning efforts of the 1960s

Five Hundred different special purpose districts involved in land and water issues, all lacking sufficient authority, jurisdiction, and finances to carry out a significant role in river basin activity

Minnesota Crosscurrents: Agencies and local governments have made significant strides toward improving service delivery by working within existing systems.

Nebraska thoughts of three decades ago: It would be very difficult to improve service by working through the existing system we had at that time.

The Initial Action

The Nebraska Association of Soil and Water Conservation Districts passed a resolution calling for legislation reorganizing districts along hydrologic boundaries.

The same resolution urged that districts would be of sufficient size to fund their programs, grant them sufficient POWERS, and they would be governed by locally elected officials.

Minnesota Crosscurrents: Cooperation, coordination and integration of efforts among agencies are complicated by inflexible funding, overlapping authorities and different data management and communication systems.

Our thoughts of three decades ago: We need to do away with overlapping authorities, funding was inadequate, data management systems were almost non-existent, and the postal service delivered the mail, and maybe people read it better at that time.

Minnesota Crosscurrents: Lack of resources can hamper local efforts and special purpose districts are hard to modify, inhibiting local governments' ability to react to changing needs.

Our thoughts of Three decades ago: The very same thought!

Our thoughts today: We still agree, but think it may be even more difficult to change special purpose districts.

The Next Step

Drafting the legislation - selling the idea, and securing introduction in the Nebraska Legislature.

Many contentious debates at the local levels as well as in the Legislature

The law passed in 1969, and became effective on July 1, 1972

Minnesota Crosscurrents: The legislature could simplify procedures for modifying special purpose districts and county comprehensive local water plans could be used by local governments and state agencies for broader environmental purposes.

Our thoughts of thirty years ago: We asked the Nebraska Legislature to help us out, we did not have county comprehensive water plans but felt we needed them on a watershed basis, and we were more development oriented and lacked some degree of environmental awareness.

Minnesota Crosscurrents: Investments in technology could yield major improvements throughout the management system, as could a more full integration of sustainable development principles into the state's effort.

Our thoughts 30 years ago: On technology - we wanted every conservation district to have their own telephone: most depended on the Soil Conservation Service for the phone, and many did not realize that conservation districts existed.

Our Thoughts today: On technology - we desire every district to be on the Internet connected to our wide area network, (which we have almost accomplished), we want to handle all forms electronically, we make arrangements for the districts to use the state Arc Info licenses for cost-effectiveness, we have an extensive natural resources data bank with searchable and GIS based databases, and it is our full intention to have digital photos for all of the state in 1999, and digital soils information for the entire state by 2003.

The Thoughts on sustainable development 30 years ago: Even though we were very development oriented, sustainable development was a goal. The concept comes across much stronger today.

The Minnesota Legislature's Five Goals

Sustainable development
Improved service delivery
Prevention
Citizen participation
Reduced pollution

Goals from the Nebraska Legislature 30 years ago: Not clearly articulated, but would track the excellent set of goals established by the Minnesota Legislature in recent years. (A formalized planning procedure set out to the needs for the Natural Resources Districts, but the process became both hectic and involved as the Legislature took over)

What is a Natural Resources District?

An NRD is the multi-purpose, local unit of Nebraska Government for management, development, and protection of the soil and water resources found in that basin.

Are the NRDs laid out on River Basin or Watershed Boundaries?

To a great extent. Nebraska has 13 river basin boundaries within the state. The Platte River Basin extends the entire length of the state, so the NRDs are cut in segments in the basin as it would be impractical to have districts of that length and size. Initially, 24 districts were formed, several years later they were downsized to 23.

The Basic Duties the Nebraska Legislature assigned to the NRDs

1. Erosion Prevention and Control
2. Prevention of Damages from Flood Water and Sediment
3. Flood Prevention and Control
4. Soil Conservation
5. Water Supply for any Beneficial Uses
6. Development, Management, Utilization, and Conservation of Ground and Surface water
7. Pollution Control
8. Solid Waste Disposal and Sanitary Drainage
9. Drainage Improvement and Channel Rectification
10. Development and Management of Fish and Wildlife Habitat
11. Development of Recreation and Park Facilities
12. Forest and Range Management

A Partial List of Assigned Program Duties

- Prepare Groundwater Reservoir Management Plans
- Provide Local Administration of the Chemigation Act
 - a. Inspect equipment
 - b. Conduct Random Inspections for Compliance
 - c. Enforce Act when violations are determined.
- Adopt and Enforce a Local Erosion and Sediment Control Program
 - a. Adopt Soil Loss Limits
 - b. Investigate Complaints and Enforce Rules against Violators
- Develop an Action Plan for non-Point Pollution Control in Ground Water Quality Management Areas established by the Department of Environmental Quality

- Develop an Action Plan for Ground Water Management Areas Established by the Department of Water Resources to allow for the Integrated Management of ground water and surface water.
- Study the practicality of constructing a road structure to replace a bridge when asked to by a county or the Nebraska Department of Roads.
- Prepare a Master Plan at least once each 10 years.
- Prepare a plan outlining annual activities and expectations with a 5 year future.

A Partial List of Program Authorities

- Absorb functions of merging special purpose districts
- Furnish financial aid to cooperators (Cost-sharing)
- Furnish specialized equipment, materials and services for conservation work
- Provide local administration of the Nebraska Soil and Water Conservation Program
- Form Project Improvement Areas for special benefit programs
- Participate in the Nebraska Game and Parks Habitat Program
- Designate flood improvement corridors
- Participate in the Water Well Decommissioning Program
- Own and operate solid waste disposal facilities
- Obtain funds from the Natural Resources Enhancement Fund for water quality programs
- Construct, operate, and maintain physical works needed to accomplish purposes, including:
 - a. Dams, dikes, levees
 - b. Water supply facilities: examples - canals, pipelines, pumping plants
 - c. Drainage ditches
 - d. River-bank protection, modification

e. Recreation facilities

f. Soil and water conservation practices

g. Fishery and wildlife habitat measures

- Administrative Authorities
- Levy property tax - up to 4.5 cents/\$100 valuation
- Hire employees
- Pay directors Per-Diem of up to \$50.00 per day in addition to out of pocket expenses
- Invest surplus funds
- Issue revenue bonds
- Borrow Money
- Acquire and sell real and personal property
- Issue bonds for financing improvement project areas
- Collect permit fees for specific programs
- Do studies, investigations and research

The Board of Directors

The board members are elected as provided by the election laws of the state, through the primary and general elections. Board members must be registered voters.

There are three ways to provide representative membership throughout the district.

1. Nominate candidates from sub-districts and the district at large and all registered voters can vote on all candidates
2. Nominate and elect each candidate from the district at large
3. Nominate and elect from sub-districts of substantially equal population, except that any at large candidate would be elected by voters of the entire district

When sub-districts are set up for representation, no sub-district can have a population greater than three times the size of the population of any other sub-district

Board sizes - 5, 7, 9, 11, 13, 15, 17, 19, or 21 members. Each board can determine their own size

Board members serve four year terms, and the terms are staggered to assure continuity

Board members must take an oath of office the same as prescribed for county officials

2/98

**NATURAL RESOURCES DISTRICTS
SUMMARY OF 1997-98 BUDGETS**

NATURAL RESOURCES DISTRICTS	VALUATION	TOTAL REQUIREMENTS	TAX REQUIREMENTS	FY 98 CENTS/\$100 OF ACTUAL VALUATION	FY 97 LEVY
UPPER BIG BLUE NRD	3,577,815,862	2,941,466	906,523	2.53	2.64
LOWER BIG BLUE NRD	1,619,577,105	1,493,064	500,000	3.09	3.46
UPPER ELKHORN NRD	895,167,051	942,356	301,505	3.37	3.18
LOWER ELKHORN NRD	4,150,752,569	3,472,400	1,376,215	3.32	3.49
LITTLE BLUE NRD	2,063,494,399	3,638,560	547,792	2.65	2.55
UPPER LOUP NRD	571,748,414	493,655	125,080	2.19	2.28
LOWER LOUP NRD	3,558,014,290	2,043,282	501,552	2.01	1.95
LEWIS & CLARK NRD	687,642,053	1,505,162	300,000	4.36	4.19
PAPIO-MISSOURI RIVER NRD	21,340,117,888	16,406,322	6,945,851	3.25	3.25
NEMAHA NRD	1,819,952,473	3,862,243	748,583	4.11	4.13
UPPER NIOBRARA-WHITE NRD	1,152,066,330	744,116	273,662	2.38	2.38
MIDDLE NIOBRARA NRD	532,084,768	514,354	189,240	3.56	3.42
LOWER NIOBRARA NRD	527,113,821	744,450	126,760	2.40	2.58
NORTH PLATTE NRD	1,723,267,668	2,407,459	600,803	3.49	3.63
SOUTH PLATTE NRD	894,095,696	764,270	329,240	3.68	3.68
TWIN PLATTE NRD	1,852,009,356	595,758	225,803	1.38	1.38
CENTRAL PLATTE NRD	★ 5,205,932,212	★ 1,103,685	★ 513,143	★ .99	★ 0.93
	5,205,932,212	9,285,735	1,272,094	2.44	2.70
LOWER PLATTE NORTH NRD	2,608,869,407	2,123,551	1,031,099	3.95	4.17
LOWER PLATTE SOUTH NRD	10,142,872,145	7,506,111	3,703,368	3.65	3.46
UPPER REPUBLICAN NRD	★ 724,301,244	★ 311,323	★ 127,501	★ 1.76	★ 1.80
	749,243,565	566,414	199,150	2.66	2.80
MIDDLE REPUBLICAN NRD	1,050,421,700	1,097,602	350,202	3.33	3.36
LOWER REPUBLICAN NRD	965,036,446	830,379	350,250	3.63	4.03
TRI-BASIN NRD	1,365,094,767	795,650	320,877	2.22	2.59
TOTAL:	★ 5,930,233,456	★ 1,415,008	★ 640,644	★ 1.08	★ 1.04
	69,052,389,985	64,774,359	21,225,649	3.07	3.09

★ GROUNDWATER MANAGEMENT AREA

David Jelinski Bio September, 1998

Dave Jelinski grew up in rural Fond du Lac county, and graduated from the University of Wisconsin in 1979 with a Bachelor of Science degree in Agricultural Engineering.

Dave's professional interests include soil and water conservation, and land use. He is a graduate of the Wisconsin Rural Leadership Program and is also the Secretary of the National Association of State Conservation Agencies.

In the early 1980's, he worked on environmental issues for the Department of Natural Resources, specializing in animal waste management.

Since 1984, he has held several positions with the Department of Agriculture, Trade and Consumer Protection, and currently serves as director of land and water resources for the department. He is responsible for the farmland preservation program, and several other programs related to soil and water conservation.



Wisconsin Land and Water Conservation Association, Inc.

One Point Place, Suite 202 • Madison, Wisconsin 53719

Phone (608) 833-1833 • Fax (608) 833-7179

WLWCA Homepage: <http://www.execpc.com/~wlwca>

Representing Wisconsin's 72 County Land Conservation Committees and Departments

LOCALLY LED CONSERVATION IN WISCONSIN

County Land and Water Resource Management Plans

A locally developed idea:

- proposed in the fall of 1996 by county conservation professionals in response to draft state agency recommendations for redesigning Wisconsin's nonpoint programs,
- promoted by the Wisconsin Land and Water Conservation Association (WLWCA) during state legislative deliberations in spring and summer of 1997, and
- became the central theme to landmark state legislation signed into law in October 1997 as part of the state budget bill (Wisconsin Act 27).

The basic concepts include:

- state agencies establish minimum statewide performance standards and prohibitions for nonpoint pollution and soil erosion control,
- state standards are used as a basis for distributing local grants, and
- each county develops a Land and Water Resource Management Plan, which explains how they will meet the state standards and address other local resource management concerns, and with state (and federal) grant assistance, counties lead local program implementation efforts, including regulatory measures, as needed.

Guiding principles include:

- rely on locally led process for plan development and implementation,
- allow for maximum flexibility in state program grants,
- encourage comprehensive watershed based efforts without excessive planning,
- reward innovation and cost effectiveness,
- require the seamless integration of programs and funding sources, making use of a wide variety of implementation tools, and
- ensure meaningful program evaluation and accountability.

Land and Water Resource Management Plans at a glance:

- assess the conditions of local soil and water resources, referencing available monitoring data and applicable state and federal standards,
- identify local soil erosion and nonpoint pollution problems and priorities,
- develop a multi-year work plan for addressing those problems, preferably by watershed,
- partner with other local agencies, organizations, landowners, and other interested parties,
- coordinate with local land use planning and zoning efforts, and
- develop a comprehensive information and education strategy to help implement the plan, and track progress toward meeting the plan's goals, including compliance with state standards.

Board of Directors

John Kohl, President • Marvin Fox, Vice-President • Joseph Wisniewski, Secretary/Treasurer

Byron Berg • James Hartung • George Nettum • Clifford Sellen • Robert Washkuhn

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**LAND AND WATER
RESOURCE MANAGEMENT PLAN
GUIDELINES**

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INTRODUCTION

Overview

Through Wisconsin Act 27 (1997-1999 Biennial Budget Bill), Chapter 92.10 of the Wisconsin Statutes was amended, creating a county land and water resource management planning program. The goal of the program is to foster and support a locally led process that improves decision-making, streamlines administrative and delivery mechanisms, and better utilizes local, state, and federal funds to protect Wisconsin's land and water resources. More specifically, the program is intended to:

- rely on a locally led process for plan development and implementation;
- allow for maximum flexibility with various program grants and funding sources;
- encourage comprehensive watershed based efforts without excessive planning;
- reward innovation and cost effectiveness;
- require the seamless integration of programs and funding sources;
- make use of a wide variety of implementation tools; and
- ensure meaningful program evaluation and accountability.

The guidelines described in this document are provided to assist counties in developing a county land and water resource management plan that will meet the minimum requirements of the county land and water resource management planning program and many of the requirements for other program grant processes.

County Land and Water Resource Management Plan Concept

The county land and water resource management plan concept was proposed in the fall of 1996 by conservation professionals in response to draft state agency recommendations for redesigning Wisconsin's nonpoint programs. The concept was promoted by the Wisconsin Land and Water Conservation Association during state legislative deliberations in the spring and summer of 1997. With the added support of the Department of Agriculture, Trade and Consumer Protection, the Department of Natural Resources, and the USDA Natural Resources Conservation Services, the county land and water resource management plan concept became a central theme to landmark state legislation signed into law in October 1997 as part of Wisconsin Act 27.

The county land and water resource management plans are not intended to be another "program" among the many others from the state and federal level. Rather, it is a "process" by which counties can assess their resource conditions and needs and decide how to best meet their goals. In other words, the county land and water resource management plans are an "umbrella" to integrate all available programs. County land and water resource management plans are intended to:

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- develop a seamless approach for program intergration;
- address the conditions of local land and water resources, referencing available monitoring data and applicable state and federal standards;
- review and incorporate existing plans, such as the areawide water quality plans;
- identify local soil erosion and nonpoint pollution problems and priorities;
- develop a multi-year work plan for addressing those problems;
- partner with other agencies, municipalities, organizations, landowners, and other interested parties;
- coordinate with local land use planning and zoning efforts;
- develop a comprehensive information and education strategy to help implement the plan;
- track progress toward meeting the plan's goals, including compliance with state standards; and
- leverage local, state, federal, and private resources.

MINIMUM STATUTORY REQUIREMENTS

The following is a summary of the minimum statutory requirements of the Land and Water Resource Management Program listed in Chapter 92.10, Wis. Statutes. Although these are the minimum requirements for the county land and water resource management plans to address, it is strongly encouraged that the Practical Considerations information discussed later in the guidelines are also included in plan development and implementation. Inclusion of the Practical Considerations will help meet many of the requirements for other program grant processes and garner more local, state, and federal support for plan implementation. For complete text of Chapter 92.10, please see Appendix A. A checklist is provided in Appendix C that summarizes the minimum statutory requirements and practical considerations information.

Authority

Through Wisconsin Act 27, Chapter 92.10 of the Wisconsin Statutes was amended, creating a County Land and Water Resource Management Program.

Plan Preparation

Meeting the requirements of ATPC 50.12(2), Wis. Adm. Code, will satisfy the requirements of s. 92.10(6)(a) 1.-5., Wis. Stats. One of the notes in this section of the administration code states that the County Land Conservation Committee may estimate the soil erosion rates on individual fields based on representative sampling of fields in an area or region. County Land Conservation Committees shall prepare county land and water resource management plans which:

- specify maximum acceptable rates of soil erosion;
- identify the parcels and locations of the parcels where soil erosion standards are not being met;

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- identify the land use changes or management practices which would bring each area of land into compliance with standards adopted by the County Land Conservation Committee;
- specify procedures to be used to assist landowners and land users in controlling soil erosion;
- establish priorities for controlling soil erosion;
- identify causes other than soil erosion of nonpoint source water pollution; and
- describe all proposed county activities related to nonpoint source water pollution.

Notification

A County Land Conservation Committee must notify landowners and land users of the results of any determinations concerning soil erosion rates and nonpoint source water pollution, and provide an opportunity for landowners and land users to present information relating to the accuracy of the determinations during preparation of the county land and water resource management plan. The statutes [s. 92.10(6)(b), Wis. Stats.] requires that landowners be notified of results of any determinations concerning soil erosion rates and nonpoint source water pollution. This requirement can be satisfied by the provisions of ATCP 50.12(5), Wis. Adm. Code. The requirement can be satisfied during implementation by including these determinations in conservation plans prepared for landowners. Also, landowners are notified of the County Land and Water Resource Management Plan contents as a result of the notice for the public hearing required under s. 92.10(6)(c), Wis. Stats.

Hearings

A County Land Conservation Committee must hold one or more public hearings on the county land and water resource management plan.

Plan Submission

A County Land Conservation Committee must submit the county land and water resource management plan to the Wisconsin Land and Water Conservation Board and the Department of Agriculture, Trade and Consumer Protection.

Plan Review and Approval

The Department of Agriculture, Trade and Consumer Protection must review and approve or disapprove county land and water resource management plans submitted by the County Land Conservation Committees. The Department may require County Land Conservation Committees to indicate specific projects to be funded under each plan and the related cost-sharing rates. A generic timeline for plan approval is as follows:

- Submit draft plan to the Department of Agriculture, Trade and Consumer protection for preliminary review and comment.
- Department of Agriculture, Trade and Consumer Protections returns comments, if any.
- County Land Conservation Committee holds public hearing.

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- Submit final draft plan to Department of Agriculture, Trade and Consumer protection for approval.
- DATCP provides plan summaries to the State Land and Water Conservation Board.
- State Land and Water Conservation Board makes recommendations.
- Department of Agriculture, Trade and Consumer Protection approves plan.

PRACTICAL CONSIDERATIONS

Although not required in the Land and Water Resource Management Program by Chapter 92.10 of the Wisconsin Statutes, the following information is strongly recommended to be considered during the development and implementation of the county land and water resource management plan. A Checklist for the Practical Considerations information is provided in Appendix C to assist in plan development and implementation.

Plan Development Process

1. Form a Local Advisory Committee

The county land and water resource management plan concept is based on the idea of forming a local advisory committee to assist in the development of the county land and water resource management plan. Driving this idea is the thought that a diverse group of stakeholders such as landowners, local government officials and staff, educators, state, federal and American Indian government personnel, Basin Partner Teams, interest groups, and citizens will have the best idea of the needs and concerns of the counties in which they live.

In order to gain local support, the stakeholders should be informed of the planning process, how they can help in the process, and what the county hopes to accomplish. Informing interested parties can be done by:

- convening public meetings to identify issues that reflect the public interest and gather public support for the subsequent actions needed to address issues and opportunities;
- securing media coverage to follow and report on the planning process;
- sending opinion surveys;
- forming citizen committees and focus groups to identify pertinent issues; and
- contacting conservation professionals to provide assistance in identifying current and future resource issues.

The county land and water resource management plan should detail the processes used to obtain the local input. This will help ensure that the plan has received the proper input and will lend credibility to the process by involving all the stakeholders.

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Interested parties should then be invited to participate on the county land and water resource management plan Advisory Committee. The purpose of the advisory committee is to:

- provide information and technical data for the plan;
- assist with preparing the plan;
- review and comment on the plan as it develops;
- advise the County Land Conservation Committee on program options for the plan;
- and
- ensure that related agency programs are coordinated with the implementation of the County land and water resource management plan.

For additional information on forming a local advisory committee and gaining local support see the *USDA Natural Resources Conservation Service Conservation Program Manual*, the *Department of Natural Resources Planning Handbook for Priority Watershed Projects*, the *National Association of Conservation Districts Locally Led Handbook*, or contact the University of Wisconsin - Extension River Basin Educator or Basin Partner Team Educator in your area.

2. Assemble Data

Data included in the plan should represent a summary of relevant data which will help identify issues and opportunities. Enough data should be included to provide the reader with a clear picture of the situation. The bulk data or assessment information should be placed in the appendix of the plan or through reference of the appropriate document or plan from which the data was derived.

Some issues have little or no data to support their importance or viability. A lack of data should not prevent further assessment of land and water resource issues, and may not require a major data gathering effort. Conservation professionals from local, state, and federal agencies, as well as other partners, have considerable background on land and water resource problems and could assist in obtaining information relevant to a particular problem.

Information and technical data is often available from the past efforts of committees and work groups, such as land use planning done at the county level, and areawide water quality management planning done by the Department of Natural Resources at the basin level. Basin Partner Teams should be able to provide land and water resource data and technical assistance in the plan development process. This type of information should be used as a source to assist in assembling the data.

There are other sources that should be considered when gathering data and conducting the resource assessment for the County land and water resource management plan. Keep in mind that this is not an exhaustive list and many other sources of information may be available. Local sources can generally provide more detailed information than some statewide data sources. Some examples include:

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- Areawide Water Quality Management Plans (NR121)
- Biological Use Objectives (NR 102)
- Impaired Waters (Clean Water Act 303d List)
- Outstanding and Exceptional Resource Water (NR 102)
- Mapped Isolated Natural Areas and Environmental Corridors (County Land Use Plan and Department of Natural Resources Bureau of Endangered Resources data)
- Water Resource Uses and Designated Standards (NR104)
- Soil Survey
- Wetland Mapping (Natural Resources Conservation Service and Wisconsin Wetland Inventory Maps)
- Comprehensive Lake Management Plans (NR 190 - Lake Management Planning Program and NR 191 - Lake Protection and Classification)
- County Comprehensive Land Use Plans
- Priority Watershed Plans

3. Assess Resources

Resource assessments provide the critical link between the data and issues identified. The data, and especially the summaries of the data, provide the raw facts about a particular problem or issue. An assessment, however, analyzes the data regarding the natural resources to provide an understanding of the problem and can lead to possible solutions.

The present condition of the land, water, and related natural resources, as evidenced by the data as well as the adequacy of existing management and regulatory programs, will form the basis of many of the implementation activities to be addressed in the plan. Resource assessments will also help determine the severity of the problems identified, thus helping in setting priorities in the planning and implementation phases. Assessments need not be lengthy, but should be detailed enough to facilitate the development of issues, goals and objectives, and actions.

4. Identify Issues

Both resource data assessment and public and professional input must be used to accurately identify issues of importance. A good plan rests on a foundation of clear issue identification. Distinctions should be made between issues (resource problems and opportunities) and actions (activities that are designed to address issues). For example, the following statement is not an issue:

- “The county lacks the staff expertise to deal with land and water quality problems.” Staffing and funding are solutions which can address specific water resources issues. The issue here is poor water quality, poor land use, and water quality degradation. Obtaining the funding and staff expertise necessary to deal with the problem are actions which should be part of the implementation plan.

The issue identification process should be open to all land and water-related resource issues, including not only direct water issues, such as water quality and supply, but

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related issues which affect water such as land use practices and soil erosion, and dependent uses such as aquatic and terrestrial wildlife. The process of issue identification can be addressed by:

- convening public meetings to identify issues that reflect the public interest and to gather public support for subsequent actions needed to address issues and opportunities;
- developing opinion surveys and form citizen committees to identify pertinent issues;
- contacting conservation professionals to provide valuable assistance in identifying current issues as well as those looming on the horizon, and
- integrating basin wide priorities with local planning efforts.

Issues can be sorted or ranked by the public through public meetings or by the local advisory committee with the assistance of county officials and resource professionals.

5. Set Goals and Objectives

The goals and objectives form the linkage between issues and the actions. Since issues change over time, the focus of the primary goals and objectives should be on high priority issues – those that the county intends to address in the near future. Keep in mind that there may already be local or regional goals and objectives in place. These existing goals and objectives should be reviewed and evaluated when developing new goals and objectives.

Goals and objectives are hierarchical in nature with the goal being the more general and longer term target. A goal states clearly what the county wishes to accomplish over the long term; the objective sets the near term targets to accomplish the goal.

For example, a goal might be to reduce phosphorus levels in county lakes to a given standard. One objective that would help achieve this goal might be to have all on-site septic sewer systems upgraded by a certain date or, create buffers strips along all adjacent agriculture land. Other, related objectives necessary to achieve this goal would also be identified. Then, actions could be planned to accomplish each of these objectives.

Goals must be clear and achievable. For example, the following goal is neither clear nor specific enough for a county land and water resource management plan: "All lake water quality should be improved." Goals should address these questions: 1) What is the ultimate result desired? 2) Is the result achievable in a reasonable period of time?

Objectives break the goal down into smaller, manageable bites and should be more specific and should be measurable. They should address the following questions: 1) What are the parts of the goal that can be identified as short-term activities which will help achieve the goal? 2) What standards must be attained?

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Using the above example the goal might read: "Phosphorous levels are to be reduced to meet water resource objectives by the year 2000." Objectives to achieve this goal might include the following : 1) Upgrade all on-site sewer systems by 2000. 2) Adopt and enforce buffer strip requirements along streams, ditches, and lakeshores. 3) Ensure that municipal treatment systems meet discharge standards.

6. Define Action Steps

Actions are the specific steps a county will take to address its priority issues and are used as a means of accomplishing objectives to achieve goals which deal with those issues. Using the previous example, if the objective is to insure that all on-site sewer systems are upgraded, the action step might indicate locations that are to be targeted in a given time period.

Actions should be specific projects, programs, or implementation activities which have a good likelihood of being achievable in the short term. That is, they are likely to be funded or realized within the existing programs implemented by the county, agency, or organization. Identifying realistic actions increases the chances that a plan will bring results. Actions should require accomplishment as a measure of success. The actions should use proactive language, require effective activities, or propose specific programs to deal with the issues. Language such as encourage, promote, and facilitate are vague and do little to address complex water resource problems and allow no measure of accomplishment. Such language may have less chance of receiving local, state, or federal funding support.

The actions should be prioritized to reflect the urgency of the problems they are intended to address, as well as the resources which can be expected to be available for addressing them. Priorities should reflect the rankings established in the Issue Identification section discussed previously. By incorporating estimates of costs and time and money available, priorities can be established using the same methods used for the issue rankings.

Actions may be accomplished either by the county or by other agencies and organizations. The amount of staff and financial resources necessary and available must be considered. The plan should indicate whether commitments for assistance from other agencies, local units of government, or other organizations has been obtained. An example is the assistance of Department of Natural Resources GMUs in providing water resource data and technical assistance.

While detailed cost estimates may not be possible or practical at this stage, "ballpark" estimates should be made so that a realistic implementation schedule can be developed. Grandiose plans may look impressive, but if they cannot be funded, goals will not be achieved.

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Based on project costs, funds, and staff available, the county should develop a plan implementation schedule that accomplishes the most important objectives first.

Plan Implementation Process

The purpose of the implementation process is to state how the plan will be carried out to meet the objectives and achieve the actions identified. It will apply the performances standards, clarify roles and responsibilities, develop information and education strategies, and track progress of the plan and plan objectives. It may also provide a cost estimate for the activities based on programmatic experience and projected costs associated with the annual activities identified in the Land and Water Resources Management Plan. Refinements to the estimated costs in the plan will be refined through the annual county budget and grant application processes. Finally, it should provide a schedule to achieve goals and objectives.

county land and water resource management plans should have implementation activities that are organized by watershed and coordinated with adjoining county land and water resource management plans, Geographical Management Units, Basin Partner Teams, local, state, federal, and tribal governments, private entities, and the general public.

1. Apply Performance Standards to Resource Assessment

Significant research continues to be conducted to analyze and quantify the impact land uses have on land and water resources. Often the research is used to guide land management decisions and the development of public policy to reduce land use impact on water resources. Key to efficient and effective land management and public policy development is the identification of the threshold whereby land management activities begin to adversely impact land and water resource conditions. Once the thresholds are defined and understood, performance standards can be established to articulate the land management activities necessary to reduce or eliminate the effect on land and water resources.

It is very difficult to develop a set of land management performance standards which are responsive to all the various water resource classifications. Owing to the need to develop and express a set of land use management expectations, performance standards should be developed to address the most typical water resources characteristics, for example, warm-water sport fishery. When the water resource characteristics need a higher level of land use management, the performances standards should be adjusted accordingly.

Through Wisconsin Act 27, the Legislature amended the statutes to allow County Land Conservation Committees to develop and adopt standards and specifications for management practices to control erosion, sedimentation, and nonpoint source water pollution. The statutes also require the Department of Natural Resources and the

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Department Of Agriculture, Trade And Consumer Protection to develop performance standards for agricultural and non-agricultural nonpoint pollution sources.¹ The development and conveyance of performance standards will clearly articulate what is expected of landowners and businesses and provide guidance to conservation efforts. The standards will be expressed through a combination of soil erosion, pollutant delivery to surface and ground water, and behaviors not appropriate for water quality.

Until the Department of Natural Resources and the Department Of Agriculture, Trade And Consumer Protection complete their statutory requirement of developing performance standards, several pre-existing state or county performance standards can be used to guide the preparation of the implementation activities. They are:

- Animal Waste Advisory Committee Prohibitions (Chapter 281 Water and Sewage, 281.16 (3) (a) 1. - 4.)
 - (1) No overflow of manure storage structures.
 - (2) No unconfined manure stacking (piling) within Water Quality Management Areas.
 - (3) No direct runoff from feedlots or stored manure to waters of the state.
 - (4) No unlimited livestock access to waters of the state where high concentrations of animals prevent adequate sod cover maintenance.
- Water Quality Management Areas are defined as land within 300 feet of a stream and within 1,000 feet of a lake, also specific sites based on susceptibility for groundwater contamination.
- Soil and Water Conservation Standards
 - Construction Site Erosion Control
 - Stormwater Management Standards
 - Manure Standards
 - Shoreland Management and Zoning
 - Agricultural Shoreland Management

¹ Under the provisions of s. 92.15, Wis. Stats., a local unit of government may enact livestock operation regulations that exceed the state performance standards, prohibitions, conservation practices and technical standards only if the local unit of government demonstrates to the satisfaction of the department of agriculture, trade and consumer protection or the department of natural resources that the regulations are necessary to achieve water quality standards.

As of the writing of these guidelines (September 1998), the Department of Natural Resources and the Department of Agriculture, Trade and Consumer Protection have not yet promulgated state performance standards, as required by 1997 Act 27. This chapter will need to be revised after the state performance standards are promulgated.

2. Clarify Roles and Responsibilities

At the root of the County land and water resource management plan concept is the cooperation and coordination of all stakeholders within and adjacent to the county and coordination between the counties.

Provisions for partnering can take place in many forms. For example, formal written memorandums of understandings or agreements could be set up between the local, state, and federal agencies as well as other organizations and interested parties. These

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agreements will define the specific roles and responsibilities of the individuals involved in the planning process. Keep in mind that there may be current agreements in place that should be reviewed prior to developing new agreements. Current agreements may only need modification to meet the needs of the County land and water resource management plan

Cooperation and coordination of stakeholders can take place in many forms. For example, there are opportunities to incorporate the priorities of the Basin Partner Teams with the county land and water resource management plans. A tremendous opportunity exists for the linkage of the basin appraisal schedules and other basin land and water program priorities with the activities of the county Land Conservation Committees and Land Conservation Departments and the development of their County land and water resource management plan. The Basin Partner Teams may want to work with the Land Conservation Department and County Land Conservation Committees to assist in a range of potential roles such as:

- overseeing the development of areawide water quality management plans;
- reviewing and commenting on County Land and Water Resource Management Plans;
- serving as a clearing house for land and water quality information within the basin;
- providing land and water resource data and technical assistance to counties to help in plan development;
- assisting in information and education strategies;
- focusing Department of Natural Resources Private Land Program activities; and
- integrating basin wide priorities into local planning efforts.

For counties developing county land and water resource management plans, Basin Partner Team involvement should be explored as early in the planning process as possible. Strong coordination is encouraged between the Basin Partner Teams and the County Land Conservation Committees and Land Conservation Departments.

Another example of stake holder involvement is the River Basin Educators. They play a lead role in developing ecosystem-based educational strategies that protect and improve local land and water resources - at the basin level. As a guide, the following are illustrative of Basin Educator responsibilities:

- assisting in the development of an ecosystem-focused river basin education strategy that addresses specific priorities identified by local work groups;
- assisting in identifying interested potential members for the County Land and Water Resource Management advisory committees;
- consulting, and where appropriate, assisting in the organization of planning and strategy meetings;
- coordinating educational outreach programming; and
- helping develop ongoing working relationships between the agencies and public interest groups involved in natural resource education programs.

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For counties developing county land and water resource management plans, local county University of Wisconsin Extension agent involvement should be explored as early in the planning process as possible. In addition, strong coordination should be encouraged between the University of Wisconsin Extension River Basin Educator and county University of Wisconsin Extension faculty. It should be recognized that in areas where basin educators and county faculty/agent work together, the county agent will have a greater opportunity to be part of local educational programs that relate to the implementation of the county land and water resource management plan.

3. Develop Information and Education Strategy

A vital component to the county land and water resource management plan is the Information and Education section. Information and Education activities will be an integral part of both the planning and the implementation phases. The information and Education information can be developed in a similar manner to how the overall plan is composed - that is it is important to integrate different agencies and private sector entities during the development of the ideas all the way through carrying out the activities.

The strength of the information and education programs is often related to how you build a strategy which integrates both water quality goals and behavioral change goals. Such strategies are not just a list of activities which project staff complete by following a recipe or schedule. The information and education strategy should address the priorities set by the county land and water resource management plan and include measurable objectives for any educational programming that will occur.

Major elements of an information and educational strategy can include:

- Your land and water resource priorities (usually several)
- Specific goals that address resource priorities
- Measurable objectives for each goal (usually several for each goal)
- Target audiences (emphasis is on audiences, not masses)
- What will happen with each target audience (some examples include):
 - identification of local problems
 - participation in planning processes
 - implementing solutions to the problems
- Educational/supporting activities
- Time line for implementing educational activities
- Who will help implement the educational activities
- Budget/costs
- Evaluation of objectives.

As a general rule, when developing an Information and Education strategy that is part of a local county land and water resource management plan you will want to focus on

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Target Audience Objectives. Examples of such "measurable" Target Audience Objectives could include:

GOAL: Improve Nutrient Management

Example Objective:

Seventy-percent of the watershed farmers will accurately credit nitrogen from manure.

Educational/Supporting Activities:

- six manure spreader calibration clinics, annually.
- nitrogen crediting demonstration and county farm or county fair exhibit.
- two informational mailing, annually (planning and harvest time).

GOAL: Reduce Urban Sedimentation

Example Objective:

Sixty-percent of the local contractors in the county will be able to design and install appropriate erosion control measures.

Educational/Supporting Activities:

- workshop for local builders and contractors, every other year.
- informational packet distributed to all contractors for each permit issued.

Many groups (private and public sector entities) can and should be part of natural resource education. The county land and water resource management plan should reflect this multi-agency and private sector expertise.

The University of Wisconsin Extension, with offices in every county in the state, a network of area and basin educators, and specialized assistance from diverse faculty on various campuses throughout Wisconsin, is uniquely positioned to provide educational support for maintaining and protecting Wisconsin's land and water resources. Cooperative Extension brings the resources of the University of Wisconsin System to Wisconsin citizens and communities. The roles need to be clarified as new interagency linkages develop between Land Conservation Departments, Department of Natural Resources, and University of Wisconsin Extension's county faculty/agents and basin educators. For more information on roles and responsibilities see the Roles and Responsibilities Section.

4. Track Plan Progress

Current efforts of measuring program success have been time consuming, costly, and largely ineffective. The reasons for this are numerous, including the complexity of the programs, the lack of funds, creative use of water quality monitoring, and failed attempts of developing and applying state-wide computerized tracking systems to be used at the local level.

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Locally led conservation does not end after plan implementation. The effectiveness of the plan should be evaluated to ensure that the community stakeholders' goals and objectives are achieved. An evaluation should be made to determine where the actual results differ from those anticipated.

Counties should identify in their land and water resources management plan the methods of tracking program efforts and evaluating the success of those efforts ensuring that they meet the minimum data requirements of the specific program or programs. For tracking to be successful, it will require that the plans include clear goals and objectives that can be quantified and measured.

5. Monitor and Evaluate Resources

The goal of the monitoring and evaluation activities is to determine the progress the county land and water resource management plan is making towards improving the quality of the land and water resources. Monitoring and evaluation activities should be developed to provide a measure of the specific goals and objectives listed in the plan.

When conducting monitoring it is important that the same methods and equipment be used to collect the data. This includes maintaining the same season in which the data is collected. As discussed throughout this document, it is important to involve all the stakeholders in the monitoring and evaluation activities. Information can be obtained from a variety of local, state, and federal resources as well as schools, basin partner teams, and citizens.

Many local, state, and federal agencies are already involved in monitoring and accomplishment reporting activities. This information is done through a variety of programs and may be a valuable resource for information. There are also designed monitoring programs, such as the Whole Stream Monitoring Sites and the Signs of Success Monitoring Program.

Plan Approval Process

1. Hearings

A County Land Conservation Committee must hold one or more public hearings on the County land and water resource management plan.

2. Plan Submission

A County Land Conservation Committee must submit the County land and water resource management plan to the State Land and Water Conservation Board and the Department of Agriculture Trade, and Consumer Protection, and should consider submission of the plan to the Department of Natural Resources Basin Stakeholder Team, local units of government, cooperating agencies, and other interested parties.

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3. Plan Review and Approval

The Department of Agriculture, Trade and Consumer Protection must review and approve or disapprove county land and water resource management plans submitted by the County Land Conservation Committees. The Department may require County Land Conservation Committees to indicate specific projects to be funded under each plan and the related cost-sharing rates. The State Land and Water Board should also certify that the plan meets the minimum requirements. A generic timeline for plan approval is as follows:

- Submit draft plan to the Department of Agriculture, Trade and Consumer protection for preliminary review and comment.
- Department of Agriculture, Trade and Consumer Protections returns comments, if any.
- County Land Conservation Committee holds public hearing.
- Submit final draft plan to Department of Agriculture, Trade and Consumer protection for approval.
- DATCP mails plan summaries to Land and Water Conservation Board.
- Land and Water Conservation Board makes recommendations.
- Department of Agriculture, Trade and Consumer Protection and the Land and Water Conservation Board approves the plan.

CONCLUSION

Locally Led Conservation

The need for local leadership in natural resources management is an important component included in the United States Department of Agriculture, *1996 Farm Bill*, USDA Natural Resources Conservation Service, *Conservation Programs Manual*, the Environmental Protection Agency, *Water Action Plan*, and Wisconsin Act 27. Elected officials and policy makers have reaffirmed that local leadership and grassroots decision-making that involves a diverse team of stakeholders are the keys to successfully managing and protecting our natural resources. As a result, Wisconsin's 72 County Land Conservation Committees have an opportunity to lead their communities in determining local conservation needs and priorities.

Locally led conservation is based on the principle that community stakeholders are best suited to identify and resolve local natural resource problems. It challenges local, state, and federal agency representatives and urban and rural neighbors to work together and take responsibility for addressing resource needs. Locally led conservation creates new opportunities, but also poses significant challenges to County Land Conservation Committees to take a more active role as conservation leaders in their communities.

Wisconsin Act 27 includes enabling legislation for County Land Conservation Committees to develop County Land and Water Resource Management Plans. County

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Land and Water Resource Management Plans are envisioned to be a local action or implementation plan with emphasis on program integration. This local planning process is not to be thought of as another "program" among the many others from the state and federal level. Rather, it is a process by which counties can assess their resource conditions and needs, decide how best to meet water quality goals, minimum state performance standards and other local conservation objectives, and measure progress towards meeting these goals. The planning process will provide a more efficient and effective means to address resource issues, meet state standards, and more effectively leverage local, state, and federal resources.

Every citizen benefits from the protection and sustainable use of our natural resources. As standing committees to County Boards, County Land Conservation Committees are the primary local delivery system of natural resource programs. County Land Conservation Committees and Departments are the public's vital link with local landowners to promote the implementation of conservation practices and achieve greater environmental stewardship of the land.

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Appendix C - Checklist for County Land and Water Resource Management Plans

This checklist is provided to summarize the minimum statutory requirements of the Land and Water Resource Management Program listed in Chapter 92.10, Wis. Stats. It is intended to be used as a tool to evaluate if the county land and water resource management plan is meeting the basic statutory requirements.

Minimum Statutory Requirements

Does the County Land and Water Resource Management Plan:

1. Specify maximum acceptable rates of soil erosion? ☐
2. Identify the parcels and locations of the parcels where soil erosion standards are not being met? ☐
3. Identify the land use changes or management practices which would bring each area of land into compliance with standards adopted by the County Land Conservation Committee? ☐
4. Specify procedures to be used to assist landowners and land users in controlling soil erosion? ☐
5. Establish priorities for controlling soil erosion? ☐
6. Identify causes, other than soil erosion, of nonpoint source water pollution? ☐
7. Describe all proposed county activities related to nonpoint source water pollution? ☐
8. Has the county held a public hearing? ☐
9. Does the plan or other correspondence verify that the county notified landowners and land users of the results of any determinations concerning soil erosion rates and nonpoint sources of water pollution, and provide an opportunity for the landowners or land users to present information relating to the accuracy of the determinations using the preparation of the Land and Water Resource Management Plan? ☐

Practical Considerations

This checklist is provided to summarize additional information that is recommended to be included in the county land and water resource management plan. It is intended to be used as a tool to evaluate the plans content and garner more local, state, and federal support for plan implementation.

Local Advisory Committee

1. Has a preliminary meeting been convened with stakeholders to discuss the Land and Water Resource Management Process?
2. Has the public been engaged in the locally led conservation process?
3. What methods have you used to gather public input?
 - ☐ meetings
 - ☐ focus groups
 - ☐ surveys
4. Has a local advisory committee been convened?

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5. Does the local advisory committee meet regularly?
6. Are special committees or task groups working as part of the local advisory committee?
7. Does the input from the public reflect needs, interests, and ideas of the diversity of the county? Possible participants include:
 - ☐ federal agencies
 - ☐ GMU basin teams
 - ☐ UWEX county agents and river basin educators
 - ☐ state conservation agency representatives
 - ☐ local, state, and tribal environmental, agricultural and recreational agencies
 - ☐ agricultural organizations
 - ☐ environmental and conservation organizations
 - ☐ civic groups
 - ☐ local and state elected officials
 - ☐ local boards of education and local schools
 - ☐ local businesses that have an impact on natural resources
 - ☐ garden clubs
 - ☐ political organizations
 - ☐ hunting, fishing, and recreational organizations
 - ☐ builders association
8. Does the County Land and Water Resource Management Plan detail the process used to obtain local input?

Data Assembly

1. Is the data relevant to the plan?
2. Have other land and water resource experts been contacted for data information, such as the areawide water quality information from the DNR basin teams?
3. Have other sources for data been explored?

Resource Assessment

1. Has the local advisory committee completed a resource assessment?
2. Is the resource assessment based upon natural resource inventory data obtained from a broad range of government and non-government sources?
3. Does the resource assessment address the entire resource base in the county including land uses, plants, animals, soil, water, and air?

Issue Identification

1. Does the resource assessment include prioritizing resource concerns?
2. Does the resource assessment include identifying priority geographic areas of need?
3. Does resource assessment include agreed upon community objectives?

Goals and Objectives

1. Has the local advisory committee set measurable goals and objectives?

Action Steps

1. Has the local advisory committee identified government and non-government programs and services that are available to address the resource needs?

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2. Do the action steps prioritize the resource problems?
3. Has a implementation scheduled been developed?
4. Does the implementation schedule include information on costs, funding, and staff?

Performance Standards

1. Does the Plan use performance standards?

Roles and Responsibilities

1. Does the plan contain provisions for partnering?
2. Does the plan identify roles and responsibilities of stakeholders?

Information and Education

1. Has a strategy to integrate water quality and behavioral change goals been developed?
2. Have the major elements been included in the information and education strategy?
 - ☐ land and water priorities
 - ☐ goals
 - ☐ objectives
 - ☐ target audience
 - ☐ supporting activities
 - ☐ timeline
 - ☐ who does what
 - ☐ budget and costs
 - ☐ evaluation

Progress Tracking

1. Does the plan include a progress tracking component?

Monitoring

1. Does the plan include resource monitoring?

Plan Approval

1. Has the plan been submitted to stakeholders for review and comment?
Stakeholders may include:
 - ☐ federal agencies
 - ☐ GMU basin teams
 - ☐ UWEX county agents and river basin educators
 - ☐ state conservation agency representatives
 - ☐ local, state, and tribal environmental, agricultural and recreational agencies
 - ☐ agricultural organizations
 - ☐ environmental and conservation organizations
 - ☐ civic groups
 - ☐ local and state elected officials
 - ☐ local boards of education and local schools
 - ☐ local businesses that have an impact on natural resources
 - ☐ garden clubs

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- ☐ political organizations
 - ☐ hunting, fishing, and recreational organizations
 - ☐ builders association
2. Has the plan been submitted to the LWCB to certify that the plan meets the minimum requirements?

Note: This document is an unofficial text of Ch. 92, Wis. Stats., as amended by 1997 Wisconsin Act 27. Before taking action, users should consult with legal counsel or the Revisor of Statutes to verify the accuracy of this text. The Department of Ag., Trade and Consumer Protection assumes no responsibility for the accuracy of this text.

CHAPTER 92

SOIL AND WATER CONSERVATION AND ANIMAL WASTE MANAGEMENT

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92.02 Legislative intent. (1) The legislature finds that the soil resources of this state are being depleted by wind and water erosion and that the waters of this state are being polluted by non-point sources of pollution. The legislature further finds that these are statewide problems endangering the health and welfare of the state's citizens, its recreational resources, agricultural productivity and industrial base.

(2) The legislature declares it to be the policy of this state to halt and reverse the depletion of the state's soil resources and pollution of its waters.

(3) It is the intent of the legislature to implement this policy by enacting this soil and water conservation law to:

(a) Establish goals and standards for conservation of soil and water resources;

(b) Provide for cost sharing, technical assistance, educational programs and other programs to conserve soil and water resources;

(c) Encourage coordinated soil and water conservation planning and program implementation; and

(d) Enable the regulation of harmful land use and land management practices by county ordinance where necessary to achieve the purposes of this chapter.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8).

92.025 State soil erosion control goals. It is the intent of the legislature that:

(1) **STATUTORY GOAL.** The soil erosion rate on each individual cropland field in the state does not exceed the tolerable erosion level on or after January 1, 2000.

(2) **INTERIM GOALS; COUNTIES.** The soil erosion rate in each county in the state does not exceed 1.5 times the tolerable erosion level on or after July 1, 1990 and does not exceed the tolerable erosion level on or after July 1, 1993.

(3) **INTERIM GOALS; INDIVIDUAL CROPLAND FIELDS.** The soil erosion rate in each individual cropland field in the state does not exceed 3 times the tolerable erosion level on or after July 1, 1990, and does not exceed 2 times the tolerable erosion level on or after July 1, 1995.

(4) **INTERIM GOAL; STATE-RUN FARMS.** The soil erosion rate on individual cropland fields of farms owned by the university of Wisconsin system or any other department or agency of state government does not exceed the tolerable soil erosion level on or after July 1, 1990.

History: 1985 a. 29.

92.03 Definitions. In this chapter:

(1) "Agency" means any department, agency, board, commission, committee, council, officer, subdivision or instrumentality, corporate or otherwise, of this state.

(2) "Board" means the land and water conservation board created under s. 15.135 (4).

(3) "Department" means the department of agriculture, trade and consumer protection.

(4) "Landowner" means any person over 18 years of age and any partnership, limited liability company, firm or corporation that holds title to land lying within a county whether or not this land is subject to easement, mortgage, lien, lease or restrictive covenant, except that this term does not include any person who is under guardianship, a person who is incompetent or a person who is mentally ill. A person, partnership, limited liability company, firm or corporation is deemed to hold title to land if the person, partnership, limited liability company, firm or corporation has any of the following:

(a) Title as sole owner.

(b) Title as a joint owner.

(c) Title as owner of an undivided interest.

(d) Title as sole or joint trustee or as sole or joint assignee.

(e) A land contract vendee's interest therein.

(5) "Land user" means any person who uses land as an operator, lessor or renter.

(6) "Secretary" means the secretary of the department.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8); 1993 a. 16, 112.

92.04 Land and water conservation board. (1) **POWERS.**

(a) **Hearings.** The board may hold public hearings in the performance of its functions.

(b) **Delegation.** The board may delegate to its chairperson or to one or more of its members any of its powers or duties.

(c) **Soil and water conservation studies and recommendations.** The board may make studies and recommendations on matters relating to soil and water conservation.

(2) **DUTIES.** (a) **Advise secretary and department.** The board shall advise the secretary and department on matters relating to exercise of the department's authority under this chapter.

(b) **Review land and water resource management plans.** The board shall review land and water resource management plans prepared under s. 92.10 and make recommendations to the department on approval or disapproval of those plans.

(c) **Review and approve soil and water conservation standards.** The board shall review soil and water conservation standards prepared under s. 92.105. The board shall establish guidelines for the approval of these standards.

(d) **Review plans.** The board shall review annual grant allocation plans developed under s. 92.14 (6) (b) and make recommendations to the department on approval, modification or disapproval of the plans.

(e) *Review joint evaluation plan.* The board shall review the evaluation plan prepared under s. 92.14 (13). After its review, the board shall make recommendations on the plan to the department and to the department of natural resources.

(f) *Review annual reports.* The board shall review the annual reports under ss. 92.14 (12) and 281.65 (4) (o).

(g) *Advise the university of Wisconsin system.* The board shall advise the university of Wisconsin system annually on needed research and educational programs relating to soil and water conservation.

(h) *State erosion control goals; compliance and evaluation.* The board shall review compliance with state soil erosion control goals established under s. 92.025. The board shall notify the department and the legislature if these goals are not achieved or if it is unlikely that these goals will be achieved.

(i) *Tolerable erosion levels.* The board shall establish a tolerable erosion level based on an erosion rate which is acceptable and maintains long-term soil productivity.

(j) *Records.* The board shall keep a full and accurate record of all proceedings before it and all actions taken by it.

(k) *Review of pollution abatement determinations.* The board shall review and affirm or reverse decisions of county land conservation committees under s. 281.20 (3) (b) when review is requested under s. 281.20 (5). The board may conduct an informal hearing that is not a contested case under ch. 227.

(L) *Review of critical site determinations.* The board shall review and affirm or reverse decisions of county land conservation committees under s. 281.65 (7) (a) 2. when review is requested under s. 281.65 (7) (b). The board may conduct an informal hearing which is not a contested case under ch. 227.

(3) **RULES REVIEW.** (a) *Board review.* The board shall review all rules of the department relating to implementation of this chapter prior to promulgation.

(b) *Submission for review.* Before submitting proposed rules to the legislative council staff under s. 227.15, the department shall submit the proposed rules to the board for comment. The board has 30 days to submit comments on the proposed rules to the department.

(c) *Emergency rules.* If the department promulgates an emergency rule under s. 227.24, it shall provide a copy of the rule to the board prior to publication of the rule in the official state paper.

(d) *Hearing.* The chairperson of the board, or his or her designee from the board, may cochair with the department any public hearing held by the department on proposed rules.

(e) *Dissenting report.* The department shall submit to the board a copy of the report required under s. 227.19 (2) on proposed rules. The board may prepare a dissenting report stating its recommendations on the proposed rules. The board shall prepare any dissenting report within 10 days from the date of receipt of the department's report. The department shall attach the dissenting report to the department's report, send them to the presiding officer of each house of the legislature and distribute copies under s. 227.19 (2). The department shall cause a statement to appear in the Wisconsin administrative register to the effect that a dissenting report of the board was submitted to the presiding officer of each house of the legislature.

(f) *No rule-making power.* The board has no rule-making authority on matters relating to soil and water conservation.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1983 a. 416; 1985 a. 29; 1985 a. 182 s. 57; 1985 a. 332 s. 251 (8); 1987 a. 27; 1993 a. 16, 166; 1995 a. 227; 1997 a. 27.

92.05 Department. (1) **CENTRAL AGENCY.** The department is the central agency of this state responsible for setting and implementing statewide soil and water conservation policies and administering the state's soil and water conservation programs. The department shall coordinate its soil and water conservation program with the nonpoint source water pollution abatement pro-

gram established under s. 281.65, the inland lake protection and rehabilitation program established under ch. 33 and other programs with objectives related to soil and water conservation administered by the department of natural resources or by other state or federal agencies.

(2) **POWERS.** (a) *Accept gifts.* The department may accept contributions of money or gifts for soil and water conservation purposes.

(b) *Require reports.* The department may require reports from the counties as needed.

(3) **DUTIES.** (a) *Information.* The department shall keep county land conservation committee members generally informed of activities and experience useful to them.

(b) *Development; coordination.* The department shall assist in developing and coordinating the plans and programs of each county.

(c) *Rules.* The department shall promulgate rules governing implementation of this chapter and distribution of state or federal funds by the department to the counties. The department shall comply with the procedures under s. 92.04 (3) in promulgating these rules.

(d) *Advise university of Wisconsin system.* The department shall advise the university of Wisconsin system annually on developing research and educational programs relating to soil and water conservation.

(e) *Studies.* The department may undertake studies and investigations and make and issue reports and recommendations with respect to state soil and water conservation program needs. Biennially, the department shall prepare a state soil and water conservation report. This report shall include a description of present soil and water resource uses and a projection of future trends, an assessment of soil and water conservation problems in relation to soil and water resource use practices and any actions necessary to correct or solve these problems including specific goals, action schedules, program evaluation criteria and provisions for the coordination of these actions with programs developed by other agencies for the development, management and conservation of soil, water and related natural resources. This report shall include the identification of counties and specific parcels within these counties where soil and water conservation problems are most acute and recommendations for actions necessary to correct or solve these problems.

(f) *Nonpoint source water pollution abatement.* The department shall perform the duties specified for the department in the nonpoint source water pollution abatement program under s. 281.65 (5).

(g) *Watershed protection and flood prevention act.* The department has responsibility over programs provided by 16 USC 1001 to 1008 relating to the planning and carrying out of works of improvement for soil and water conservation and other purposes.

(h) *Model ordinances.* The department shall make available model ordinances for counties and municipalities concerning regulation and control of land use and land management practices as authorized under s. 92.11.

(i) *Provide staff.* The department shall provide staff to assist the board in performing its statutory duties.

(j) *Milkhouse wastewater.* The department, in consultation with appropriate state and federal agencies, shall promulgate guidelines for determining eligibility for financial assistance under ss. 92.14 and 281.65 for milkhouse wastewater.

(k) *Nutrient management rules.* The department shall promulgate rules to improve agricultural nutrient management in this state. The rules shall be consistent with rules promulgated under s. 281.16 (3) and shall include incentives, educational and outreach provisions and compliance requirements.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8); 1987 a. 27; 1991 a. 309; 1995 a. 227; 1997 a. 27.

92.06 Land conservation committees. (1) CREATION; MEMBERSHIP. (a) *Creation.* Each county board shall create a land conservation committee.

(b) *Membership.* 1. The county board shall appoint to the land conservation committee at least 2 persons who are members of the committee on agriculture and extension education created under s. 59.56 (3) (b).

2. The county board shall appoint to the land conservation committee a person who is the chairperson of the county agricultural stabilization and conservation committee created under 16 USC 590h (b) or other county agricultural stabilization and conservation committee member designated by the chairperson of the county agricultural stabilization and conservation committee.

3. The county board may appoint to the land conservation committee any number of members who are also members of the county board.

4. The county board may appoint to the land conservation committee up to 2 members who are not members of the county board.

(c) *Terms.* Each member of the land conservation committee shall serve for a term of 2 years or until a successor is appointed, whichever is longer.

(d) *Reimbursement.* Each member of the land conservation committee shall be reimbursed for necessary expenses and shall be paid the same per diem as members of other county board committees.

(e) *Programs and responsibilities.* The county board may assign other programs and responsibilities to the land conservation committee.

(2) **DESIGNATED REPRESENTATIVES.** The county board shall designate a representative of each county committee with responsibilities related to natural resource management to serve as an adviser to the land conservation committee. The county board shall designate, at a minimum, representatives from any county zoning or land use, forestry, parks and solid waste committees. In addition, the land conservation committee may invite any state, federal or local agency with which the county or committee has a memorandum of understanding to designate a representative to advise the land conservation committee.

(4) **PUBLIC PARTICIPATION.** The committee shall actively solicit public participation in the planning and evaluation of soil and water conservation programs.

History: 1981 c. 346; 1985 a. 29; 1995 a. 201.

Appointments to committee are made by county board, not county executive. 76 Atty. Gen. 173.

Committee responsibilities and prohibition of private interest in public contracts discussed. 76 Atty. Gen. 184.

92.07 Land conservation committee; powers.

(1) **POWERS GENERALLY.** Each land conservation committee may carry out the powers delegated to the committee subject to the approval of the county board.

(2) **STANDARDS.** Each land conservation committee may develop and adopt standards and specifications for management practices to control erosion, sedimentation and nonpoint source water pollution. The standards and specifications for agricultural facilities and practices that are constructed or begun on or after October 14, 1997, and, if cost-sharing is available to the owner or operator under s. 92.14, 281.16 (5) or 281.65 or from any other source, for agricultural facilities and practices that are constructed or begun before that date shall be consistent with the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 (3). The land conservation committee shall use the rules promulgated under s. 281.16 (3) (e) to determine whether cost-sharing is available.

(3) **DISTRIBUTE FUNDS.** Each land conservation committee may distribute and allocate federal, state and county funds made available to the committee for cost-sharing programs or other incentive programs for improvements and practices relating to soil and water conservation on private or public lands, and within

the limits permitted under these programs, to determine the methods of allocating these funds.

(5) **EDUCATIONAL AND OTHER PROGRAMS.** Each land conservation committee may encourage research and educational, informational and public service programs, advise the university of Wisconsin system on educational needs and assist the university of Wisconsin system and the department in implementing educational programs under ss. 36.25 (7), 59.56 (3) and 92.05.

(6) **PREVENTIVE AND CONTROL MEASURES AND WORKS OF IMPROVEMENT.** Each land conservation committee may carry out preventive and control measures and works of improvement for flood prevention and for conservation, development, utilization and control of water within the county. These preventive and control measures and works of improvement may include, but are not limited to, changes in the use of land and use of engineering operations such as terraces, terrace outlets, desilting basins, floodwater retarding structures, floodways, dikes and ponds, methods of cultivation and the growing of vegetation. These preventive and control measures and works of improvement may be carried out on lands owned or controlled by this state or any of its agencies, with the cooperation of the agency administering and having jurisdiction of the land, and on any other lands within the county upon obtaining the consent of the landowner or the necessary rights or interests in the land.

(7) **ASSISTANCE.** Each land conservation committee, in the name of the county, may cooperate with, enter into agreements with, or furnish financial, technical, planning or other assistance to any agency, governmental or otherwise, or any landowner or land user within the incorporated or unincorporated parts of the county, in carrying out resource conservation operations and works of improvement for flood prevention or for the conservation, development, utilization and protection of soil and water resources within the county.

(7m) **ASSISTANCE TO THE DEPARTMENT OF TRANSPORTATION.** Each land conservation committee shall cooperate with the department of transportation as requested under s. 85.195.

(8) **OBTAIN PROPERTY.** Each land conservation committee, in the name of the county, may obtain options upon and acquire, by purchase, exchange, lease, gift, grant, bequest, devise or otherwise, any property or rights or interests in property or in water. A land conservation committee may maintain, administer and improve any properties acquired. A land conservation committee may receive income from these properties on behalf of the county and may expend this income in carrying out the purposes and provisions of this chapter. A land conservation committee may sell, lease or otherwise dispose of the property or interests in property in furtherance of the purposes and the provisions of this chapter.

(9) **MACHINERY AVAILABILITY.** Each land conservation committee may make available, on terms it may prescribe, to landowners and land users within the incorporated and unincorporated parts of the county, agricultural and engineering machinery and equipment, fertilizer, seeds and seedlings, and other material or equipment which will assist the landowners and land users in carrying on operations upon their lands for the conservation of soil resources, for the prevention and control of soil erosion, for flood prevention, for the conservation, development and utilization of water or for the prevention of nonpoint source water pollution.

(10) **STRUCTURES.** Each land conservation committee may construct, improve, operate and maintain structures necessary or convenient for the performance of any of the operations or activities authorized in this chapter.

(11) **ADMINISTRATION OF PROJECTS OR PROGRAMS.** Each land conservation committee, in the name of the county, may acquire, by purchase, lease or otherwise, and administer, any soil conservation, flood prevention, water management or nonpoint source water pollution abatement project or combinations of these projects, and participate in programs concerned with the conservation of natural resources located within the county undertaken by the United States or any of its agencies, or by this state

or any of its agencies. A land conservation committee may administer, as agent of the United States or any of its agencies, or of this state or any of its agencies, any soil conservation, flood prevention, water management, water quality improvement, nonpoint source water pollution abatement, erosion control, erosion prevention project or resource conservation program within the county. A land conservation committee may act as agent for the United States, or any of its agencies, or for this state or any of its agencies, in connection with the acquisition, construction, operation or administration of any resource conservation program within the county. A land conservation committee, on behalf of the county, may accept donations, gifts and contributions in money, services, materials or otherwise from any source and use or expend these moneys, services, materials or other contributions in carrying on its operations.

(12) **CONTRACTS; RULES.** Each land conservation committee, in the name of the county, may make and execute contracts and other instruments necessary or convenient to the exercise of its powers.

(13) **CONTRIBUTIONS; AGREEMENTS.** As a condition to extending any benefits under this chapter to, or the performance of work upon, any lands not owned or controlled by this state or any of its agencies, a land conservation committee may require contributions in money, services, materials or otherwise to any operations conferring the benefits, and may require landowners and land users to enter into and perform agreements or covenants respecting the use of land as will lead to conservation of soil and water resources.

(14) **ENTER UPON LANDS.** Each land conservation committee may enter upon any lands within the county to examine the land and make surveys or plans for soil and water conservation without being liable for trespass in the reasonable performance of these duties. This authorization applies to the land conservation committee members and their agents.

(15) **ADMINISTRATION AND ENFORCEMENT OF ORDINANCES.** A land conservation committee may, if authorized by the county board, administer and enforce those provisions of an ordinance enacted under s. 101.65 (1) (a) related to construction site erosion, a zoning ordinance enacted under s. 59.693 or an ordinance enacted under authority granted under s. 101.1205.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8); 1991 a. 309; 1993 a. 16; 1995 a. 201; 1997 a. 27.

Cross-reference: See ss. 59.70 (20) (c) and 60.10 (2) (i) for authorization of county or town appropriations.

92.08 Basic workload allocation plan. (1) Every land conservation committee shall prepare annually for its county a plan which describes the soil and water resource activities to be undertaken by that county and the dollar amounts required for personnel to administer and implement activities in that county related to soil conservation activities required under ss. 92.104 and 92.105 to claim a farmland preservation credit under subch. IX of ch. 71, activities required under s. 92.17 related to shoreland management or activities required under s. 281.65 (8m) related to the development or implementation of animal waste [or construction site erosion] ordinances. The land conservation committee shall submit that plan to the county board of that county and to the department.

NOTE: Sub. (1) is shown as affected by two acts of the 1995 legislature and as merged by the revisor under s. 13.93 (2) (c). The bracketed language was inadvertently omitted. Corrective legislation is pending.

(2) The department shall review and approve, modify or disapprove any plan prepared under sub. (1).

History: 1987 a. 27; 1991 a. 309; 1995 a. 225, 227; s. 13.93 (2) (c).

92.09 Land conservation committee staff. The land conservation committee may employ county soil and water conservation staff, subject to the approval of the county board. The county soil and water conservation staff is responsible for the administration of the county soil and water conservation program and may exercise the powers granted to the land conservation committee.

History: 1981 c. 346.

92.10 Land and water resource management planning program. (1) **CREATION.** There is created a land and water resource management planning program. The department, board and land conservation committees jointly shall develop and administer this program.

(2) **PURPOSES.** The purposes of the land and water resource management planning program are to conserve long-term soil productivity, protect the quality of related natural resources, enhance water quality and focus on severe soil erosion problems.

(3) **IDENTIFICATION OF PRIORITY COUNTIES.** (a) *Identification.* The department shall identify priority soil erosion control counties.

(b) *Criteria.* In identifying priority soil erosion control counties, the department shall consider the following factors:

1. The amount of cropland in the county.
2. The magnitude and extent of cropland erosion in the county.
3. The availability of soil survey information in the county.

(4) **IMPLEMENTATION; DEPARTMENT DUTIES.** (a) *Data.* The department shall develop a systematic method of collecting and organizing data related to soil erosion. The department shall cooperate with the land information board under s. 16.967 in developing this methodology or any related activities related to land information collection.

NOTE: Par. (a) is amended eff. 9-1-03 by 1997 Wis. Act 27 to read:

(a) *Data.* The department shall develop a systematic method of collecting and organizing data related to soil erosion.

(c) *Plan assistance.* The department shall assist land conservation committees in preparing land and water resource management plans. The department may allocate funds appropriated under s. 20.115 (7) (c) to land conservation committees in identified priority counties to cover up to 50% of the cost of preparing land and water resource management plans.

(d) *Plan review.* The department shall review and approve or disapprove land and water resource management plans submitted by the land conservation committees. The department may require land conservation committees to indicate specific projects to be funded under each plan and the related cost-sharing rates.

(5) **IMPLEMENTATION; BOARD DUTIES.** (a) *Plan review.* The board shall review land and water resource management plans submitted by the land conservation committees and make recommendations to the department.

(b) *Solicit comments.* The board shall solicit comments on land conservation committee plans from the agencies identified as advisers to the board under s. 15.135 (4).

(6) **IMPLEMENTATION; COMMITTEE DUTIES.** (a) *Plan preparation.* A land conservation committee shall prepare a land and water resource management plan which does all of the following:

1. Specifies maximum acceptable rates of soil erosion.
2. Identifies the parcels and locations of the parcels where soil erosion standards are not being met.
3. Identifies the land use changes or management practices which would bring each area of land into compliance with standards adopted by the land conservation committee.
4. Specifies procedures to be used to assist landowners and land users in controlling soil erosion.
5. Establishes priorities for controlling soil erosion.
6. Identifies causes, other than soil erosion, of nonpoint source water pollution.
7. Describes all proposed county activities related to nonpoint source water pollution.

(b) *Notification.* A land conservation committee shall notify landowners and land users of the results of any determinations concerning soil erosion rates and nonpoint source water pollution, and provide an opportunity for landowners and land users to present information relating to the accuracy of the determinations during preparation of the land and water resource management plan.

(c) *Hearings.* A land conservation committee shall hold one or more public hearings on the land and water resource management plan.

(d) *Plan submission.* A land conservation committee shall submit the land and water resource management plan to the board and department.

History: 1981 c. 346; 1983 a. 524; 1985 a. 29; 1987 a. 27; 1989 a. 31; 1997 a. 27.

92.104 Soil and water conservation plan. (1) *PREPARATION.* A land conservation committee shall ensure that a soil and water conservation plan is prepared for land covered by a farmland preservation agreement.

(2) *APPROVAL.* A soil and water conservation plan approved by the land conservation committee is required to be included in the farmland preservation agreement.

(3) *MONITORING.* A county land conservation committee shall ensure that a soil and water conservation plan incorporated in a farmland preservation agreement is followed except that deviations may be allowed if, in the judgment of the land conservation committee, personnel are not available to lay out the suggested practices on the land or if practices are not economical for the owner to adopt.

(4) *NONCOMPLIANCE.* If the land conservation committee determines that farming operations are not being conducted in compliance with a soil and water conservation plan and that the deviation is not permitted under sub. (3), it shall issue a notice of noncompliance to the farmer and send a copy to the department of revenue. This notice remains in effect until canceled. If actions are taken to comply with the soil and water conservation plan in a manner satisfactory to the land conservation committee, it shall cancel the notice of noncompliance by notifying the farmer and the department of revenue.

(5) *ELIGIBILITY FOR FARMLAND PRESERVATION CREDIT.* A farmland preservation credit may not be allowed under subch. IX of ch. 71 if a notice of noncompliance is in effect with respect to a claimant to which this section applies at the time the claim is filed.

(6) *APPLICABILITY.* This section and a soil and water conservation plan prepared under this section apply to a person claiming a farmland preservation credit, land related to that claim and farming operations on that land if eligibility for the credit is based on a farmland preservation agreement applied for prior to July 1, 1986.

History: 1985 a. 29; 1987 a. 312 s. 17.

92.105 Soil and water conservation standards. (1) *ESTABLISHMENT.* A land conservation committee shall establish soil and water conservation standards. The standards and specifications for agricultural facilities and practices that are constructed or begun on or after October 14, 1997, and, if cost-sharing is available to the farmer under s. 92.14, 281.16 (5) or 281.65 or from any other source, for agricultural facilities and practices that are constructed or begun before that date shall be consistent with the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 (3). It shall submit these standards to the board for review.

(2) *GUIDELINES; REVIEW.* The board shall develop guidelines to be used for the establishment and administration of soil and water conservation standards. The board shall review and shall approve or disapprove submitted soil and water conservation standards based on the guidelines it develops. If the board approves soil and water conservation standards, it shall notify any appropriate zoning authority of its approval.

(3) *APPROVED STANDARDS REQUIRED FOR FARMLAND PRESERVATION CREDIT.* A farmland preservation credit may not be allowed under subch. IX of ch. 71 for claims relating to any land to which this section applies unless the land conservation committee for the county where the property is located establishes soil and water conservation standards which are approved by the board.

(4) *MONITORING.* The land conservation committee shall monitor compliance with soil and water conservation standards on land to which this section applies.

(5) *NONCOMPLIANCE.* If the land conservation committee determines that farming operations on land to which this section applies do not comply with soil and water conservation standards, it shall issue a notice of noncompliance to the farmer and send a copy of the notice to any appropriate zoning authority. If no appropriate zoning authority exists, it shall send a copy to the department of revenue. This notice of noncompliance remains in effect until canceled. If actions are taken to comply with the soil and water conservation standards in a manner satisfactory to the land conservation committee, it shall cancel the notice of noncompliance by notifying the farmer and by sending a copy of the cancellation to any appropriate zoning authority. If no appropriate zoning authority exists or if the original notice was sent to the department of revenue, it shall send a copy of the cancellation to the department of revenue.

(6) *ELIGIBILITY FOR FARMLAND PRESERVATION CREDIT.* A farmland preservation credit may not be allowed under subch. IX of ch. 71 if a notice of noncompliance is in effect with respect to a claimant to which this section applies at the time the claim is filed.

(7) *APPLICABILITY.* (a) *General applicability; farmland preservation.* This section and soil and water conservation standards established under this section apply only to a person claiming a farmland preservation credit under subch. IX of ch. 71, land related to that claim and farming operations on that land and apply only as provided under pars. (b) to (d).

(b) *Participants eligible under new farmland preservation agreements.* This section and soil and water conservation standards established under this section apply to a person claiming a farmland preservation credit, land related to that claim and farming operations on that land if eligibility for the credit is based upon a farmland preservation agreement applied for on or after July 1, 1986.

(c) *Existing participants under exclusive agricultural zoning.* This section and soil and water conservation standards established under this section apply beginning on January 1, 1988, to a person claiming a farmland preservation credit, land related to that claim and farming operations on that land if eligibility for the credit is based on exclusive agricultural zoning and if a farmland preservation credit was received by that person for property taxes on the same land accruing in 1984 or any prior year.

(d) *New participants under exclusive agricultural zoning.* This section and soil and water conservation standards established under this section apply beginning on July 1, 1986, to a person claiming a farmland preservation credit, land related to that claim and farming operations on that land if eligibility for the credit is based on exclusive agricultural zoning and if a farmland preservation credit was not received by that person for property taxes on the same land in 1984 or any prior year.

History: 1985 a. 29, 332; 1987 a. 312 s. 17; 1997 a. 27.

92.106 Department review. The department shall review all soil and water conservation standards under s. 92.105 at least once every 5 years to determine whether the standards are consistent with the purposes of the soil and water resource management program under s. 92.14 (2).

History: 1991 a. 309.

92.11 Regulation of local soil and water resource management practices. (1) *PROPOSED ORDINANCES.* To promote soil and water conservation or nonpoint source water pollution abatement, a county, city, village or town may enact ordinances for the regulation of land use, land management and pollutant management practices.

(2) *APPLICABILITY; CONTENTS.* (a) An ordinance enacted under this section may be applicable throughout the county or to

any part of the county, including both incorporated and unincorporated areas.

(b) An ordinance enacted under this section may prohibit land uses and land management practices which cause excessive soil erosion, sedimentation, nonpoint source water pollution or storm water runoff.

(3) **PRESENTATION; NOTICE; HEARING; COUNTY BOARD ADOPTION.** Any ordinance proposed by the land conservation committee under this section shall be presented to the county board together with a report on the need for the ordinance and its expected economic and environmental impact. Within 2 weeks after its receipt, the county board shall publish the proposed ordinance as a class 2 notice, under ch. 985, in a newspaper having general circulation throughout the county and make the report available for public inspection. The county board shall hold one or more public hearings on the proposed ordinance before taking final action. The county board shall adopt, adopt with revisions or disapprove the ordinance.

(4) **REFERENDUM; LOCAL APPROVAL REQUIRED.** (a) *Definition.* As used in this subsection, "affected area" means the entire town, all of a village within the county or all of a city within a county if an ordinance adopted under this section or a revision to an ordinance adopted under this section is applicable to any part of the town, village or city.

(b) *Referendum required.* No ordinance adopted under this section and no revision to an ordinance adopted under this section may take effect in any affected area in that county unless the ordinance or revision is approved by referendum.

(c) *Wording of ballot question; procedure.* The county board shall include the wording of the question to be placed before the electors in the referendum as a part of the ordinance adopted under this section or the revision to an ordinance adopted under this section. Upon the adoption of the ordinance or revision the county board shall forward a copy of the ordinance or revision to the county clerk who shall cause the question to be placed before the voters of the affected area in the next spring or general election occurring not less than 45 days after the adoption of the ordinance or revision. The form of the ballot shall correspond substantially with form "D" annexed to s. 5.64 (2).

(d) *Approval; disapproval.* If the question placed before the electors in the referendum is approved by a majority of all votes cast on that subject in an affected area in that county, the ordinance adopted under this section or the revision to an ordinance adopted under this section takes effect in that affected area. Otherwise, the ordinance or revision does not take effect in that affected area.

(5) **ENFORCEMENT.** (a) The county board shall by ordinance prescribe administrative procedures and provide personnel necessary for the enforcement of any ordinance enacted under this section. Ordinances enacted under this section may be enforced through civil forfeiture or through issuance of an injunction by the circuit court in an action initiated by the county or land conservation committee. The court may award reasonable attorney fees to any plaintiff in a successful action for enforcement through injunction.

(b) At least one year before the county or land conservation committee may initiate an action for enforcement, the land conservation committee shall make a reasonable effort to contact the landowner or land user in person and to furnish the landowner or land user all of the following:

1. An explanation orally and in writing of the reasons for the excessive soil erosion.
2. A management plan which, if followed, would reduce soil erosion to a rate established as acceptable by the land conservation committee. The management plan shall, with reasonable limits, set forth all of the options which are available to the landowner or land user to achieve acceptable soil erosion rates.
3. An explanation of the financial aids and technical assistance which are available to the landowner or land user. These may

include, but are not necessarily limited to, cost-sharing, loans, tax incentives and technical assistance available from the land conservation committee and other agencies.

(6) **BOARD OF ADJUSTMENT.** The county board shall provide for the appointment of a board of adjustment in any county which adopts an ordinance under this section.

(7) **CONSTRUCTION.** Any ordinance enacted under this section shall be liberally construed in favor of the county. It shall be construed as setting minimum requirements for the purposes stated and not as a limitation on other powers granted the county board and land conservation committee.

History: 1981 c. 346; 1987 a. 27; 1993 a. 246.

Ordinance passed under this section may be applicable to incorporated as well as unincorporated areas of the county. 77 Atty. Gen. 87.

92.12 Intergovernmental cooperation. Counties, cities, villages, towns and public agencies with natural resource responsibilities in the same or different counties may cooperate in carrying out the purposes of this chapter. If a problem of soil or water conservation is defined in part by drainage basin boundaries beyond a single county's borders or otherwise transcends these borders, the respective counties, cities, villages, towns and public agencies with natural resource responsibilities may enter into mutually binding agreements and contracts containing, but not limited to, provisions for mutually enforced and administered regulatory ordinances and cost-sharing distribution arrangements.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8).

92.13 State and local agencies to cooperate. Agencies of the state having jurisdiction over, or charged with the administration of any state-owned lands, and any county or other governmental subdivision of the state having jurisdiction over, or charged with the administration of any county-owned or other publicly owned lands, shall cooperate to the fullest extent with the land conservation committee in carrying out programs under this chapter. The land conservation committee may enter and perform work upon these publicly owned lands. The provisions of land conservation practices ordinances enacted under s. 92.11 are applicable to these publicly owned lands, and shall be in all respects observed by the agencies administering the lands.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8).

92.14 Soil and water resource management program.

(1) **DEFINITIONS.** In this section:

(a) "Best management practices" has the meaning given under s. 281.65 (2) (a).

(b) "Nonpoint source" has the meaning given under s. 281.65 (2) (b).

(c) "Priority watershed" has the meaning given under s. 281.65 (2) (c).

(2) **ESTABLISHMENT.** There is created a soil and water resource management program, which has all of the following purposes:

(a) Enhancing protection of surface water and groundwater resources in this state.

(c) Providing financial and technical assistance for land and water conservation activities.

(d) Promoting cost-effective land and water conservation activities.

(e) Promoting compliance with the requirements under ss. 92.104 and 92.105 by persons claiming a farmland preservation credit under subch. IX of ch. 71.

(g) Promoting and attaining the soil erosion control goals specified under s. 92.025.

(h) Encouraging innovative local strategies, regulations and incentives to address soil and source water conservation activities.

(i) Increasing local technical assistance to address soil and water resource problems.

(j) Enhancing the administration and coordination of state nonpoint source water pollution abatement activities by the department and the department of natural resources.

(3) BASIC ALLOCATIONS TO COUNTIES. To help counties meet administrative and technical operating costs in their land and water conservation activities, the department shall award grants from the appropriation under s. 20.115 (7) (c) or (qd) to any county land conservation committee which has a workload allocation plan approved by the department under s. 92.08 (2), and which, by county board action, has resolved to match any moneys granted under this subsection with an equal amount of county moneys. The county shall use the grant for county land conservation personnel to administer and implement activities directly related to any of the following:

(a) Compliance with requirements under ss. 92.104 and 92.105 by persons claiming a farmland preservation credit under subch. IX of ch. 71.

(b) Animal waste management activities and ordinances under s. 92.16.

(c) Soil erosion control activities in accordance with plans approved under s. 92.10 and construction site ordinances.

(d) Nonpoint source water pollution abatement activities.

(e) Other conservation activities determined by the county to be necessary for conservation and resource management in that county.

(3m) SHORELAND MANAGEMENT GRANTS. From the appropriation under s. 20.115 (7) (c) or (qd) or 20.866 (2) (we), the department shall award grants to counties or farmers for implementing best management practices required under a shoreland management ordinance enacted under s. 92.17, including reimbursement for all of the following:

(a) The cost of fencing that the landowner installs in order to comply with the ordinance.

(b) The cost of providing a well for livestock if, as a result of complying with the ordinance, the livestock does not have adequate access to water for drinking purposes.

(4) OTHER LAND AND WATER RESOURCE GRANTS. From the moneys remaining in s. 20.115 (7) (c) and (qd) after the department has awarded all grants for a year under sub. (3) or from the appropriation under s. 20.866 (2) (we), the department may award grants to any eligible county, including any county which has received a grant under sub. (3) or (3m), for one or more of the following:

(a) Implementing land and water resource management projects approved in plans under s. 92.10.

(b) Implementing land and water resource management projects undertaken to comply with the requirements under ss. 92.104 and 92.105 by persons claiming a farmland preservation credit under subch. IX of ch. 71.

(c) Construction of a facility or system related to animal waste management by a farmer who has received a notice of discharge under ch. 283 or management practices required under a notice to a farmer under s. 281.20 (3). In awarding grants under this paragraph, the department shall give preference to farmers who have received a notice of discharge under s. 281.20 (3) or ch. 283. The amount of a grant for management practices required under a notice to a farmer under s. 281.20 (3) shall be based on the cost of the method of controlling nonpoint source pollution which the department determines to be the most cost-effective and may not exceed 70% of the total cost of that method. The department may issue grants directly to farmers under this paragraph.

(4m) GRANT PRIORITY. The department shall give grants under sub. (4) (c) priority over other grants under sub. (4) and grants under sub. (3m).

(4r) REQUESTING TRANSFER OF FUNDS. The department shall submit a request to the joint committee on finance for the transfer of funds from the appropriation under s. 20.370 (6) (aq) to the

appropriation under s. 20.115 (7) (qd) if necessary to provide grants under sub. (4) (c).

(5) ANIMAL WASTE MANAGEMENT GRANTS. (a) From the appropriation under s. 20.115 (7) (km), the department may make a grant for the purpose specified in sub. (4) (c) if the conditions specified in sub. (4) (c) are satisfied.

(b) The department, with the approval of the board, may request the department of natural resources to transfer funds from the appropriation account under s. 20.370 (6) (aa) or (aq) to the appropriation account under s. 20.115 (7) (km) if the funds are needed to pay grants under par. (a).

(6) ADMINISTRATION OF GRANTS. (a) The department shall propose spending levels for land and water resource management activities under this section. The department shall submit the proposed spending levels to the board. The board shall review the proposed spending levels and shall approve, approve with modifications or disapprove the spending levels. The board may modify the spending levels if demand for grants under sub. (4) (c) is greater than was anticipated when the spending levels were established.

(b) The department, in cooperation with the department of natural resources, shall prepare an annual grant allocation plan, that is consistent with the spending levels approved under par. (a), identifying the amounts to be spent annually for land and water resource management projects to be funded under this section and the general purposes of those projects, which it shall specify. The department shall submit that plan to the board.

(c) In developing the allocation plan for projects under par. (b), the department, in cooperation with the department of natural resources, may consider any of the following factors:

1. Cost-effectiveness of an activity, including but not limited to technical assistance, educational assistance, management practices, and satisfying the requirements under ss. 92.104 and 92.105 for claiming farmland preservation credits under subch. IX of ch. 71.

2. The amount of soil erosion reduction proposed to be effected by the activity.

3. Severity of the water quality problem addressed by an activity.

4. The comprehensiveness of an activity's planning methods and the area affected by an activity.

5. The degree of cooperation and commitment and the amount of supplemental funds from other sources contributed by counties related to an activity.

6. The need for staff and project continuity.

(d) The board shall review the annual allocation plan submitted to it under par. (b) and make recommendations to the department on approval, modification or disapproval of the plan. The department shall review and approve or disapprove the plan and shall notify the board of the department's final action on the plan.

(e) The department shall make grant awards under this section to eligible applicants which are consistent with the allocation plan approved by the department under par. (d).

(f) The department shall provide summaries of projects awarded grants under par. (e) to the board for its review.

(g) Every project awarded a grant under this section shall be consistent with the plans under s. 92.15, 1985 stats., and under this section and ss. 92.08, 92.10 and 281.65.

(h) 1. The department may not make a grant under this section for the construction of any facility or system related to animal waste management unless all of the following conditions are met:

a. The facility or system is necessary to meet surface water or groundwater quality objectives.

b. The facility or system is designed consistent with rules of the department and with the technical standards of the county and

is designed to be constructed and operated to avoid water pollution.

c. The facility or system will use the most cost-effective method to meet water quality standards.

d. The grant for the facility or system, combined with all other governmental funding, is no more than an amount specified by the department by rule, except that there is no limit on the amount of the grant if the principal purpose of the facility or system is to prevent or control barnyard runoff.

e. The amount of the grant does not exceed 70% of the cost of the facility or structure.

2. The department may make payments under this section for the construction of a facility or system related to animal waste management directly to farmers who receive a notice of discharge related to animal waste under ch. 283.

3. Nothing in this paragraph affects the authority of the department of natural resources to act under ch. 283.

4. The department may exceed the limits under subd. 1. d. and e. in cases of economic hardship, as defined by rule by the department.

(i) No cost-sharing funds from any grant awarded under this section may be distributed to a landowner or land user unless he or she, by contract with the grant recipient, agrees to do all of the following:

1. Maintain any funded practice for its normal expected life, replace it with an equally effective practice or improvement or repay the cost-sharing funds to the grant recipient.

2. Conduct all land management and pollutant management activities in substantial accordance with the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 and with plans approved under this section, under s. 92.15, 1985 stats., and under ss. 92.08, 92.10 and 281.65, or to repay the cost-sharing funds.

(j) A grant awarded under this section may be used for technical assistance, educational and training assistance, ordinance development and administration, cost-sharing for management practices and capital improvements, plan preparation under s. 92.10, easements or other activities determined by the department to satisfy the requirements of this chapter.

(k) The department shall identify by rule the types of cost-shared practices and the minimum grant amounts for cost-sharing grants that require any subsequent owner of the property to maintain the cost-shared practice for the life of the cost-shared practice, as determined by the department.

(L) The department may make a grant under this section to replace a structure or facility at a new location, rather than to repair or reconstruct the structure or facility, if the relocation reduces water pollution and replacement is cost-effective compared to repairing or reconstructing the structure or facility.

(7) MAINTENANCE OF EFFORT. The department may not make a grant to a county under this section in any fiscal year unless that county enters into an agreement with the department to maintain or increase its aggregate expenditures from other sources for land and water conservation activities at or above the average level of such expenditures in its 2 fiscal years preceding August 1, 1987.

(8) RULES. In consultation with the department of natural resources, the department shall promulgate rules to administer this section and the department's duties under s. 281.65.

(10) TRAINING. The county may use a grant under this section for training required under s. 92.18 or for any other training necessary to prepare personnel to perform job duties related to this section. The department may contract with any person for services to administer or implement this chapter, including information and education and training.

(11) AID TO STATE AGENCIES. The department may distribute grants and aids to any state agency, including itself, for implementation of the soil and water resource management program on land under state ownership or control, subject to this chapter.

(12) ANNUAL REPORT. Annually, the department, in cooperation with the department of natural resources, shall submit a report on the progress of the program under this section and s. 281.65 to the board.

(13) EVALUATION PLAN. The department, jointly with the department of natural resources, shall prepare a plan, which includes water quality monitoring and analysis, for evaluating the program administered under this section and s. 281.65 and submit the plan to the board. The board shall make recommendations to the department and the department of natural resources on the plan. The department shall review and approve or disapprove the plan and shall notify the board of its final action on the plan. The department shall implement any part of the plan for which the plan gives it responsibility.

(14) APPLICATION, REPORTING AND EVALUATION FORMS. The department, jointly with the department of natural resources, shall develop a single set of grant application, reporting and evaluation forms for use by counties receiving grants under this section and s. 281.65.

(15) FINANCIAL INFORMATION. The department shall consult with the department of natural resources when it prepares the information which it submits to the department of administration under s. 16.42.

History: 1987 a. 27, 297; 1989 a. 56; 1991 a. 39, 309; 1993 a. 16, 166, 213; 1995 a. 27, 225, 227; 1997 a. 27.

92.15 Local regulation of livestock operations. (1) In this section:

(a) "Livestock operation" means a feedlot or other facility or a pasture where animals are fed, confined, maintained or stabled.

(b) "Local governmental unit" means a political subdivision of this state, a special purpose district in this state, an instrumentality or corporation of such a political subdivision or special purpose district, a combination or subunit of any of the foregoing or an instrumentality of the state and any of the foregoing.

(2) Notwithstanding ss. 92.11 and 92.17, a local governmental unit may enact regulations of livestock operations that are consistent with and do not exceed the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 (3).

(3) (a) Notwithstanding ss. 92.11 and 92.17, a local governmental unit may enact regulations of livestock operations that exceed the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 (3) only if the local governmental unit demonstrates to the satisfaction of the department of agriculture, trade and consumer protection or the department of natural resources that the regulations are necessary to achieve water quality standards under s. 281.15.

(b) The department of agriculture, trade and consumer protection and the department of natural resources shall, by rule, specify procedures for review and approval of proposed local governmental unit regulations under par. (a).

(4) A local governmental unit may not apply a regulation under sub. (2) or (3) to a livestock operation that exists on October 14, 1997, unless the local governmental unit determines, using the rules promulgated under s. 281.16 (3) (e), that cost-sharing is available to the owner or operator of the livestock operation under s. 92.14, 281.16 (5) or 281.65 or from any other source.

(5) Any livestock operation that exists on October 14, 1997, and that is required to obtain a permit under s. 283.31 or that receives a notice of discharge under ch. 283 may continue to operate as a livestock operation at the same location notwithstanding s. 59.69 (10) (a) or 62.23 (7) (h) or any zoning ordinance enacted under s. 59.69, 60.61, 60.62, 61.35 or 62.23 (7), if the livestock operation is a lawful use or a legal nonconforming use under any zoning ordinance enacted under s. 59.69, 60.61, 60.62, 61.35 or 62.23 (7) on October 14, 1997.

History: 1997 a. 27.

92.16 Manure storage facilities. A county, city, village or town may enact an ordinance requiring manure storage facilities constructed after July 2, 1983, to meet the technical standards of the county, city, village or town and rules of the department. The department shall adopt rules for ordinances setting standards and criteria for construction of manure storage facilities.

History: 1983 a. 27; Stats. 1983 s. 92.16; 1983 a. 410 s. 24n; Stats. 1983 s. 92.34; 1985 a. 8 s. 10; Stats. 1985 s. 92.16; 1987 a. 27; 1993 a. 246.

Ordinance passed under this section is applicable only in unincorporated areas of the county. 77 Atty. Gen. 87.

92.17 Shoreland management. (1) GUIDELINES ORDINANCE. The guidelines for a shoreland management ordinance shall establish standards for activities related to the purpose of maintaining and improving surface water quality.

(2) AUTHORITY TO ENACT ORDINANCE. (a) A city or village may enact a shoreland management ordinance.

(ag) A county may enact a shoreland management ordinance. A county shoreland management ordinance does not apply in any town that enacts an ordinance under par. (ar).

(ar) A town may enact a shoreland management ordinance that is prepared under sub. (1).

(b) If a county, city or village proposes to enact an ordinance based on the guidelines prepared under sub. (1), or if a town proposes to enact a shoreland management ordinance, the county, city, village or town shall submit a draft of the ordinance to the department.

(c) The board shall review a draft of an ordinance submitted under par. (b) and make recommendations to the department.

(d) The department shall review and approve or disapprove a draft of an ordinance submitted under par. (b).

(e) A county, city or village may enact an ordinance based on the guidelines prepared under sub. (1) only if the draft of the ordinance is approved by the department under par. (d). A town may enact a shoreland management ordinance only if the draft of the ordinance is approved by the department under par. (d).

(2m) AUTHORITY TO ENFORCE ORDINANCE. A county, city, village or town may not enforce a shoreland management ordinance unless funds have been appropriated for grants under s. 92.14 (3m).

(2r) DEPARTMENT NOT TO REQUIRE ENACTMENT. The department may not require a county, city, village or town to enact an

ordinance under this section as a condition of any other program administered by the department.

(4) COOPERATION. The department shall consult with the governing bodies of counties, cities, villages and towns to secure voluntary uniformity of regulations, so far as practicable, shall identify low-cost practices and shall extend assistance to counties, cities, villages and towns under this section.

History: 1991 a. 309; 1993 a. 213.

92.18 Training and certification. (1) The department shall, by rule, establish a program of training and certification for persons who review plans for, conduct inspections of or engage in activities under any of the following:

(a) This chapter.

(b) Section 281.65, if those activities relate to agricultural practices.

(2) The department shall do all of the following:

(a) Identify those persons involved in plan review or inspections who are required to obtain certification.

(b) Establish the requirements for and the term of initial certification, and the requirements for recertification upon expiration of that term. To the extent possible, the department shall establish the requirements for certification in conformance with the engineering approval system used by the federal soil conservation service in providing technical assistance under 7 CFR 610.1 to 610.5. The department may require applicants to pass an examination in order to receive initial certification.

(c) Establish different levels of certification as the department determines is appropriate.

(d) Identify persons other than inspectors and plan reviewers who may benefit from the training program, and encourage those persons to enroll in the training program.

(3) The department may impose fees for the training and certification program.

(4) The department shall promulgate rules under this section in consultation with the department of natural resources.

(5) Any training required under this section may be conducted by the department or the department of natural resources or by another person with the approval of the department.

(6) The department may suspend or revoke a certification under this section for failure to comply with this section or rules promulgated under this section.

History: 1991 a. 309; 1995 a. 227.

Biographical sketch

Name: Jerry Griswold
Position: USDA Chesapeake Bay Liaison
Organization: USDA Natural Resources Conservation Service

Education Background

B.S. and M.S. from the University of Wisconsin at Platteville in Soils and Agronomy

Ph.D from the University of Wisconsin at Madison in Land Resources Program of the Institute of Environmental Science

Work Experience

USDA Liaison to the Chesapeake Bay Program - Annapolis, Maryland

USDA Natural Resources Conservation Service Positions:

Liaison to Region VI Environmental Protection Agency - Dallas, Texas

National Coordinator for Farm*A*Syst/Home*A*Syst Program

Water Resources Specialist - Madison, Wisconsin

Wisconsin Department of Natural Resources Non-Point Source Program

District Conservationist - Racine and Kenosha Counties, Wisconsin

Soil Conservationist Positions at several locations

Grant County, Wisconsin Soil and Water Conservationist District

United States Army

The Chesapeake Bay Program: An Overview

America's Leading Bay & River Restoration Program

The Chesapeake Bay Program is the unique regional partnership which has been directing and conducting the restoration of the Chesapeake Bay since the signing of the historic *1983 Chesapeake Bay Agreement*. The Chesapeake Bay Program partners include the states of Maryland, Pennsylvania, and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the Environmental Protection Agency, representing the federal government; and participating advisory groups.

As the largest estuary in the United States and one of the most productive in the world, the Chesapeake was this nation's first estuary targeted for restoration and protection. In the late 1970's scientific and estuarine research on the Bay pinpointed three areas requiring immediate attention: nutrient over-enrichment; dwindling underwater Bay grasses; and toxic pollution. Once the initial research was completed, the Chesapeake Bay Program evolved as the means to restore this exceptionally valuable resource.

Since its inception in 1983, the Chesapeake Bay Program's highest priority has been the restoration of the Bay's living resources--its finfish, shellfish, Bay grasses, and other aquatic life and wildlife. Improvements include fisheries and habitat restoration, recovery of Bay grasses, nutrient and toxic reductions, and significant advances in estuarine science.

Examples of specific actions initiated by the Chesapeake Bay Program include a watershed-wide phosphate detergent ban, the introduction of agricultural best management practices, Biological Nutrient Removal at wastewater plants, and a public education campaign emphasizing the role each of the watershed's 15 million residents play in the restoration.

Considered a national and international model for estuarine research and restoration programs, the Chesapeake Bay Program is a partnership led by the Chesapeake Executive Council. The members of the Executive Council are the governors of Maryland, Virginia and Pennsylvania; the mayor of the District of Columbia; the administrator of the U.S. Environmental Protection Agency, representing the Federal government; and the chairman of the Chesapeake Bay Commission, a tri-state legislative body. The Executive Council meets annually to establish the policy direction for the Bay Program.

In the *1987 Chesapeake Bay Agreement*, the Executive Council set a goal to reduce the nutrients nitrogen and phosphorous entering the Bay by 40% by the year 2000. Achieving a 40% nutrient reduction will ultimately improve the oxygen levels in Bay waters and enable aquatic life to flourish.

In the *1992 Amendments*, the Chesapeake Bay Program partners agreed to maintain the 40% goal beyond the year 2000 and attack nutrients at their source -- upstream in the Bay's tributaries. As a result, Pennsylvania, Maryland, Virginia, and the District of Columbia began developing tributary strategies to achieve the nutrient reduction targets. The Chesapeake Bay Program also began reevaluating its *Basinwide Toxics Reduction Strategy* in order to better understand the impact toxics have on the Bay's resources.

In 1993, the Chesapeake Bay Program partners celebrated a "Decade of Progress" by highlighting the 10th anniversary of the signing of the *1983 Chesapeake Bay Agreement* along with some of the restoration successes to date, including an increase in the acreage of underwater Bay grasses and significant reductions of point source pollution.

Highlighting the results-oriented emphasis of the Chesapeake Bay Program, the Executive Council guided the restoration effort in 1993 with five directives addressing key areas of the restoration, including the tributaries, toxics, underwater Bay grasses, fish passages, and agricultural nonpoint source pollution. Specifically, the Executive Council directed the partners to outline initiatives for nutrient reduction in the Bay's tributaries; revise the *Basinwide Toxics Reduction Strategy* by 1994; develop action plans to address problems related to toxics in specific geographic areas within the watershed; and work with the agricultural community to implement total resource management programs on farms in the watershed.

In addition, the Executive Council set an initial goal for recovery of Bay grasses at 114,000 acres by the year 2005; and set five- (582 miles) and 10-year (1,350 miles) goals for reopening upstream spawning habitat for migratory fish by removing blockages, such as small dams, on the Bay's rivers.

In July 1994, high-level Federal officials from 25 agencies and departments signed the *Agreement of Federal Agencies on Ecosystem Management in the Chesapeake Bay*. The historic agreement set out a number of specific goals and commitments by Federal agencies on Federal lands throughout the watershed, as well as new cooperative efforts by Federal agencies elsewhere.

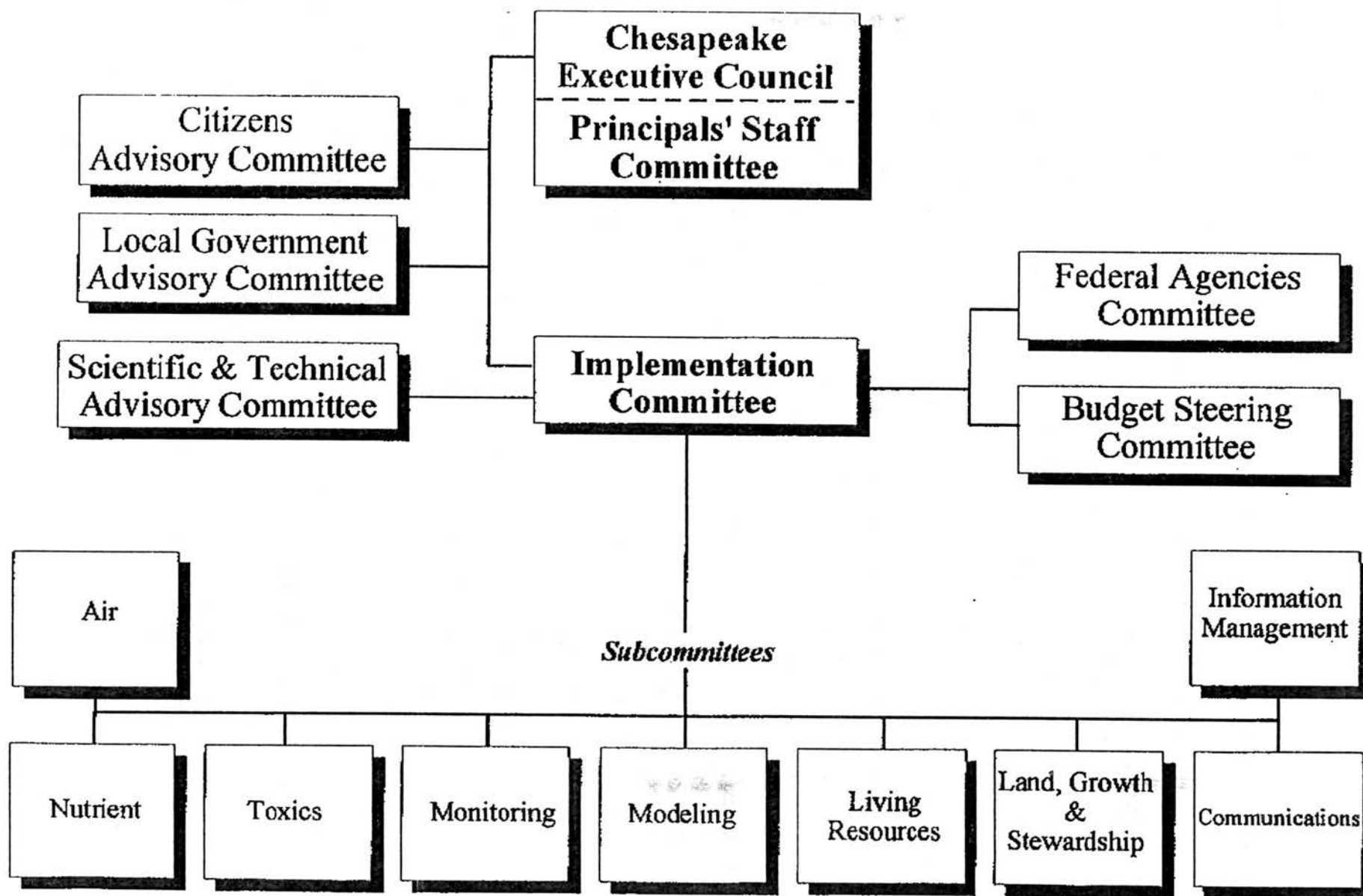
In October 1994, the Executive Council called the implementation of the tributary strategies the top priority for the Chesapeake Bay and its rivers. The Executive Council also adopted the *1994 Chesapeake Bay Basinwide Toxics Reduction and Prevention Strategy*. In addition, the Executive Council issued new initiatives for riparian forest buffers, habitat restoration, and reciprocal agricultural certification programs.

The *1995 Local Government Partnership Initiative* engaged the watershed's 1,650 local governments in the Bay restoration effort. The Chesapeake Executive Council followed this in 1996 by adopting the *Local Government Participation Action Plan* and the *Priorities for Action for Land, Growth and Stewardship in the Chesapeake Bay Region*, which address land use management, growth and development, stream corridor protection, and infrastructure improvements. The Executive Council also signed the *Riparian Forest Buffers Initiative* in 1996 which increased the Chesapeake Bay Program's commitment to improve water quality and enhance habitat. The new Initiative has a goal which calls for restoring 2,010 miles of riparian buffers on stream and shoreline in the watershed by the year 2010.

Recent Bay restoration highlights include an analysis of 10-years of monitoring data which show that the major rivers and the freshwater portions of the Bay are cleaner now than 10 years ago. This improvement in water quality is directly connected to reduced runoff from agricultural land, the phosphate detergent ban and phosphorous reductions from point sources, such as wastewater treatment plants and industrial facilities. However, the saltier parts of the Bay are not showing the same improvement because nitrogen reduction has not been as great.

Other recent restoration highlights include:

- * Protection for crabs increased -- in 1995 and 1996 much progress was made in the area of regulatory protection, regional coordination, and scientific understanding of the blue crab. Both Maryland and Virginia passed new regulations to protect crabs, and in June 1997 the Chesapeake Executive Council adopted the *1997 Chesapeake Bay Blue Crab Fishery Management Plan*.
- * Striped bass population sets records -- 1996 was a record-setting year for young striped bass in Chesapeake Bay. Maryland and Virginia's young-of-the-year survey was the highest-ever in the 43 years of sampling. Key factors came together to help produce the high numbers of juveniles including record high flows that created large freshwater nursery areas, more returning females, and recovering populations of zooplankton that provide food for young striped bass.
- * Chemical releases from industry decline -- The latest data available through the national Toxics Release Inventory (TRI) showed a 55% reduction in chemical releases in the Bay region between 1988 and 1994.
- * Nitrogen controls at wastewater treatment facilities increase -- The largest wastewater treatment facility in the Bay region - the Blue Plains Treatment Plant in the District of Columbia - went on-line in September 1996 with a pilot Biological Nutrient Removal (BNR) facility for half of its flow capacity. This will remove three million pounds of nitrogen annually that otherwise was discharged directly into the Potomac. BNR also has been installed in 33 major treatment plants in the region. Seventy six other facilities in the region, including six of the seven major federal facilities, are committed to installing BNR by the year 2000.



OPENING REMARKS

Thank you for inviting me to talk to you today about water and land management and how that is accomplished with the Chesapeake Bay Watershed

It is nice to get back to the Midwest, especially at this time of year.

I grew up just down the river from here on a four generation family farm that will probably become a five generation family farm in a few years from now.

On that farm, I was first exposed to conservation and a good land ethic. I was learning all those things and did not even realize it. It was just a way of life.

My father and my grandfather installed contour strips, grassed waterways, diversions, pasture management and other practices sometime around 1944. (Before I was born).

I grew up thinking that was the only way to farm.

Which may have led to some interesting discussions I had with farmers having them explain why they couldn't install conservation practices because of the difficulty in operation.

By the way, those practices I mentioned still exist today.

Enough about my background, I am here today to talk about the Chesapeake Bay Program.

My theme here today is (1) strong partnerships and (2) work based on watersheds

The first of which the Chesapeake Bay Program does well!

And the second which the Chesapeake Bay Program is working on!

(1) Partnering: partnering must go in all directions:

To me, it means working closely together as a team both up and down and from side to side.

Working together as a team including public, private, local, state, and federal.

The Chesapeake Bay Program does a pretty good job at accomplishing that.

(2) Watershed: approaching problems and solutions on a watershed basis.

To me the watershed is a system.

You can not address one part of the system without considering possible unexpected outcome elsewhere.

The Chesapeake Bay Watershed is a system that is 64,000 square miles large.

But, in reality, it is nothing more than many small watersheds of a more easily manageable size.

Eventually you get right down to a farm sized unit that can also be dealt with like a small watershed.

CHESAPEAKE BAY PROGRAM OVERVIEW

WHAT LED TO THE PROGRAM

Let me give a brief overview of what led to the Chesapeake Bay Program

I will start the brief discussion with this handout

HAND OUT "The Chesapeake Bay Program an Overview"

Before I start, I want to provide some general statements about the program.

(1) It is voluntary:

There are no regulatory powers associated with the program

In fact, the office was set up in Annapolis, MD so as not be associated with the EPA region III office in Philadelphia.

(2) It is a State Driven Program:

Agreement within the program is accomplished by consensus

In 3 years I have been there, I've yet to see an actual vote.

Chairs will basically pole the state representatives. If there is some problem, they continue to discuss it.

(3) Partnership:

The program is based on partnerships.

(4) Budget is about 20 million:

About 20 million per year comes to the program from the Federal Government.

The states put in additional, but I don't have those figures right now.

About 50 percent goes directly to the states. It is used for implementation and staff at the state and local level.

About 50 percent goes to the subcommittees for research grants and pilot studies and program staff.

Now a little about how the program got to where it is today.

1983 Agreement: Signed by the signatories to research causes for the downfall of the living resources of the bay.

Goals of the Bay: restore populations of fish, oysters, blue crabs and submerged aquatic vegetation.

They agreed to research to find the causes.

It was determined the most important cause for the demise of living resources in the Bay was nutrients, specifically nitrogen and phosphorus.

1987 Agreement: Signatories agreed to reduce the input of nutrients to the bay by 40% by year 2000.

1992 Amendments: Signatories agreed to maintain the 40% nutrient reduction after the year 2000. They also agreed on a toxics reduction strategy.

1994 Directive: The Executive Council agreed on a tributary strategy process. In other words they finally recognized that tributaries leading to the bay were major sources of nutrient and toxics to the bay..

They divided up the nutrient load being delivered to the bay to each of the major tributaries.

Susquehanna, Potomac, James, Elizabeth, Rappahannok, York, and others.

1995 Directive: The Local Government Partnership Initiative. The first real effort from the

programs perspective to involve the local units of government.

Established a very distinguished task force of agency heads and political types. To address the directive.

What happened is that a an influential individual was looking to set up a community organization got to be chair of the task force.

Now I worked hard to get soil conservation districts recognized as an important entity to be involved. In the end, they were recognized, but politics caused them to be sort of overlooked.

During that time, I started using the term "where the rubber meets the road" because districts, extension and nrcs provide the interface between federal and state programs and the local landowner.

From the public perspective there are three technical organizations that have a real world contact with the landowners. They are districts, extension service and NRCS.

These folks have the responsibility to have a working knowledge of every program you and others bring down the pipe. Because farmers ask them the questions.

However, the effort I and other put out did not really have a lot of real impacts on the outcome of the task force.

1997 Directive:

The community watershed strategy.

A second major attempt at connecting with the local landowners.

Some important players in the Chesapeake Bay Program have figured out that the only way for a watershed project to work is to have strong local support.

I think districts and some others have known that for a considerable time.

Some individuals in the Chesapeake Bay Program are apparently trying to set up a Chesapeake Bay Program oversight layer of government for the community watershed program.

It is my opinion, one already exists at the local level — Districts.

So — again, over the past several months, I have been working hard to try to get people within the task force to recognize the value of districts as being an important link in the delivery of a community watershed program.

It is too soon to tell if the efforts will pay off, but I am hopeful.

ORGANIZATIONAL STRUCTURE OF THE PROGRAM

OVERLAY OF ORGANIZATIONAL CHART

Chesapeake Executive Council: Executive Council is made of the Governors of VA, MD, PA, mayor of D.C., administrator of EPA and the Chair of the Chesapeake Bay Commission. The chair of the council is elected annually.

Principal's Staff Committee: Chaired by EPA Region III Administrator; members include State Secretaries of Agriculture, Environment and Lead Water Agencies, and the Executive director of the Chesapeake Bay Commission

Implementation Committee: Chaired by EPA Chesapeake Bay Program Office Director, membership includes numerous state agency reps, federal agency reps etc.

They even let me sit on this committee.

This is the committee that is expected to implement the wishes of the elected officials (the governors).

The implementation committee directs the various subcommittee and their respective workgroups.

Federal Agencies Committee:

Coordination of all agency federal activities in the Chesapeake Bay Watershed area.

Budget Steering Committee:

This is where the wringing of hands takes place

These meetings are sometimes a bit on the turbulent side.

Subcommittee's

Briefly discuss each of the subcommittee's

DESCRIBE WATER MANAGEMENT IN THE SIX STATES

The roles of local, county and state are similar to what we have heard already here today.

There are six states and the District of Columbia

Pennsylvania has township rule, similar to Wisconsin.

The other five states start at the county level along with the communities

Local Role: All successful project have a strong local support. If not, the project is almost always headed for a train wreck.

County/Regional Role: Nothing out of the ordinary.

State Agency Role: Water is a states rights in each of the states.
Water programs are handled through state agencies
Chesapeake Bay Program money goes to states.

The existing system has been in place for many years.

The Chesapeake Bay Program has been in existence since 1983.

No recent changes in the system.

WHAT WORKS WELL IN THE SYSTEM

The strengths of the program:

Partnerships between jurisdictions, especially at the federal and state level.

It promotes a coordinated effort that crosses municipal, county and state lines.

Provides a forum to work out any differences.

Weakness of the program

It really does not make a direct connection with the local level.

It is trying to make that connection, but it will be difficult

WHAT SHOULD BE CHANGED IN THE SYSTEM

Organization:

Subcommittee structure of the Chesapeake Bay Program should be reorganized to represent watersheds.

This would get the existing subcommittees to think broader than their own world of toxics, nutrients etc.

Each subcommittee would have to consider all aspects of their watershed.

This would get them closer to thinking in a systems methodology.

Research:

The existing problem in the Chesapeake Bay Watershed is too many nutrients (specifically, nitrogen and Phosphorus).

The program needs to research methods that explore ways to harvest or collect nutrients and hopefully be able to get them out of the system.

WATER MANAGEMENT ORGANIZATIONS ROLES IN MANAGING LAND USE

From the Chesapeake Bay Program perspective, land management and water management roles are certainly interrelated.

This is not always the situation in some of the states involved with the Chesapeake Bay Program.

The Bay program works diligently to solidify the relationship between land, land uses and water and water uses..

HOW IS WATER MANAGEMENT AND LAND MANAGEMENT LINKED

I look at each individual farm unit as a nutrient balance equation: outputs must equal inputs or you have potential problems.

Accomplish a nutrient balance, one farm at a time. This is what the local level is all about.

GROUNDWATER AND SURFACE WATER MANAGEMENT

My personal opinion about ground water is: It is the most serious issue facing the management of natural resources in this country today.

Surface water quality is serious, but if it get polluted, we have a chance to clean it up, simply because there is access to it. Does not mean it is easy, but at least we can see it and work at it.

Groundwater on the other hand, is buried deep beneath the surface. We are never sure if it is being contaminated or not or to what level.

When talking about clean-up, we are into an entirely new ball game. There may be no easy access. There may be no defined boundaries. No matter how you look at it, there is big trouble.

Chesapeake Bay Program: Some talk about ground water, but not to the same degree that natural resource agencies in the midwest do.

The Chesapeake Bay Program could do a lot more with respect to making the connection of surface and ground water.

With respect to water, it does not matter if it is on the surface, under the surface or in the air. It is just a matter of time before it changes location.

FINANCING OF WATER MANAGEMENT IN THE STATES, REGIONAL, LOCAL.

Financing of water management in the Chesapeake Bay is significant. I have already discussed the \$20 million annual budget.

Other financing sources include the same as in other states.

USDA Program including: EQIP, CRP and CREP (Maryland was first), Wetland Reserve etc.

EPA funding including: Section 319, Revolving Fund etc.

States also put in a considerable funding.

Local farmers and municipalities put in significant resources either on their own or cost-shared.

Is funding adequate?

Funding is never adequate as all of you would agree.

It is a constant struggle to find more or just to keep what you have.

Is it fair and equitable?

It is as fair as you can get within the program.

I am sure other states see the Chesapeake Bay as getting a larger than their share of the pie.

What needs to be improved?

The delivery process to the local level needs to be improved.

Too much is taken off the top at both the federal level and at the state level.

I understand that budgets have been cut all over the country.

Across this country, considerable amounts of 319 dollars are spent on staff.

WHAT ARE THE MAJOR ISSUES IN THE GOVERNANCE OF WATER MANAGEMENT IN STATE AT THIS TIME

Water Quality is the major issue.

I won't go into it further, because that is what the Chesapeake Bay Program is all about, and is what I have been talking about this whole time.

HOW ARE THESE ISSUES BEING ADDRESSED

The issue is being addresses as per my pervious statement.

Genuine effort is being made to address the water quality problem in the Chesapeake Bay Watershed.

Biography - Clifton J. Aichinger

Education:

Bachelor of Science Degree, Recreation Resource Management, University of Minnesota, College of Forestry, 1971.

Employment:

Natural Resource Planner and Assistant Planning Director, Dakota County, 1971-1973.
Environmental Planner, City of St. Paul, 1973-1976.
Critical Areas Program Coordinator, Minnesota Environmental Quality Board, 1976-1980.
Planning & Management Consultant, 1981-1989.
Administrator, Ramsey-Washington Metro Watershed District, 1981-present.

Experience:

Involved in natural resource and water management planning throughout my career. Actively involved in Mississippi River management issues and planning in the '70's. Active participant in the Metropolitan Surface Water Management Act (509) planning process since early discussions of the law in 1980. Active in urban wetland management issues and past chair of the Urban Wetland Management Coalition. Trained wetland delineator. Served as member of the Committee on Watershed Management (1996-1998), National Research Council, National Academy of Sciences. This committee produced the book, *New Strategies for America's Watersheds*, to be published in the fall of 1998. Administrator for Ramsey-Washington Metro Watershed District since 1981 with a current annual budget in excess of \$2.0 million with six staff. Projects and activities include updating the District Watershed Management Plan, preparation of a wetland management plan, LGU for the Wetland Conservation Act, integrated resource management programs, wetland restorations, habitat restoration projects, GIS system development, water quality monitoring program, and capital improvements to improve water and prevent flooding.

September 9, 1998

Presentation Summary NEW STRATEGIES FOR AMERICA'S WATERSHEDS

Presented by: Clifton J. Aichinger, Administrator
Ramsey-Washington Metro Watershed District

This presentation provides a summary of the results of a National Academy of Sciences, National Research Council, committee evaluation and report on watershed management in the United States. The committee activities were completed earlier this year. The report final editing and review process has been completed and the official public release date is set for October 5, 1998. The report is not available for public distribution until the release date. At that time, copies will be available for purchase from the National Academy Press (NAP) in a pre-release version by calling 800-624-6242 or through the NAP web site at <http://www.nap.edu/bookstore>. The final printed publication with all tables, photos and color plates, will be available in mid-December.

This report grew out of a recognition of the emerging trends toward integrative watershed management and the need to improve communication between scientists and decision-makers. In 1995, several agencies asked the National Academies of Sciences and Engineering and their investigative arm, the National Research Council (NRC), to provide advice on the utility and limitations of the watershed-based policy-making and management. The Environmental Protection Agency took a prominent role in this request, because the agency was beginning its Watershed Initiative to deal with nonpoint source pollution, a problem inadequately addressed through traditional approaches. The Tennessee Valley Authority, itself defined by the geographic boundaries of a river basin, supported the review effort in part to produce guidance for its Clean Water Initiative, an innovative approach to water-quality problems that is organized according to smaller watersheds within the Tennessee Valley. The Natural Resources Conservation Service (formerly the Soil Conservation Service), an agency with a long and venerable history of watershed management mostly for agricultural purposes, also sponsored the NRC review. The Forest Service provided support because the agency has as part of its charter the requirement to manage watersheds on a significant component of the nation's public lands. Other governmental supporters included the Bureau of Reclamation, an agency charged with development and management of western water resources, and the U.S. Geological Survey, the nation's primary source of data for water science, policy, and management. In addition to these federal agencies, two nongovernmental organizations also provided support. The National Water Research Institute has broad interests in scientific research related to water. The McKnight Foundation is a major stimulant for local involvement in watershed projects in the upper Mississippi.

In response to the request for advice by these organizations, the National Research Council appointed a committee of fifteen scientists, planners, and public administrators. Committee members included practitioners from the fields of biology, chemistry, geography, economics, engineering, hydrology, sociology, planning, and administration. The Council and the sponsors agreed upon three specific charges for the committee:

- Review the range of scientific and institutional problems related to watersheds, especially water quality, water quantity, and ecosystem integrity.
- Evaluate selected examples of watershed management in a search for the common elements of successful management.
- Recommend ways for local, state, regional, and federal water managers to integrate ecological, social, and economic dimensions of watershed management.

The committee addressed these charges over a two-year period. Committee members donated their time in five multiple-day meetings, which included field hearings in Chattanooga,

Presentation Summary

Page 2

Tennessee, Irvine, California, and Minneapolis, Minnesota. In Minneapolis, the committee participated with local, state, and regional managers in a workshop focused on issues in the Upper Mississippi Basin.

During the field investigations the committee met researchers trying to unravel complex natural systems to produce better understanding for public decisions, private citizens who had organized local watershed efforts to meet a variety of goals, and administrators working to realize visions of a quality future. We also met state and local officials overrun with management problems, yet lacking sufficient financial resources to solve them, and federal officials uncertain about the future of their agencies and their own contributions. We met people who ignored the downstream consequences of their pollution and who did not accept responsibility for their actions. We also met true heroes who organized the chaos around them to create successful initiatives to improve both the human and the natural environment around them. From all these people we learned important lessons that dramatically expanded our own experiences. We have included these lessons in the report. The report is designed to be useful to readers ranging from interested lay persons to working scientists and policy makers at all levels.

This report contains the lessons we learned as a committee. Underlying the formal lessons recounted here were three more general truths. First, the way we perceive the nation as individual resource users, researchers, and decision makers has a direct and major impact on how we perceive problems and solutions. The problems and solutions of watershed management depend on your perspective. For example, the continental United States takes on a very different general appearance depending upon whether we use a political or a natural framework. Even different natural frameworks provide us with very different contexts.

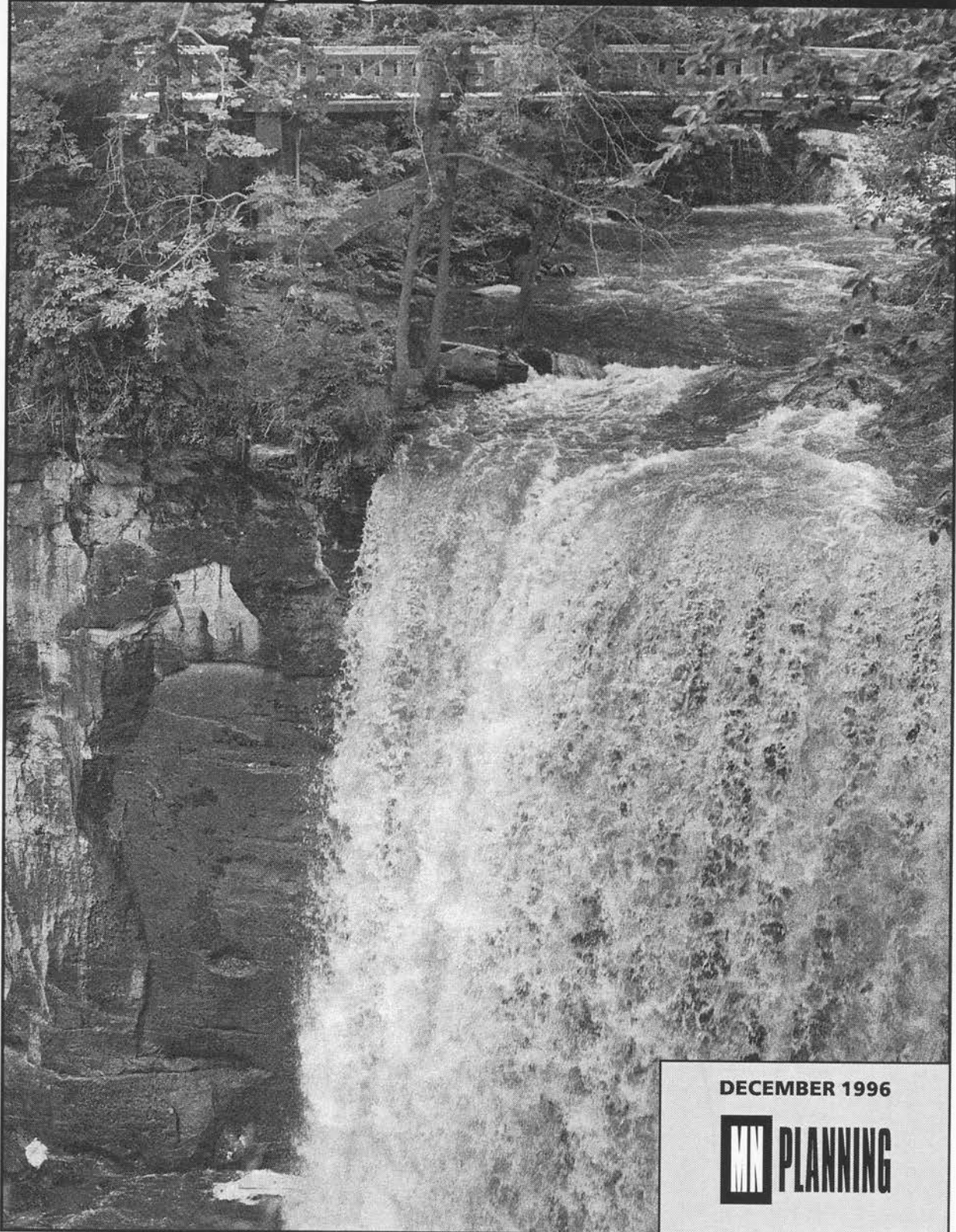
Second, watersheds are logical divisions or regions of the natural landscape, and for some purposes they are ultimately the best framework to use for management. Yet it is also true that for every natural watershed there is a "shadow watershed" defined by human and natural components that extend the decision maker's interest beyond the boundaries of the physical watershed. Whether migratory birds, hydroelectric power grids, or other factors are involved, we must be prepared to perceive watershed space in dimensions other than physical.

Third, the devolution of political power from the federal to regional and local levels in American politics means that we must develop a new "flexible federalism" in which the federal government maintains a newly defined role with some responsibilities while regional and local governments exert greater influence in solving problems. For the federal agencies, this arrangement means efforts increasingly in partnerships with regional and local governments. However, it does not excuse the federal government from its responsibility for representing the interests of the nation as a whole, especially regarding the setting of standards and the management of public land and water.

The conclusions and recommendations of the report provide the committee's thoughts on fundamental principles of contemporary watershed science, crucial watershed management objectives, recommendations for consideration in reauthorization of the Clean Water Act, and 15 recommendations as ways to steer the nation toward improved strategies for watershed management.

Crosscurrents

Managing Water Resources



DECEMBER 1996

MW PLANNING

MINNESOTA PLANNING is charged with developing a long-range plan for the state, stimulating public participation in Minnesota's future and coordinating activities with state agencies, the legislature and other units of government.

This report was prepared by Deborah Pile, with assistance from Russell Kava. Additional assistance was provided by an interagency work group with representatives from the Environmental Quality Board, the Pollution Control Agency, the Board of Water and Soil Resources, and departments of Agriculture, Health and Natural Resources.

Crosscurrents was prepared for the Environmental Quality Board in partial fulfillment of 1995 Minnesota Laws, Chapter 248, Article 5 using funding provided through 1996 Minnesota Laws, chapter 407. The cost to prepare and publish this report was about \$20,000, not counting assistance provided by the interagency work group.

Upon request, *Crosscurrents* will be made available in alternate format, such as Braille, large print or audio tape. For TTY, contact Minnesota Relay Service at (800) 627-3529 and ask for Minnesota Planning.

December 1996

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Cover photo by Deborah Pile: Minneopa Falls
(west of Mankato, Minnesota)

Crosscurrents

Managing Water Resources

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- 2 Crosscurrents
- 3 Minnesota's System
- 9 Improvements
- 15 Barriers
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- 27 State Structures
- 30 Inventory of Improvements

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Thank you for your help.



Minnesota Summary

Minnesota's environment and natural resource management system is complex. Nearly a dozen state agencies and special purpose districts, as well as counties, cities and townships play a role in management. Recognizing the complexity of the state's system, the Minnesota Legislature presented five goals and 11 outcomes and authorized a study of how services could be better delivered by reorganizing related functions.

Crosscurrents focuses on how the state's water management system can be changed to meet the Legislature's goals and outcomes. It reports recent improvements by agencies and special purpose districts, barriers to achieving further improvements and options for change. *Crosscurrents* draws on past studies, comments provided by citizens and local government personnel, and input from state agency representatives. It notes that the current system of advocacy agencies gives all interest groups a voice in decision-making and is generally preferred by citizens.

Agencies and local governments have made significant strides toward improving service delivery by working within existing systems. Agencies work cooperatively on planning, enforcement and assistance efforts and have struck partnerships with local governments and citizens. Partnerships among local governments also are common. Agencies have simplified permitting by using general permits, delegation and other approaches. All parties are continually developing better ways to get pertinent, understandable information to citizens.

Still, barriers to improvements exist. Cooperation, coordination and integration of efforts among agencies are complicated by inflexible funding, overlapping authorities and different data management and communications systems. Agencies have different regional structures, further hindering integrated service delivery. Lack of resources can hamper local efforts and special purpose districts are hard to modify, inhibiting local governments' ability to react to changing needs.

Crosscurrents' options for change build on Minnesota's current management structure, recognizing its important checks and balances and opportunities for citizen involvement. For state agencies, options include developing a multi-year plan to merge regional offices, integrating financial assistance programs and identifying additional permitting decisions that can be handled through simplified means. The Legislature could simplify procedures for modifying special purpose districts and county comprehensive local water plans could be used by local governments and state agencies for broader environmental purposes. Investments in technology could yield major improvements throughout the management system, as could a more full integration of sustainable development principles into the state's efforts.

Crosscurrents

Crosscurrents provides a snapshot of Minnesota's environment and natural resource management systems, focusing on how water-related functions can be changed and improved. The report highlights past reorganization efforts and the evolution of the current system. While individual agencies have made significant strides toward improving internal efficiencies and program effectiveness — and protecting the state's air, water and land — the main focus here is on issues within and among agencies and how services ultimately can be better delivered.

Crosscurrents draws on comments provided by citizens attending a series of eight regional public meetings sponsored by the Environmental Quality Board in 1995, as well as telephone interviews conducted with local government personnel in 1996. Input also was solicited from state agency representatives.

Recognizing the complexity and confusion of the state's system for citizens and decision-makers, the Legislature presented five goals and 11 outcomes and authorized a study of how services could be better delivered by reorganizing related functions. It also called for an examination of special purpose districts to identify ways to eliminate overlapping jurisdictions and duplicative efforts. The 11 outcomes fall into four broader areas that can be used to evaluate current efforts and develop options.

LEGISLATURE'S FIVE GOALS

- Sustainable development
- Improved service delivery
- Prevention
- Citizen participation
- Reduced pollution

Streamline and Integrate Appropriate Elements of the State's Efforts

Since water resource management efforts evolve within programs and agencies as new needs are identified, the state must routinely review if they are efficiently organized and interrelated. Programs and activities should be well coordinated and appropriate ones consolidated within and among agencies, capitalizing on the expertise of specific agencies. Flexibility should be enhanced to encourage cooperation between state and local governments to meet water resource needs. Efforts that can be better handled by local governments or the private sector should be modified and programs should be evaluated to see if they are still needed.

Tailor Efforts to Better Serve Customer's Needs

Customers' needs for information and technical assistance are increasing. These include local governments involved with local water planning and wellhead protection, citizens groups working to protect a lake or stream and people seeking permits. Pertinent information should be understandable and easily accessible. Service delivery systems should be decentralized so that customers can get permit requirements, resource quality and other information at various sites throughout the state.

Simplify Permitting and Other Decision-Making

Permitting can be complex, with several different permits and agency approvals required for what the public perceives as one activity. The state should simplify permitting through joint permit applications, better coordination among agencies and eliminating unnecessary reviews and paper work. Appropriate decisions should be delegated to regional offices and local governments.

Orient Efforts Toward Sustainable Development

Solving problems is much more difficult and expensive than planning ahead. To ensure that overall environment, natural resource and human needs will be sustained by today's actions and development decisions, the state should establish a policy-planning framework for sustainable development. It should encourage customers to adopt sustainable practices through polluter-pays principles that balance regulatory controls and financial incentives. Resource management should be based on appropriate natural resource characteristics, rather than political boundaries.

Minnesota's System

Minnesota's current system of water resource management is the result of more than 50 years of advances in the understanding of environmental problems, coupled with the public's desire for high quality resources and federal calls for action. The system is built upon existing institutions and reflects the state's strong political and cultural tradition of direct citizen participa-

tion in government and involving constituent groups in policy formation. Hazardous waste, wetland destruction, nonpoint source pollution, acid rain and other threats led to new authorities, programs and agencies. Actions of individuals became as much a focus as those of industries and municipalities. Local governments became important actors.

Evolving understanding of the complexity of issues led to needed ties within and among agencies and between state agencies and local governments. Input from specialists was needed to solve problems, making it necessary for groups or teams of people to be involved in some decisions.

Agency Missions, Activities Demonstrate Diversity and Advocacy

Pollution Control Agency

Mission: Protect and improve Minnesota's air, water and land to secure the quality of life of its citizens.

Major water management activities: Dominates the water quality management arena and is responsible for implementing the federal Clean Water Act in Minnesota. Portions of the federal Resource Conservation and Recovery, the Comprehensive Environmental Response and Liability and Clean Air Acts, all administered in Minnesota by the PCA, also deal with water quality.

Department of Health

Mission: Protect, maintain and improve the health of Minnesota citizens.

Water activities: Deals with health risk, wells, wellhead protection and drinking water and has responsibilities through the federal Safe Drinking Water Act.

Department of Natural Resources

Mission: Serve present and future generations of Minnesotans by professionally managing our rich heritage of fish, wildlife, waters, wetlands, forests, prairies, minerals, public lands and other natural resources to preserve and enhance our environment.

Water activities: Administers water quantity and other water-related resource management efforts, including programs affecting fish and wildlife habitat, recreation and shore-land management.

Department of Agriculture

Mission: Foster and maintain a diverse agricultural industry that is economically profitable and environmentally sustainable, to protect public health and safety, to provide consumer protection and to assure orderly commerce in agriculture and food.

Water activities: Regulates pesticides and fertilizers and administers sustainable agriculture and integrated pest management programs. The MDA is responsible for implementing the federal Insecticide, Fungicide and Rodenticide Act in Minnesota.

Board of Water and Soil Resources

Mission: Provide leadership enabling local governments to properly manage water and soil resources and to help all citizens be stewards of our irreplaceable natural resources.

Water activities: Provides financial, technical and administrative assistance to counties, soil and water conservation districts, watershed districts, watershed management organizations and other local governments and coordinates activities among local, state and federal governments.

Environmental Quality Board

Mission: Lead Minnesota environmental policy by anticipating and responding to key issues, by providing appropriate review and coordination, by serving as a public forum, and by developing long-range strategies to sustain and enhance Minnesota's environmental quality.

Water activities: Responsible for coordination and water policy integration among state agencies and local, regional and federal bodies. Water duties are assigned to its Water Resources Committee.

Minnesota Analyzes its Structures

Reorganization of water management efforts has been considered many times. A 1986 Minnesota House Research Information Brief, *State Water Management: Reorganization and Consolidation*, documented more than 12 laws changing water management and 14 studies of water management reorganization. Major actions since then include creation of the Board of Water and Soil Resources in 1987, which consolidated three existing boards, and the Commission on Reform and Efficiency 1993 recommendations on environmental reorganization. Much emphasis throughout these efforts centered on water planning and local or substate activities.

Coordination generally has gotten more emphasis in evaluations of Minnesota's water managements structures then consolidation or reorganization. In 1970, the State Planning Agency's Water Resources Coordinating Committee issued a report identifying three major goals

for water management: prepare sound water resource plans, coordinate state programs and policies, and present a united position in water management involving state and federal government. That same year, the Minnesota House of Representatives Land and Water Resource Committee issued an interim report recommending legislation to create a 12-member water resources coordinating committee chaired by the Commissioner of Conservation to plan, develop and manage water resources in the state.

The University of Minnesota Center for Studies of the Physical Environment recommended three possible courses of action for water management in the state in a 1973 report: consolidating the number of water agencies, clearly defining the responsibilities of each agency, or establishing a policy coordinating committee. The idea of a permanent water resources coordinating body was suggested again in 1979, this time in a study by the Water Planning Board. By 1984, a State Planning Agency

report recommended that the Environmental Quality Board establish a permanent water and related land resources subcommittee to coordinate water policy and discussion. A year later, a report from the same agency argued that a consolidated "superagency" was not necessary for various agency groundwater responsibilities but continues the theme that a coordinating body was needed to address certain issues.

Occasionally, some reports argued for greater consolidation rather than coordination in water management. In 1993, a report by the Commission on Reform and Efficiency noted the fragmented, unresponsive, overly prescriptive, time-consuming and costly nature of the environmental services delivery system. It argued that most state environmental functions should be consolidated into two agencies, a Department of Resource Management and a Department of Environmental Protection. It recommended that a secretary of the environment

oversee both agencies and report to the governor.

Several studies also have looked at more specific issues of merging particular agencies. A 1971 study from the office of Governor Levander recommended placing the Water Resources Board within the Department of Natural Resources, which was echoed two years later in Governor Anderson's environmental message to the Legislature. In 1981, the Southern Minnesota Rivers Basin Board recommended that it merge with the Water Resources Board and the Soil and Water Conservation Board. This same merger was advocated in two studies in 1985, one from the State Planning Agency and one from the Department of Agriculture.

Need Emphasized for Overall Planning

Many past water management reorganization efforts centered on how the state could best accomplish water resource planning. In 1967, the State Planning Agency formed a Water Resources Coordinating Committee to carry out the coordination required by the federal Water Resources Planning act of 1965. The federal act provided the impetus for a state framework water and related land use plan, federally funded river basin studies and river basin commissions. The state water framework plan was supposed to provide the guidance for federal projects as well as for local efforts. However, while water assessments were prepared, the framework plan was not.

In 1973, the Minnesota Water Resources Council was created by Executive Order to coordinate programs and activities necessary for proper land and water planning. It met the coordination requirements of the federal Water Resources Planning Act and was chaired by the Department of Natural Resources. However, with no funding, progress was limited. The legislation gave the DNR the responsibility to develop a statewide framework water plan by 1975, but it was not prepared. A 1976 Executive Order assigned responsibilities for preparing the framework water plan to the Minnesota Water Resources Council.

In 1977, prompted by a severe drought, the Legislature created

A 23-Year History of Water Management Reorganization Studies

Year	Title
1970	<i>Minnesota Water and Related Land Resources: First Assessment</i> , State Planning Agency, Water Resources Coordinating Committee
1970	<i>Minnesota House of Representatives Land and Water Resources Committee Interim Report, 1969-1970</i>
1971	<i>Natural Resources Organization for Minnesota</i> , Office of Governor Levander, Laurence Koll and David Durenberger
1972	<i>Recommendations</i> , House/Senate Joint Subcommittee on Water Resources.
1973	<i>Governor Anderson's Special Environmental Message to the 68th Session</i>
1973	<i>Environmental Decision-Making in Minnesota: Summary and Alternatives</i> , University of Minnesota Center for Studies of the Physical Environment
1979	<i>A Framework for a Water and Related Land Resources Strategy for Minnesota</i> , Water Planning Board
1981	Southern Minnesota River Basin Board Proposal
1981	<i>Special Study on Local Water Management</i> , Water Planning Board
1984	<i>State and Local Water Planning</i> , Issue Team Report, State Planning Agency
1985	<i>Ground Water Management Strategy</i> , Issue Team Report, State Planning Agency
1985	<i>Water Agency Merger Study</i> , State Planning Agency
1985	<i>Metropolitan Development Guide Chapter: Water Resources Management, Part 3</i> , Metropolitan Council
1985	<i>Report of the 1985 Interim Study Group</i> , Department of Agriculture
1993	<i>Reforming Minnesota's Environmental Services System</i> , Commission on Reform and Efficiency

General and Special Purpose Districts Have Major Roles

Counties, cities and towns are responsible for zoning, land use decisions, local ordinances and permit actions that can affect water resources. Counties outside the Twin Cities area have authority to develop and implement county comprehensive water plans.

Soil and Water Conservation Districts are responsible for conservation projects dealing with land, surface water and ground water.

Watershed Districts have broad authority to address a wide variety of water-related issues, including flood control and water quality.

Lake Improvement Districts are generally established to preserve the natural character of a particular lake and its shoreland environment.

Watershed Management Organizations develop watershed management plans for the minor watershed units wholly located in the seven-county metropolitan area.

Lake Conservation Districts have a variety of regulatory powers over a lake, including power to regulate the types of boats and motors used, times and places of use and speeds.

and funded the Water Planning Board whose responsibilities included creating a framework water and related land resources plan, coordinating water activities and involving citizens. *A Framework for a Water and Related Land Resources Strategy for Minnesota* was published in 1979. It recommended a permanent water coordinating body with adequate authority. But President Reagan terminated the federal Water Resources Council and the federal-state river basin commissions in 1981, lessening federal and state emphasis on river basin approaches.

The functions of the Water Planning Board were merged into the Environmental Quality Board in 1983, making it the state water coordinating body. As noted in *State Water Management: Reorganization and Consolidation*, "it is interesting to note that the role of coordinating water planning, which started in the State Planning Agency through the Water Resources Coordinating Committee in 1967, was back in the SPA by 1983 through the auspice of the EQB."

The EQB developed biennial water resources priority recommendations for state and legislative actions, facilitated interagency efforts on the 1989 Ground Water Protection Act and prepared the Minnesota Water Plan to guide state efforts in 1991.

The need for overall planning was again emphasized when the Legislative Water Commission called for greater coordination in its 1992 report focusing on the state's water management needs for the year 2000. Noting the complex system of water management at both the state and local levels of government, the commission stated that the overall water management system must be better focused and coordinated so that it is accountable and understandable and that people know who is responsible for each facet of water management. They recommended that the EQB oversee the development of a coordination strategy for water management in the state, involving the various interested parties. Yet by 1995, the Legislature had changed the water plan requirement from five years to ten, with the next plan due in 2000, transferred several water-related

assessment authorities to other agencies, and allowed the Legislative Water Commission to sunset.

Management Evolves at Local Level

Over the years, the state recognized that water resource management and protection require active involvement of local units of government and individuals. Early emphasis centered on county and watershed-level efforts, but later broader scale efforts were emphasized as well. Significant attention in reorganization studies and legislative action has centered on local governance and planning.

In 1937, Minnesota passed the enabling legislation for soil conservation districts and a Minnesota oversight board to control soil erosion based on a federal model. The model suggested local districts have authority for land use regulations and use watershed-based planning, but the legislation did not include land use authorities. The state's districts generally pursue voluntary compliance and county-based plans.

Improvements

The Water Resources Board was created in 1955, along with enabling legislation for watershed districts. These districts had the necessary taxing and other authorities that soil conservation districts lacked to qualify for technical and financial assistance under federal public law 566, which provided funding for projects such as drainage and flood control.

During the 1970s, there was much interest in land and water issues. In 1971, the Southern Minnesota Rivers Basin Board was established to develop a comprehensive plan for the Minnesota River Basin and the tributaries to the Mississippi River in southeastern Minnesota. At the same time, a joint Minnesota legislative subcommittee reported that the system for land and water in Minnesota had become so complicated that few had a clear understanding of the entire system. They recommended creating a citizen board charged with reviewing the multiplicity and fragmentation of special purpose districts and abolishing the Water Resources Board and State Soil and Water Commission.

Another study in 1971, *Natural Resource Organization for Minnesota*, discussed the need for coordination and state oversight of land and water activities. It recommended forming a Natural Resources Council and including the Water Resources Board and State Soil and Water Commission in the Department of Natural Resources. The Legislature brought the State Soil and Water Commission into the DNR in 1971, but left the Water Resources Board independent.

Three additional studies — by the Southern Minnesota Rivers Basin Board in 1981 and the State Planning Agency and Department of Agriculture in 1985 — recommended combining the Water Resources Board, the State Soil and Water Commission, then known as the Soil and Water Conservation Board, and the Southern Minnesota Rivers Basin Board. While the Soil and Water Conservation Board was transferred to the Department of Agriculture in 1983, it was 1987 before the Board of Water and Soil Resources was created from the authorities of the three boards.

Several studies and legislative initiatives recognized the need to plan and manage water resources locally. The Water Planning Board recommended in a 1981 study, *Special Study on Local Water Management*, that counties take a leadership role in local water management. The Comprehensive Local Water Management Act was enacted in 1985, providing for county-led, voluntary local water planning. Fifty-two counties formed six groups for local water planning purposes and received state assistance to begin plans. Today all counties outside the Twin Cities metropolitan area have local water plans.

The Metropolitan Water Management Act, passed in 1982, required watershed-based planning in the Twin Cities Metropolitan Area by watershed districts or watershed management organizations. In 1987, amendments to the act gave counties in the Twin Cities voluntary ground water planning authorities.

	pre-1930	1930	1940
Water Management History This timeline covers major changes in Minnesota's management structures.	1919: Department of Agriculture created; merged in 1923 with Dairy and Food Department, created in the late 1800s	1931: Department of Conservation created 1937: Soil and Water Conservation Board created and soil and water conservation district law enacted	1945: Water Pollution Control Commission established

1950	1960	1970	1980	1990
1955: Water Resources Board created and watershed district law enacted	1967: Minnesota Pollution Control Agency created, replacing the Water Pollution Control Commission established in 1945 1967: State Planning Agency forms Water Resources Coordinating Committee	1971: Name changed to Department of Natural Resources from Department of Conservation 1971: Southern Minnesota Rivers Basin Board established 1973: Minnesota Water Resources Council created 1973: Environmental Quality Council created 1977: Water Planning Board created 1977: Initiated in 1926, name change creating the Department of Health from State Board of Health and Vital Statistics, created in the late 1800s	1983: Water Planning Board merged into the Environmental Quality Board 1985: EQB forms Water Resources Committee 1987: Board of Water and Soil Resources created from Water Resource Board, Soil and Water Conservation Board, and Southern Minnesota Rivers Basin Board	

A System Designed Purposefully — or Haphazardly

Minnesota's environmental system can be categorized as a collection of advocacy agencies, concluded the Commission on Reform and Efficiency in 1993 when they recommended combining agencies. They found that each agency presents one or more differing perspectives that can lead to gridlock and untimely decisions.

Each water resource management agency has a distinct perspective. The Department of Natural Resources' conservationist bent favors controlled use and systematic protection of resources. The Pollution Control Agency leans more toward the environmentalists perspective of protecting resources from destruction. The Department of Health is an advocate and protector of public health, while the Department of Agriculture emphasizes a strong agricultural economy, including support of farmers and agribusiness. The Board of Water and Soil Resources provides resources to local units of government and advocates on their behalf. The state level coordinating role goes to the Environmental Quality Board, which serves broad public interests and as a forum for discussions of conflicting issues by the environmental agencies.

Yet this might be just the system that the state intended. The system meets the needs of various interest groups and gives them a voice in state government decision-making that they might not have with only one agency. Major decisions are made with full public scrutiny. Water resource issues are complex and far-reaching, and agencies dealing with agriculture, health, public safety, natural resource

management and pollution control all have legitimate interests in them. The Office of the Legislative Auditor noted in its 1987 report, *Water Quality Monitoring*, that the major rationale for this system is that separate agencies can better advocate for their specific areas of responsibility. In addition, the external checks and balances of the system can foster creative tension and diversity in dealing with issues.

As noted in *State Water Management: Reorganization and Consolidation*, "Despite administrative complexity and the fragmentation and overlap that may occur among state water management agencies, Minnesota traditionally has supported a system of strong, competing agencies, each concerned with its own duties and specific goals. In political terms, an advocacy system promotes competition and increases the public representation of each goal or interest and highlights political choices. Conflicts and tradeoffs in such a system are meant to be solved through the political rather than the administrative process."

The state's system of allowing for multiple types of special purpose districts gives many choices to local governments and citizens in getting things done. They can form a lake improvement district to focus attention on a problem or a watershed district if a county or other unit is not taking necessary actions.

Improvements

Many actions already have been taken or are underway that directly relate to the legislative outcomes. Interagency and intergovernmental cooperation on planning, enforcement and technical assistance has been increasing. Changes in permitting are yielding more simplified processes. More decisions are taking place outside St. Paul. Examples of these and numerous other improvements are discussed here and detailed in the inventory of improvements section of *Crosscurrents*. These improvements offer ideas for possible continued courses of action.

State agencies have worked together to manage water resources for many years — from nonpoint source pollution efforts in the 1970s to current efforts focusing on water and wastewater infrastructure needs. Cooperation has increased in recent years as the interrelationship of issues and programs became more apparent. The Environmental Quality Board established its Water Resources Committee in 1985 to highlight the need for interagency approaches to water resource management.

Cooperative Planning Efforts Underway

Comprehensive local water plans are encouraging cooperation among local governments. Counties are responsible for preparing local water plans, but soil and water conservation district staff often play a key role and other units, including neighboring jurisdictions, have opportunity for input. Some counties are including overall water resource needs and responsibilities for all units of government in their updated plans, eliminating duplication, overlap and competition for funding. Many parts of the state report great strides in coordination and

cooperation since beginning local water planning.

In other areas, however, additional improvements are needed. Some counties report almost no coordination with cities. Isolated incidence of insufficient cooperation between counties, soil and water conservation districts and watershed districts also are noted, as was the need for better coordination with the Minnesota Extension Service on education. Independent taxing or funding authority appears to work against coordination. The comprehensive local water plan should provide the vehicle for local units to work out these differences.

State-level cooperative planning often stems from federal mandates. These mandates frequently call for state rather than agency plans. The federal Insecticide, Fungicide and Rodenticide Act, and subsequently state law, required the Department of Agriculture to prepare a pesticide management plan with input from many interests. The Pollution Control Agency was charged with preparing the state ground water protection strategy, the comprehensive ground water protection program, framework and state assessment and the nonpoint source management plan, all through requirements of the federal Clean Water Act. The Department of Health is charged with the state's wellhead protection program, which depends on elements of the pesticide management plan and comprehensive ground water protection program for success. Sometimes agencies worked through the Water Resources Committee on these efforts.

Other state-level efforts come from legislation and agencies. Cooperative planning efforts assigned by the Legislature to the Environmental Quality Board and other agencies include the state water resource monitoring plan, water quantity and quality assessment reports and identification of water resource research needs. Local water plan review also calls for involvement of multiple agencies.

Some efforts come from needs identified by agencies and the Water Resource Committee. These include the evaluation of water and wastewater infrastructure needs and current efforts to develop unified water resource monitoring needs. The Water Resource Committee showed its potential as a forum for pulling agencies together for the state ground water protection strategy and Ground Water Protection Act of 1989. Many other legislative issues are routinely discussed and worked on each year by the agencies, including integrated capitol budget requests and consolidated requests to the Legislative Commission on Minnesota Resources.

Compliance, Enforcement and Assistance Offered Cooperatively

Agencies have instituted several efforts to pool resources to address water resource management. These recognize and draw on the technical and human resources each agency has to offer in meeting state needs. Joint efforts between the Pollution Control Agency and the Department of Natural Resources capitalize on the large number of DNR field staff to extend the PCA's abilities. Efforts include joint issuance of field citations for illegal disposal of wastes and joint involvement in

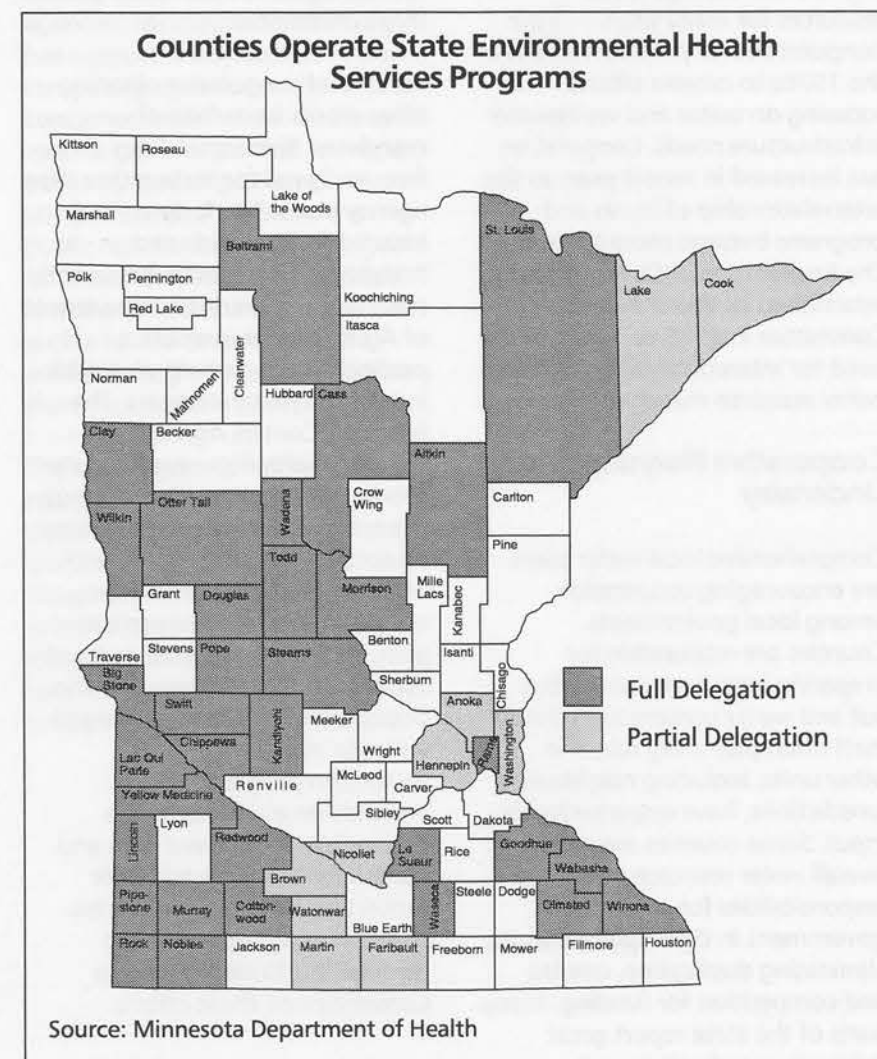
Agencies work closely with local units of government and citizens to accomplish goals. These efforts can streamline and integrate activities, decentralize programs and increase citizen's understanding of environmental issues.

The Department of Health forms partnerships with counties in running environmental health services and state well programs. The food, beverage and lodging program and manufactured home park and recreational camping area program are handled by 33 county health departments through delegation agreements. Another 10 handle just the food, beverage and lodging program. Nine counties in southeastern Minnesota handle portions of the state well program and an additional three counties are working with the department on agreements.

The Pollution Control Agency's partnership with the state's soil and

water conservation districts calls for district assistance in inspecting construction sites for compliance with the agency's storm water permit program for construction activities. Another PCA effort delegates feedlot program authorities to counties. Other permitting efforts involving partnerships with local governments include the Department of Natural Resources' general permits for county bridge and culvert projects.

Several efforts unite agencies, local units of government and citizens in monitoring. Both the PCA and the DNR use citizen volunteers to help monitor lakes. The DNR has formed



partnerships with local governments, such as the Heron Lake Watershed District, for stream gaging services and hydrologic modeling. The department's observation wells are measured by soil and water conservation districts under a cost-sharing arrangement. Districts also help manage the state's high density precipitation monitoring network, which involves a network of more than 1,600 volunteers. Ground water quality monitoring cooperatives have been developed between several state agencies and Minnesota counties, including Wadena and Stearns counties and nine counties in the southeastern part of the state. The Department of Agriculture cooperates with several counties on ground and surface water monitoring projects.

Agencies and local units also cooperate to solve problems. The Minnesota River Action Plan and Minnesota River Implementation Plan, spearheaded by the PCA, pulled together state and federal agencies, local governments and citizens to address water quality problems on the river. In turn, local governments developed the Minnesota River Joint Powers Board to protect and rehabilitate the river, recognizing that actions would be needed by all governments in the river basin.

The Department of Agriculture forms partnerships with local units of government to deal with waste pesticides and empty pesticide containers. Waste pesticides are collected annually in at least half of Minnesota's counties and empty container collection sites are available in all counties.

Partnerships Among Local Units Abound

Cooperative efforts are common among local units of government throughout the state. Units draw on each others strengths and roles vary greatly. Strong, multipurpose watershed districts in northern Minnesota often take the lead on projects, providing engineering and administrative services. In southern Minnesota, where watershed districts are smaller, soil and water conservation districts might supply contracting and administrative services for watershed districts. The state's multidistrict approach allows each area to devise arrangements that fit local needs.

Watershed districts, soil and water conservation districts, counties and cities work jointly on projects to solve water quality problems. Heron Lake in the southwest, the Wild Rice River in the northwest, Knife River in the northeast, Zumbro River in the southeast and North St. Paul in the Twin Cities area are but a few of the examples of local units working together to identify problems, develop funding proposals and define responsibilities. Team efforts for pesticide container collection also are common, with each area working out the unique structure that suits it best.

Local units also consult with neighboring jurisdictions through formal and informal groups. Examples include the Lake Superior Association of Soil and Water Conservation Districts and the Southeast Minnesota Water Resources Board.

Local units share staff and provide technical assistance to each other. Many counties arrange for soil and water conservation district

preparation of local water plans and assistance in wetland, feedlot and other programs through formal and informal arrangements. Sometimes staff have dual appointments with a county and district. Other times district staff act as agents of a county. Some counties rely on soil and water conservation districts for agriculture-related and water quality expertise and some watershed districts rely on them to review erosion and sedimentation aspects of permits. Local units often share technical staff. For example, in northeastern Minnesota, a group of districts share an engineer hired with state funds. Other examples of shared technical staff among districts and counties include foresters and computer and wetland specialists.

Information Packaged for Customers

Agencies and local units of government are continually developing better ways to get pertinent, understandable information to citizens. Methods include reports, one-on-one contact and use of new information technology. In addition, many soil and water conservation districts serve as contact points for the public, directing them to the services and agencies they need.

The Department of Health develops manuals to help citizens interpret their regulations and sends newsletters to regulated parties. It also provides information on water quality in private wells to consumers at fairs throughout the state and at Department of Agriculture sponsored nitrate testing clinics. These clinics are coordinated with local governments and provide opportunities for agencies to deliver information

to the public and answer questions on a variety of ground water issues.

The Pollution Control Agency's *Ground Water: A Directory of Minnesota's Programs and Resources*, prepared jointly with the other water resource-related agencies, offers a good example of how programs of multiple agencies can be presented in a unified manner. The PCA's electronic bulletin board service provides public access to agency fact sheets, program guidance and lake information.

The Department of Natural Resources' *Water Talk* keeps local governments and the public informed about water programs and issues. The department also publishes data summaries and posts information on the University of Minnesota Soils Department's World Wide Web site.

The Minnesota Department of Agriculture's home page on the World Wide Web offers a good example of how information can be organized by issue instead of agency to serve customers. In addition to an overview of the department, a phone list of agency employees, a fresh produce directory, weekly crop weather reports, and a collection of department press releases, it contains a feedlot and manure

management directory with a variety of information citizens might otherwise have to get from several agencies. The page includes:

- general information on feedlot permits, manure storage systems and manure treatment
- when feedlot permits are required and where the permits are available
- when feedlots are classified as a pollution hazard
- tips for filling out forms and a list of contacts, educational resources and references
- sources of financial assistance for conservation projects

Many local units of government also are developing Web sites to better serve customers. The Minnesota Association of Watershed Districts is developing a Web site that will include a separate page for each watershed district.

The Minnehaha Creek Watershed District's extensive Web site contains the Combined Joint Notification Form/Water Resource Application used by the district and other agencies for proposed water or wetland project. Applicants can download the form over the Internet, eliminating the need to go to the office or request it by mail. Electronic links to other permitting

agencies also are made available. Reports, summaries of current projects, overall goals, minutes and schedules of meetings, and district rules and regulations all are available online. Developers planning the storm water management component of a project, for example, can learn the district's general storm water policies, the decision criteria used for storm water plans, and exhibits that must be submitted with a plan.

Norman Soil and Water Conservation District is developing a Web site containing the county local water plan, district activities and other information and is using computers to help landowners understand problems and make good decisions. The district has scanned U.S. Department of Agriculture aerial photos onto computer disks. Landowners can get copies of the files on their property on disk to study in the office or on their home computers, giving them the time to see and understand the effects of their operations.

Permitting Simplified

Both the Pollution Control Agency and Department of Natural

Resources use general permits to simplify permitting, but the approaches are different. The PCA's general permits apply to categories of permittees whose operations, emissions, activities, discharges or facilities are the same or substantially similar. Applicants request these permits the same way as an individual permit, but decisions come more quickly. Under the general permit for storm water, project proposers can start work 48 hours after filing their application. The PCA's Division of Water Quality currently has more than 3,400 general permits in force, 88 percent of these cover storm water.

The Department of Natural Resources' general permits are issued to local units of government and allow more than one project to be conducted under a single permit. These permits were authorized by the Legislature in 1994 for "classes of activities having minimal impact upon public waters."

Bridge and culvert projects were identified as the most suitable activity for these permits. As of November 1996, 21 counties had received general permits for bridge and culvert projects and additional counties are working with the department to qualify. The ability to issue general permits to the general public was added in 1996. The DNR is identifying potential areas for these types of general permits.

The Department of Natural Resource, the Board of Water and Soil Resources, the U.S. Army Corps of Engineers and local governments have developed a joint permit notification form for projects affecting wetlands. Applicants can fill out one form and submit copies to all parties.

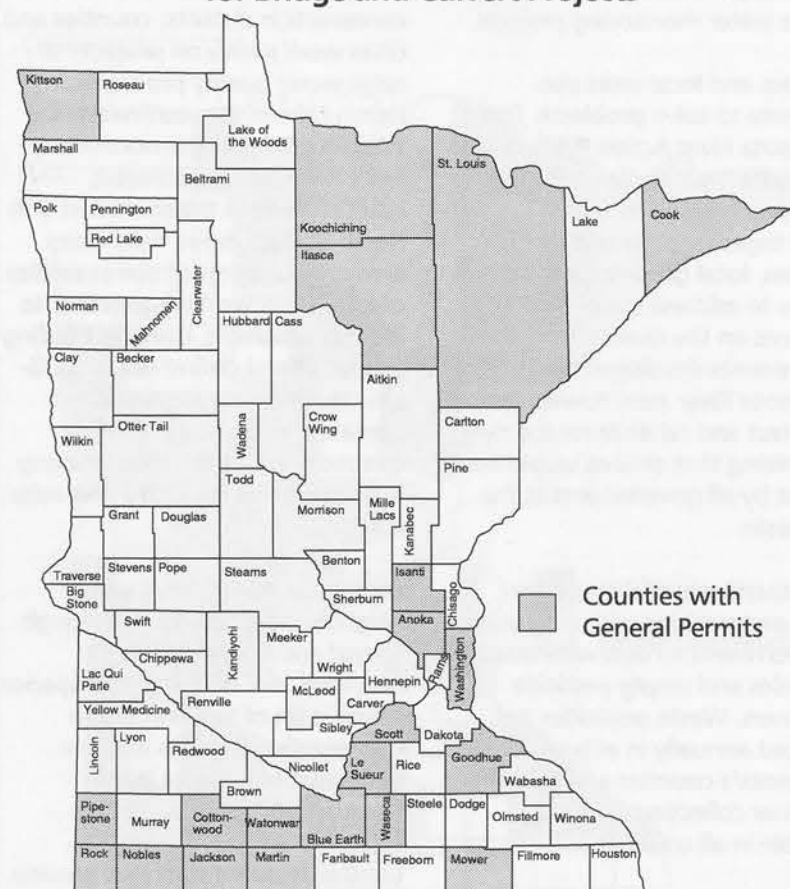
The Pollution Control Agency's project XL offers businesses great potential for simplifying compliance with environmental regulations. Authorized by the U. S. Environmental Protection Agency and a 1996 Minnesota law permitting pilot regulatory reform initiatives, project XL or eXcellence in Leadership, gives companies greater flexibility in meeting environmental goals in exchange for better environmental performance. The PCA and other agency permits covering air, water and land can be combined and designed to allow businesses to change their operations as needed. While the PCA's first XL pilot project with 3M has been suspended, the concept holds promise.

Decision-Making and Staff Disbursed

The Department of Natural Resources has been systematically decentralizing decision-making. While the number of Division of Waters staff outside St. Paul has held steady at 51 for the last six years, decisions made in regional and area offices and the field have increased. Ninety-five percent of permit decisions are made in regional offices, following changes instituted in the late 1980s. Permits with the potential for significant effects, such as those dealing with hazardous waste sites or for large appropriations, are still made in the central office.

In 1993, the Department of Natural Resources began a pilot project to further delegate decision-making to area offices and the field. Three areas — Grand Rapids, Fergus Falls and Spicer — were selected to examine the benefits of delegating select permit category areas from the regional to the area level. Also

Twenty-one Counties Have General Permits from DNR for Bridge and Culvert Projects



Source: Minnesota Department of Natural Resources

DNR Delegates Decisions to Area Offices for Water Permits

Protected Waters:

- Filling
- Excavation
- Structures
- Water Level Controls
- Bridge and Culverts
- Intakes and Out Falls

Water Appropriations:

- Temporary Water
- Other Limited Classes

involved is development of a series of permits where proposed projects meeting preapproved site and dimension conditions can be immediately permitted in the field.

The Pollution Control Agency began several actions in the early 1990s to move additional staff and activities to its regional offices. The agency formed a Regional Operations Division and regional compliance units to focus on regional service delivery and prepared a report and policies on expanded regional office roles. Staff covering such areas as leaking underground storage tank cleanup, tank compliance and assistance, and information and education were moved or added to regional offices.

Actions Oriented Toward Resources and Sustainable Development

Many efforts of state agencies and local units of government orient actions toward resources. Indeed, watershed, lake improvement and lake conservation districts are specifically designed for this purpose. The departments of Natural Resources and Agriculture and the Pollution Control Agency all use ecologically based regions for assessing problems and developing solutions. While their unique regions do not match, they are able to cooperatively deal with problems and deliver services. Joint state and local government efforts to focus on problems in the Minnesota River basin led to more than \$5 million in cost-share funding for conservation practices in the basin in 1995. Approximately half of the Department of Agriculture's best management practice loan funds went to the basin.

Not all agencies' efforts fit natural resource boundaries, and geographical areas appropriate for one problem or program might not be the same as that for another. For example, the area of concern for protecting a community's well could be quite different than the one to protect the quality of a nearby lake. State and local governments must form situational alliances with communities of common interests to accomplish goals, rather than organize according to one preset geographic structure.

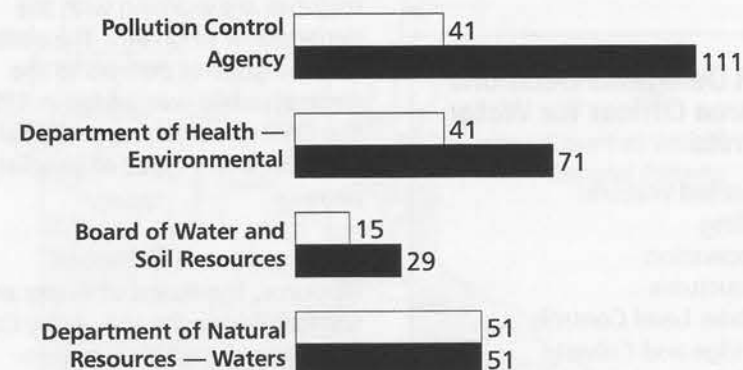
Minnesota's efforts in sustainable development are recognized nationwide and are preceding rapidly. Begun in 1993, the state's efforts include recommendations from more than 100 citizen leaders on how the state can enhance economic opportunities and community well-being while protecting and restoring its natural resources. Legislation in 1994 created a 17-member Sustainable Economic Development and Environmental Protection Task Force composed of citizens and

legislators. It recommended principles, goals and strategies for more coordinated, cost-effective and sustainable approaches to development.

The Minnesota Round Table on Sustainable Development is currently identifying the most important things the state can do to move toward sustainable development and setting priorities for action. It was approved by the Governor in January 1996 and consists of 30 leaders in business, civic and environmental organization.

Legislation in 1996 calls for Minnesota Planning to publish model ordinances and a planning guide for sustainable development at the local level. It also directs state agencies to describe how their mission and programs reflect and implement Environmental Quality Board adopted principles of sustainable development, or how they could be changed to do so. The EQB is to report agency findings to the Legislature by January 1997.

Agencies Increase Number of Field Staff



□ 1990 ■ 1996

Source: Data provided by individual state agencies

Barriers

While agencies have made strides toward achieving the Legislature's goals and outcomes, barriers impede further progress. Inflexible funding sources and rules, planning that is unconnected to legislative decisions or efforts of other agencies and levels of government, differing regional structures and decision-making procedures, and lack of fiscal and technological capacity all inhibit change. In addition, legislative authorities and responsibilities for some issues are at times vested in multiple agencies with no one agency clearly in charge. These barriers can affect all outcome areas.

Agency Funding Can Restrict Change and Cooperation

Funding for water resource management — and environmental programs in general — has become less flexible. Over the past two decades, funding has shifted from state general fund and federal dollars to fees. Dollars from the state general fund fell from 74 percent of overall spending in 1980 to slightly more than 50 percent in

1993 and the proportion of funds from this source has continued to decline. General funds for the Department of Health's drinking water protection program shrank from 57 percent in 1988 to zero in 1996. While fees can be a stable source of funding, they also can reduce flexibility. The Minnesota Environment and Natural Resources Trust Fund, established in 1988, was expected by some agencies to provide a stable source of funding for long-term water-related needs. While a variety of shorter term water projects have received funding, long-term monitoring needs have not.

Money from fees often is restricted to activities directly related to the purpose of the fee, limiting agencies' abilities to undertake cooperative efforts. The Department of Health drinking water protection regional personnel could fulfill some of the Pollution Control Agency's program needs, except that funding restrictions prohibit them from working in areas outside their program. Such restrictions also can limit agencies' ability to assign staff

to interagency coordination, emerging issues and crises.

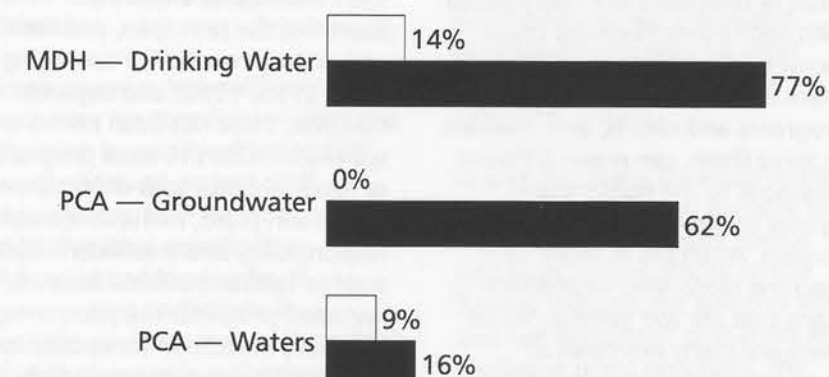
Fees and funding by program can lead to a fragmented water resources management effort. Fee payers expect that their money is buying a product or service, such as a permit, and balk at any expenditures not directly related to that product. Well drillers resist use of fees for training. People paying water appropriation fees want money to go directly to their needs, not the state's general fund. Few program funds allow staff for general or statewide policy development or allow managers to reassign staff as priorities change. Fees paid to the Petroleum Tank Release Cleanup fund can only be used for the narrow purposes defined in law, regardless of priorities. Basing programs solely on fees defines the fee-payer as the primary customer, ignoring the state's main water resource customer, the general public.

Funding techniques could become more of a problem as the state considers how to cover federal budget cuts. If cuts are covered by program-specific fees with tight spending restrictions, agencies' abilities to coordinate and cooperate with each other and to orient efforts toward sustainable development will be further hampered. The state should seek ways to retain the positive side of fees while allowing flexibility to use funds on related activities and coordination efforts.

Statutes and Rules can be Difficult to Change

Statutes, rules and programs often are designed to benefit or respond to special interests, making them difficult to change. Competing

Percentage of Funding from Fees Goes Up



□ 1988 ■ 1996

Source: Data provided by individual agencies

interests want to make sure that changes will not adversely affect them or their concerns. Studies, numerous legislative hearings and lengthy procedures often are required to change statutes and rules. This advocacy system ensures that all sides of issues are heard, but does impose resistance to change.

It took six years from the first study recommending merger of the Water Resources Board, the Soil and Water Conservation Board, and the Southern Minnesota Rivers Basin Board to creation of the Board of Water and Soil Resources — and this followed several studies in the preceding ten years recommending some degree of merger. The Waste Management Board, established in 1980 primarily for siting a hazardous waste facility in Minnesota, evolved into the Office of Environmental Assistance following several years of debate over whether it should be autonomous or merged with the Pollution Control Agency and a 1988 governor's executive order dissolving it. Change is particularly difficult when competing interests see their positions threatened.

Some inflexibility is tied to federal laws and regulations, since many state environmental laws and programs are tied to federal ones and federal dollars. Delegation of authority under the Clean Water Act, Safe Drinking Water Act, Federal Insecticide, Fungicide and Rodenticide Act, and other federal programs comes with mandates that can be overly prescriptive. The Clean Water Act, for example, requires that all National Pollutant Discharge Elimination System permits expire in five years, creating heavy workloads, backlogs and burdens on permittees. Many of these permits could be issued for

longer durations without negatively affecting the environment.

The time required for rule changes through the Administrative Procedures Act also inhibits change. Minor rule changes take at least six months and noncontroversial changes handled through an Administrative Law Judge take more than one month, even though the Attorney General's office has already reviewed the issue. A recent problem discovered with an air-testing provision of the plumbing code will require a long process to correct a small provision. While the Administrative Procedures Act does eliminate litigation and is better than the courts for resolving disputes, simpler processes could be developed for minor and noncontroversial changes.

Planning can be Unconnected Among Agencies and With Legislative Process

All agencies plan and many are currently involved in strategic planning and internal reorganization efforts, but these efforts are not guided by an overall set of goals or directions nor coordinated with each other. Planning often focuses on programs and how to make them better. Different programs and clients, and missions to serve them, can mean different messages to the public from agency to agency or division to division. Attempts at more far reaching plans tend to produce plans that are too general. While there are many examples of cooperative planning, including those mentioned in the Improvements section of *Crosscurrents*, too often these efforts lack follow through or commitment from affected agencies.

Many planning efforts are not coordinated among agencies. The Environmental Quality Board and its Water Resources Committee, intended as the forums for discussion of interagency issues, are not being used to make connections among planning efforts. The administration established environmental cluster has improved communication among agencies on programs and problems, as have informal monthly meetings of agency water managers. All agencies involved in water resource management reported internal strategic planning efforts and the Pollution Control Agency and the Department of Agriculture are involved in extensive reorganization. However, these efforts and their guiding principles are not systematically discussed among agencies nor are overall goals or connections developed. While the Department of Agriculture has administered a nationally recognized sustainable agriculture program since 1987, most agencies lack a clear understanding of sustainable development and how it applies to their programs.

The Environmental Quality Board's 1991 Minnesota Water Plan identified the principles, policies and actions needed for managing water in the 1990s and beyond; however, there has been no systematic effort to track progress or foster actions. Lack of implementation plans, multiple lines of responsibility and insufficient EQB staff to facilitate actions have all impeded progress. The plan, originally scheduled for update in 1995, will not be updated until 2000 and efforts toward that update have yet to begin. The EQB's 1992 Minnesota Water Monitoring Plan likewise had no systematic follow through and was

little used. Some elements of both plans have been implemented by individual agencies and a current interagency effort to develop a unified water resource monitoring funding proposal might indicate a trend toward greater connections among agencies. However, this latter effort is not being developed through any permanent coordinative body.

Legislatively required plans are seldom used in budget discussions or policy debates, discouraging agencies from devoting time or resources toward them. Agencies report that most legislators lack knowledge of plans and their content. The Legislature requires more than 18 specific water resource-related plans or reports. These are in addition to the biennial performance reports, which must contain goals, objectives and performance measures, biennial budget documents, which must contain agency missions and proposed activities, and reports and plans required by the federal government. Several of these plans and reports call for policy recommendations, status reports and needs assessments that could be of great value to budget and policy debates.

Most agencies lack sufficient resources for coordinated planning. Planning is usually added to the work efforts of current staff, leaving little time for internal, interdivisional coordination. Agencies and local units of government participate in coordinated planning to the extent that they are able within available resources. Maintaining core programs takes a higher priority.

Authorities Sometimes Unclear and Overlapping

Programs evolved as the state began to understand the connections among issues and environmental programs. Agricultural programs expanded to cover environment effects and mitigation as well as promotion. Pollution control went beyond the traditional industrial and municipal dischargers to concern with nonpoint source pollution and the actions that all people take. Safe drinking water could not be ensured without concern for programs of other agencies and actions of land and water resource users. All agencies became concerned with land use. Programs began to blend at the edges.

The Legislature recognized this blending, and the need for involvement of multiple interests in issues, by giving funding, programs and authorities to multiple agencies. Sometimes, however, this approach has led to confusion, mixed messages and potentially inefficient use of resources. For example, recent legislative changes give the Office of Environmental Assistance broad responsibilities for environmental education for pupils and other citizens, calling into question its role vis-a-vis other agencies and the Minnesota Extension Service.

Grants and loans for water-related projects are provided by more than eight entities. Nonpoint source pollution control efforts can be funded through the Board of Water and Soil Resources' cost-share and challenge grant programs, the Pollution Control Agency's Clean Water Partnership and 319 programs, the Department of Natural Resources' shore land grants, the Department of

Agriculture's grants and loans, the Metropolitan Council's nonpoint source grants and the Legislative Commission on Minnesota Resources, among others. Some of these programs were added by the Legislature recently. Currently more than \$11 million is available each year for water-related grants and more than \$15 million is available in loans, excluding grants and loans for wastewater treatment projects.

Criteria for some programs overlap and local governments apply to various programs for the same project in hopes of getting funding. Time frames for submitting applications often differ, as do requirements placed on recipients. For example, some programs require adoption of ordinances to go along with cost-share funding, while others do not. Priorities are not consistently based on overall state needs or resource plans.

Overlapping authorities for wetland management have developed as programs to provide greater protection of dwindling wetland resources were implemented. Federal, state and local agency programs were authorized separately over time. Agencies have used memoranda of understanding, a joint permit notification form and multi-agency coordination meetings to address many of these jurisdictional overlaps.

The Legislature gave responsibility for developing best management practices for nonpoint source pollution to the Pollution Control Agency and the Department of Agriculture, with the latter covering agriculturally related practices. However, nonpoint source pollution control does not neatly fall into these categories. The Department of Agriculture is developing best

management practices for urban areas covering lawn care products, grass clippings and leaves, and the Department of Natural Resources develops forestry practices in conjunction with the PCA.

Even for issues where one agency has the lead, the Legislature might give funding to other agencies for related work. While the Pollution Control Agency regulates feedlots, the Legislature gave the Department of Agriculture funding for a feedlot model ordinance without requiring or providing resources for PCA involvement. Responding to concerns of producers over the PCA led remedial action and implementation plans for the Minnesota River, the Legislature gave money to the Department of Agriculture to facilitate producer involvement and reevaluate plans.

Memoranda of agreement and understanding are sometimes used by agencies to better define the edges. These memoranda allow flexibility in policy-making and form a cooperative rather than confrontational approach. However, memoranda are not developed in the same open manner as laws and rules. There is no input from citizens, legislators or non-participating agencies. There are no public or administrative announcements of these policies. Methods of enforcement are often unclear, as are methods of passing information about agreements to new staff. Most agencies maintain no overall listing or file of agreements.

Memoranda include agreements among the Department of Health, the Pollution Control Agency, and the Departments of Agriculture for wellhead protection, and between the PCA and the Department of Health for individual sewage

treatment systems and release of hazardous substances. Agreements between the PCA and the Department of Natural Resources cover investigation and enforcement of feedlot-related environmental violations, nonpoint source pollution control and ground water at contamination sites. Other agreements involve the Board of Water and Soil Resources, the Metropolitan Council and the U.S. Army Corps of Engineers.

Agencies have Different Regional Structures

Four water resource management agencies — the departments of Natural Resources and Health, the

Pollution Control Agency and the Board of Water and Soil Resources — have staff assigned to regional offices, but these offices are rarely in the same towns, let alone the same buildings. Only Rochester is home to regional offices of all four agencies. When DNR subregional or area offices are included, the number of communities with all four agencies increase by one to include Marshall. These separate regional offices make it difficult for agencies to coordinate activities and integrate permitting and other services for clients.

Regional structures were developed to meet the unique needs of programs and customers at a time

when connections among agencies' efforts were less recognized. The PCA and the Department of Health focused on their permittees, while the Board of Water and Soil Resources' customers were local governments and the DNR's were citizens and governments using the state's resources. Any connections deemed necessary were worked out in St. Paul. Now, as decision-making becomes more decentralized and local governments become significant players in many programs, the need for collocation is becoming more apparent. Agencies recognize that they must reach all citizens to deal with such issues as wellhead protection, nonpoint source pollution and sustainable development. And customers want the state's position and requirements on wetlands, feedlots or building a new manufacturing facility when they visit a state office, not just one agency's.

While the public has consistently requested "one-stop shopping" through the CORE report and elsewhere, very little action has taken place to collocate regional facilities. Neither the executive nor legislative branches has provided the leadership or resources for office mergers. When a University of Minnesota owned complex became available in Rochester that could have housed all of the agencies' regional staffs, for example, the state did not act to secure it.

Data and Communications Systems are Unconnected Among and Within Agencies

Telecommunications technology — e-mail, teleconferencing, remote computer access, the Internet — allows all offices and staff of an agency to operate as a single unit, no matter where they are located. They can access the same data, participate in joint conferences and meetings and confer on permit decisions just as if they were in the same office. These technologies also allow better coordination among agencies and allow the public to more seamlessly access information at any state office. Yet, most agencies and local governments lack the resources to take full advantage of telecommunications technology. In addition, different information coding systems make data hard to use.

World Wide Web sites, which offer an excellent way for the public and agency staff to get information, are underused. The Internet connects people to information without them physically traveling from one agency and location to another or even knowing they have dealt with multiple agencies. It can be a unifying tool to reach customers with integrated water resources or environmental information. While agencies are actively working to build home pages — Web sites providing access to the agency or "home" — there is little emphasis on coordinating or integrating sites or creating seamless access for customers to water resource information across agencies or programs. An interagency request to the Legislative Commission on Minnesota Resources to develop integrated joint Web sites was not funded; however, agencies continue to discuss the need. Some agencies have received funding to

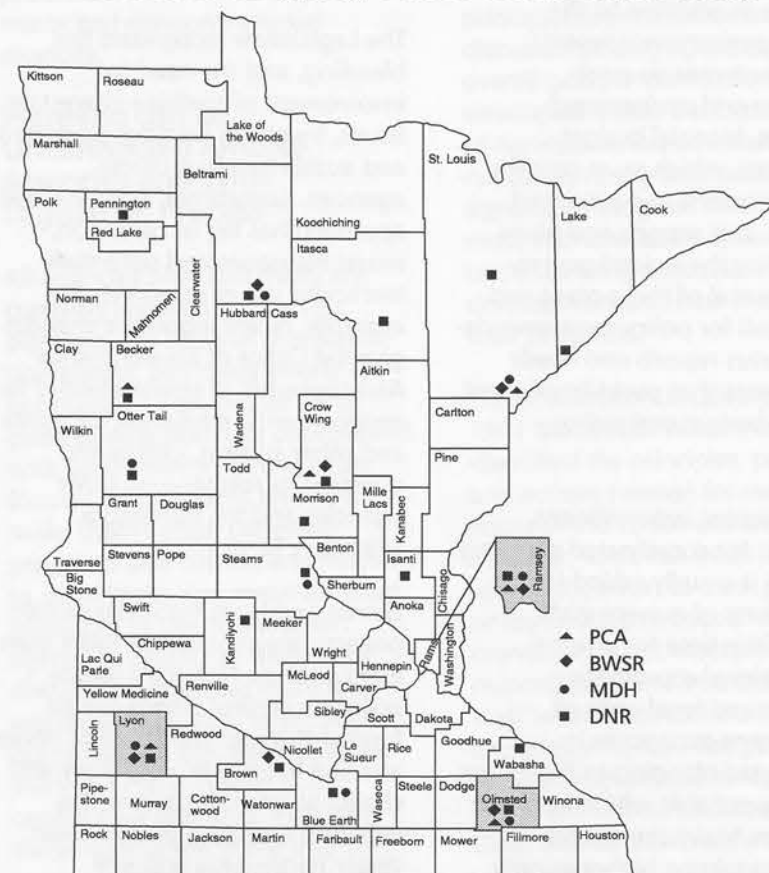
develop sites, but for most funding is scarce.

While the Department of Agriculture's home page section on feedlots offers a good example of how information can be organized by issue instead of agency, local governments and others who know the Pollution Control Agency has primary responsibility for feedlots might not think to look to the department's page for information. Agencies have formed an interagency team to address Web site coordination and links.

Different data collection and management systems make access to and use of state information difficult. Water data collection efforts were designed to serve the needs of specific programs and clients, with little thought to how information might be used by or useful to other efforts. Data processing systems were funded through their respective programs, many of which were based on federal objectives and funds, for core program needs. Thus design and content are governed by program needs and funding sources. Broader purposes and the additional funds necessary to reach them are generally not considered.

Existing systems — both within and among agencies — are difficult to change. Efforts to develop and promote a common system for unique identification of wells, for example, began in the mid-1970s. Collaboration among state agencies over time led to a standard way to distinguish one well from another. This effort for well numbering avoided the situation which exists for streams where several approaches were developed independently. Two stream numbering systems are still in use.

Locations of Agency Offices Show Little Overlap



Source: Data provided by individual state agencies. See map on page 12 for county names.

The Legislative Commission on Minnesota Resources requires data compatibility for all projects receiving its funds, but these standards are not consistently enforced. Systems funded from other sources may have been required to meet other standards. State law now requires all systems to be compatible with the Land Management Information Center's standards. However, many older systems will need considerable investments to comply and standards have not yet been developed for all types of data.

Past and current efforts to coordinate and integrate information include the Ground Water Clearinghouse, the Integrated Ground Water Information System and the Pollution Control Agency's project DELTA. While early discussions in the 1980s called for having all data in one place, the different formats and varying quality-control procedures made this level of integration impossible. For example, data used for litigation is held to higher standards of quality control than that used for assessments and trends. The Ground Water Clearinghouse is currently being designed to take advantage of the Internet. Instead of housing data on one system, the clearinghouse will smoothly deliver data from multiple sites to the user's computer.

Even efforts to link systems within agencies are difficult. New systems, such as the PCA's project DELTA, designed to link all permit and enforcement data within the agency, are developed using the latest hardware and software, making ties with older systems difficult. These older systems must be reconstructed to be fully compatible with new ones. In

addition, both DELTA and other intra-agency tracking systems, such as the Department of Agriculture's ADAMS, were not designed for links to or uses by other agencies.

These discreet systems make access to and use of information about specific parts of the state difficult. Callers looking for information on the quality, supply and stressors of water resources in a given area must contact many programs in several agencies to determine what is available and how well it matches their needs. When the incidence of brain tumors in a Minnesota town came under question, the Department of Health, the Pollution Control Agency and the affected county had to hire a student worker to pull the necessary information together to assess the situation.

Many data systems are not automated. In 1993, when the Department of Natural Resources experimented with the idea of putting all available water-related data on a particular lake into a "lakeshore owner's report," they found that the lack of computerization of many records and the lack of standardization among governmental data systems made preparation impractical. The DNR was unable to provide this information to the public on a wider basis.

Decision-Making Still can be Cumbersome

Despite efforts of some agencies, many decisions still are made in central offices. The need for central office staff to come to meetings or visit project sites can cause delays, particularly in those parts of the state that are four or more hours from St. Paul.

Local governments report difficulties getting timely decisions from the state. Problems include conflicts between central and regional office positions, too many divisions and agencies involved and too much reliance on consensus as a decision-making tool. They report lack of clarity as to which agency or division within an agency has the final say on the decisions.

Sometimes the wrong people are at the table. Both in meetings with local units and committees of state agency staff, participants are at times not the people with authority nor are they given the authority to make decisions for their respective agencies.

Lack of Resources can Hamper Local Efforts

While many programs are best implemented at the level local, having the necessary resources can be a problem. Lower pay, lower benefits and lack of job security can make employee retention difficult. Some soil and water conservation districts report high turnover, as staff leave for the security and better pay and benefits of county employment once they are trained. Some local governments believe the support offered by the state for local water planning, feedlots, wetlands and other efforts is not sufficient for the tasks.

Some programs requiring local involvement demand highly experienced staff that can be difficult for all counties or districts to recruit, both due to costs and availability. One example is agricultural nutrient management, where experienced staff are not available for all counties or soil and water conservation districts. In addition, state agencies often lack

the resources to deal with the large number of local units. Joint efforts by the departments of Health and Agriculture, the Minnesota Extension Service and counties to test wells for nitrate levels can only reach 20 counties per year.

The state's community health services system solved some of these problems by combining into 50 Community Health Boards to serve the entire state. The system, created in 1976, combined hundreds of local boards of health under a shared mission statement between state and local public health agencies.

Lack of available technology also is a factor. Many local units of government lack the computers, modems, Internet connections and other resources to communicate efficiently and effectively with each other and the state. Even lengthy photo development services in more remote areas can increase the time it takes to get information to

decision-makers, a problem that could be cured with digital cameras and images sent by e-mail.

Special Purpose Districts are Difficult to Modify

Special purpose districts vary greatly in size, resources and level of effort. Some watershed districts have annual levies and aids in excess of \$500,000, while others have less than \$5,000 and some are inactive. Total annual revenues for many soil and water conservation districts are less than \$150,000, but some exceed \$500,000. In addition, soil and water conservation districts receive 50 percent of their revenues from counties, on average, and for some more than 70 percent. Most other district funding comes from the state.

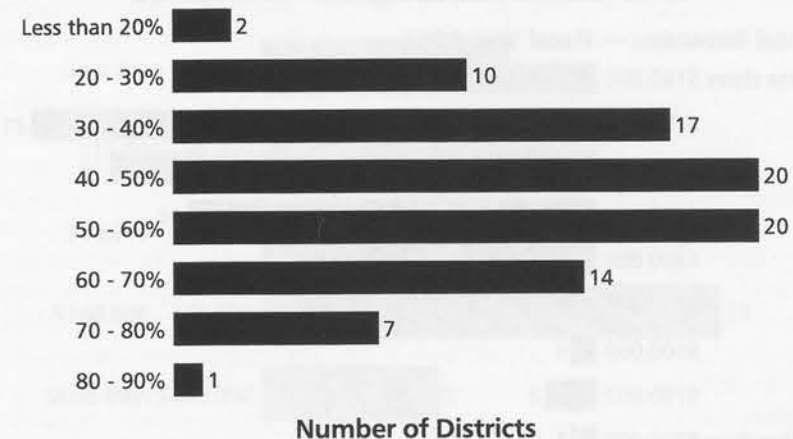
Districts are sharing staff and services with each other and counties to stretch resources, but future budget tightening and need

for specialists to deal with complex environmental issues might necessitate new governmental arrangements to get the job done. Possibilities include districts merging with neighboring districts and counties taking on functions of smaller districts. But the procedures for consolidating, terminating or changing the boundaries of soil and water conservation districts, watershed districts and watershed management organizations are cumbersome and there could be fiscal penalties.

The Board of Water and Soil Resources is charged with determining the feasibility of any proposals to consolidate or terminate soil and water conservation districts or watershed districts. It can divide and consolidate soil and water conservation districts without a hearing or referendum; however, the process for forming the divided or consolidated district board is as complicated as initial district establishment. Petitions and referenda are required for consolidations and terminations initiated by districts.

Soil and Water Conservation Districts Rely Heavily on County Funds

Percentage of Revenues — Fiscal Year 1995



Source: Board of Water and Soil Resources

Options

Changes are needed to Minnesota's water resource management systems to make them more streamlined, simplified and responsive to customers' needs and sustainable development principles. Findings of past studies highlighting the need for better coordination, focus and planning are as valid today as they were in the 1970s and 1980s. The past improvements and barriers noted in *Crosscurrents* can provide building blocks for options to address the Legislature's goals and objectives, as well as these past findings. *Crosscurrents'* 10 options are directly related to water resource management efforts, but, in many ways, apply broadly to the state's environmental and natural resource management systems.

1 Continue to Build on the Current Management Structure

Citizens attending the Environmental Quality Board sponsored meetings and contacted as part of *Crosscurrents* expressed little desire for major changes in the state's current water resources management systems. They believe that little could be accomplished by combining all efforts within one agency and are concerned that the checks and balances and opportunity for citizen input provided by the multiagency approach would be lost. Coordination within agencies already can be difficult and local units report having to deal with multiple sections and divisions that sometimes are unfamiliar with each other's programs. Combining and enlarging agencies could serve to exacerbate these problems. Financial costs of combining agencies and their regional structures would be high.

In addition, there is no clear evidence that other organizational structures would better achieve outcomes. Structures across the county vary — from a multiagency approach being fashioned by Michigan out of a previously more unified system to Wisconsin's more all encompassing Department of Natural Resources. However, states with more consolidated structures still tend to leave key parts of environmental protection out. Wisconsin's DNR, for example, does not include the pollution control programs of the state's agricultural department. Even more agencies must be involved to address sustainable development, including departments dealing with transportation and economic development. As more of the interconnections among issues are realized, coordination, unified state missions and visions become the only workable alternative to achieving outcomes.

To be successful, the current system must be better coordinated and unified through common missions and plans. The state could revitalize the Environmental Quality Board as

a forum for agencies to develop collective missions and coordinated plans for the state's water resource management. It could reexamine the purpose of the EQB and institute changes to improve the board's effectiveness. In addition, agencies must be given the flexibility to use funds for coordinated efforts and changing customer and program needs if outcomes are to be achieved.

2 Develop a Multi-Year Plan to Merge Regional Offices

Merged regional offices could improve interaction among agencies and better serve customers. Staff can gain knowledge of overall state programs and citizens can gain access to information and experts from all agencies in one spot. Agencies also can share clerical and other services, including vehicles, some personnel services and computer specialists, and infrastructure.

Wisconsin is endeavoring to decentralize its Department of Natural Resources to 35 service

centers over the next three years. Most people will be within a 30-minute drive to a center and most centers will be open selected evening and weekend hours. Three centers currently are operating as pilots. This scale of decentralization is costly in disruption of staff and morale, as well as dollars.

Minnesota could pursue a smaller number of joint regional offices, or service centers, and partner with local units of government to provide additional sites of access to state information and systems. It could develop a decentralization and collocation strategic plan for all agencies to be implemented over a five- to 10-year period. The plan could call for taking advantage of opportunities for collocation as they arise, as well as pilot centers. Rochester, Duluth, Marshall, Bemidji or Brainerd could be considered for pilot centers, since several agencies have regional or area offices in these cities. These efforts would require significant capital investments.

3 Simplify Procedures for Modifying Special Purpose Districts

Current procedures for modifying special purpose districts are cumbersome and as complicated as procedures for establishing them in the first place. The state could simplify these procedures, giving local units the tools to make the best arrangements for their situation and enabling them to better respond to changing needs.

Wisconsin eliminated all of its soil and water conservation districts and assigned their duties to counties and Nebraska consolidated more than 150 districts into 24 natural resource conservation districts. These "one size fits all" solutions do not fit Minnesota's diverse geography and variety in special district size and level of effort. While merging with counties might be advantageous for some smaller soil and water conservation districts or watershed districts, mergers with neighboring districts might make as much or more sense, particularly where experts are needed. Merged districts might be able to hire experts in several

fields, rather than having to hire one person to fit several roles.

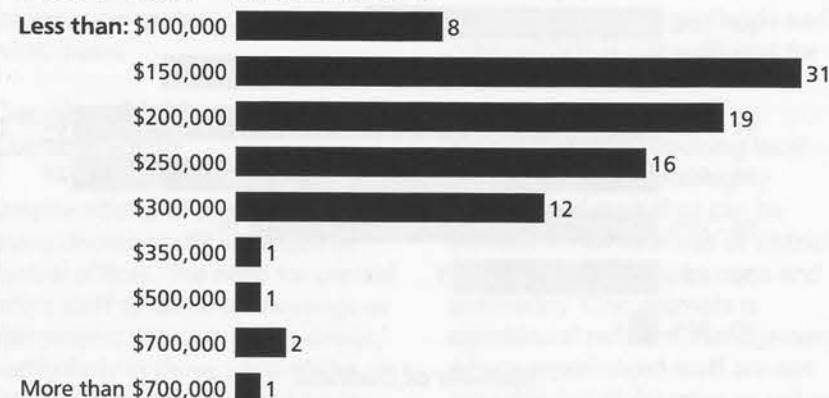
Modification to existing procedures could include allowing units to merge into larger combined resource districts, eliminating or reducing petition and referendum requirements and providing for interim merged boards. The Board of Water and Soil Resources could take a more proactive role in identifying opportunities for mergers. It could work with units to facilitate efforts, as the Board of Government Innovation and Cooperation does with general purpose governments. It could take the lead to help units explore approaches, identify costs and map out a transition plan to the new structure. Feasibility studies could be undertaken early in the process so citizens have a clear understanding of what the merger will entail.

The state could provide incentives, similar to those used to foster school district mergers. It could provide funding to help defray actual costs of mergers and keep state funding levels to the merged unit at levels no lower than previously provided to the separate units for an interim period. The state also could provide funding for feasibility studies, once units resolve to consider consolidation.

These changes would enable local governments to better respond to changing fiscal, water resource, technology and staffing needs. However, it could lead to a hodgepodge system of units and responsibilities across the state that would be hard for citizens and state agencies to negotiate. For example, one area might eliminate its soil and water conservation district and fold its functions into the county, while another area might have a four-county super soil

Soil and Water Conservation Districts Vary Greatly in Revenues

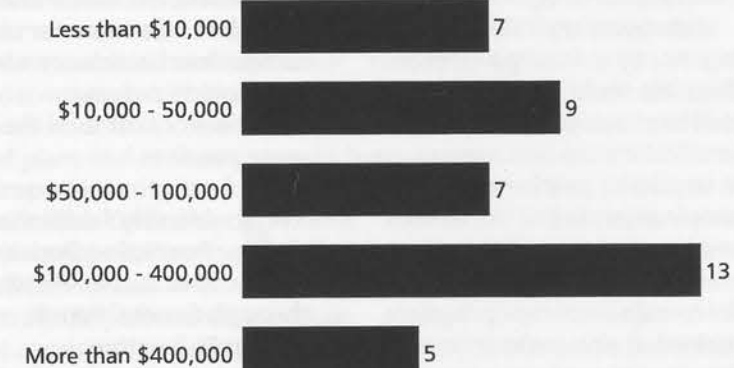
Total Revenues — Fiscal Year 1995



Number of Districts

Source: Board of Water and Soil Resources

Watershed Districts Vary from Small, Single Project Operations to Large Multi-Faceted Units



Number of Districts

Source: House Research Department, *Special Taxing Districts*, 11/93

Options
and water conservation district. Additionally, continued representation of affected parties in the new structures, such as those assessed for a watershed improvement project, would have to be ensured.

4 Build on Local Water Planning

County comprehensive local water plans can be the vehicle for defining roles and responsibilities at the state and local level, regardless of the adopted local level structure. Some plans, such as Benton County's, clearly identify the responsibilities of all local governments within the county. Others do not. Using the water plan to serve this function would allow citizens and state agencies to easily ascertain roles at the local level.

These plans also could form the basis for all environmental information in local sustainable development plans. They should contain information on all aspects of water resource needs in the county, including the water supply and wastewater treatment needs of cities. Water plans are used as a criterium for many grant and loan programs. They could become a more significant one as plans become more detailed. The state could explore other ties to these plans, including higher environmental review thresholds and streamlined permit and approval processes for projects in local water plans.

5 Enhance Coordination Among Agencies

While local water plans can be the vehicle for defining roles at the local level, no similar tool exists at the state level. The *Minnesota Water Plan*, produced every 10 years, can serve to define overall objectives for the state but not day-to-day roles.

Citizen and local units of government must know who is in charge and whom to contact. Efforts among agencies also can be better streamlined and integrated if responsibilities are clear.

The Legislature, or agencies collectively through the Environmental Quality Board, could designate lead agencies for various activities. For example, one agency could coordinate monitoring and another grant applications or feedlot issues. The lead agency would be responsible for bringing agencies together to address conflicts and facilitate decisions. Agencies could build upon their current effort to coordinate biennial budget requests for monitoring by developing joint goals and outcomes for their efforts. In addition, agencies could maintain electronic listings of memoranda of agreement and understanding with a summary of the issue, responsibilities assigned, date enacted and next review or expiration date.

The Environmental Quality Board could systematically review implementation of the *Minnesota Water Plan* and foster actions by appropriate agencies. It could be the forum for discussion of agency missions and joint development of overall goals and priorities for water resource management.

6 Integrate Financial Assistance Programs

State grant and loan programs providing money to local governments and individuals could be better integrated to streamline procedures for applicants and ensure that moneys are directed to priority problems. The state could review objectives of the various grant and loan programs on a biennial basis to reduce overlap and ensure that purposes remain distinct or programs are combined. It also could set overall priorities, stress top priority actions and use consistent cost-share amounts that apply to all programs.

One agency could be designated as the contact for all grant and loan programs and manage all applications. Deadlines and application forms could be standardized. The agency could screen preliminary applications and guide applicants to appropriate programs, similar to the process the Department of Trade and Economic Development uses for economic development grants and loans. A single committee composed of representatives from all pertinent agencies could review applicants and make funding recommendations. Financial assistance for water-related efforts funded through the Legislative Commission on Minnesota Resources, the Board of Government Innovation and Cooperation, the Office of Environmental Assistance and other state sources also could be reviewed by this committee.

In addition, certain grant programs could be combined. A committee is currently reviewing financial assistance programs for individual wastewater treatment systems to determine possible program consolidations. Similar efforts could be undertaken for other categories of assistance with overlapping program objectives or that fund the same practices.

7 Identify Additional Permitting Decisions that can be Handled through General Permit, Rule or Delegation

Efforts by the Pollution Control Agency and the Department of Natural Resource to simplify permitting could be continued

and expanded. All agencies could evaluate their permitting and other decision processes to identify elements that could be handled through general permits, rules and delegation to regional or field staff, local units of government and the general public. These approaches reduce workloads and encourage particular kinds of actions, since a project must conform with the conditions of the general permit or rule to proceed under this process. Projects can proceed more quickly and permittees know that projects will be approved if conditions are met.

The Department of Natural Resources' general permits for bridge and culvert repair and replacement could be expanded to include additional counties. Other DNR efforts that might lend themselves to general permits include erosion control projects conducted under soil and water conservation district developed plans, installation of dry hydrants for local fire protection efforts, and winter stream crossings on public forest lands. The Pollution Control Agency could pursue permitting certain feedlots by rule.

The approach could be to decentralize, delegate and issue through general permits and rules decisions that are routine and of minor environmental significance. Conformance with soil and water conservation district plans, shoreland ordinances and other local plans and ordinances could be an important criterion for judging significance. Critical decisions and projects not conforming to defined conditions would be made centrally. Any efforts must ensure that consistency of decisions is maintained across the state and resources are protected.

8 Seek Waivers from Federal Mandates
Strings Attached: the Price of Federal Mandates, prepared by Minnesota Planning in November 1995, identified many of the federal mandates affecting the state and recommended steps that could be taken to address them. It suggested that agencies review the purpose and intent of federal mandates regularly to determine if desired outcomes are being achieved. It also urged agencies and the executive branch to aggressively seek waivers from outdated and ineffective mandates and regulations.

Agencies could pursue these steps by identifying outdated and ineffective mandates and federal requirements that are inconsistent with Legislature's goals and outcomes. They could propose more efficient ways of implementing the mandates and requirements and outline actions needed to institute change. One requirement in need of change is the five-year maximum length the U.S. Environmental Protection Agency places on National Pollutant Discharge Elimination System permits.

9 Invest in Technology
Technology can be an important key to achieving many of the Legislature's outcomes. It can be particularly valuable for coordinating efforts, decentralizing service-delivery, improving access to information and expediting decisions. For regional offices or service centers to function properly, they must be connected to central offices and each other. Training and information that must be provided to all agency staff could be handled electronically. Files and databases could be readily accessible from any location.

Technology also could hook local government offices with the state so that citizens can stop at county, soil and water conservation district or watershed district offices to get information and permit applications. Citizens could even leave an e-mail question or have a "teleconversation" with regional or central office staff.

The state could develop a technology improvements plan. It could include a schedule to connect all offices and local units of government. It could identify key equipment needs to streamline permitting and decision-making, such as digital cameras and portable computers and modems for field use and teleconferencing to "transport" needed central offices staff to the field. The plan could build on such existing services as emergency on call, which includes all agencies, and the wetland hotline being developed by the Board of Water and Soil Resources.

Agencies could develop unified, interconnected Web sites so that citizens can seamlessly navigate through the state's water resource management system. These could contain permit applications, procedures, general permit conditions and resource data, to name only a few possibilities. Sites could be accessed at central and regional offices, local units of government and any other location with computers linked to the Internet.

As technology is developed, and databases expand, the state should ensure that systems among and within agencies and units of government are compatible. The state could adopt a standard set of geographical codes so that information can be easily used.

10 More Fully Integrate Sustainable Development into State Efforts

Minnesota has come a long way in establishing a policy planning framework for sustainable development, but several actions would help to more fully integrate this concept into the state's efforts. *Challenges for a Sustainable Minnesota*, prepared by the Environmental Quality Board in 1995, laid out a draft mission and principles. This draft could be revised, as necessary, and formally adopted so that it could be used by agencies in rethinking how their missions and programs support sustainable development. The EQB also could develop methods for evaluating how well policies and programs promote sustainable development.

Long-term planning and goal setting for sustainable development are inhibited by single-issue mandates and funding that restricts agencies' ability to collaborate across programs and agency lines. The Legislature could relax its programmatic approach to

funding and instead mandate specific outcomes, leaving executive branch agencies and local governments to jointly work out how best to achieve them.

Sustainable development also requires that environmental and economic issues be addressed together. However, the main state body responsible for coordinating sustainable development efforts within the executive branch — the Environmental Quality Board — is perceived as being concerned only with environmental issues. The Legislature could add the Department of Trade and Economic Development to the EQB to address this issue.

State Structures

State Agencies and Local Government

Actions of most state agencies can influence water resources, including building a highway, siting a new correctional facility or providing a loan for an industrial park. But responsibility for ensuring that water resources are protected and managed properly is vested in traditional resource agencies. In addition, more than 20 formal state-level boards, councils and task forces deal with water resource related issues.

Six State Agencies Play Key Roles in Water Protection and Management. Four of these agencies — the departments of Natural Resources, Health and Agriculture and the Pollution Control Agency — serve multifaceted roles. All four have responsibilities for regulation, technical assistance, financial assistance, monitoring and setting standards for activities and resources. But each has specific state-established responsibilities and others assigned through federal law.

The Department of Natural Resources administers water quantity and other resource management efforts, including programs affecting fish, wildlife, recreation, minerals and forestry. The Department of Health deals with health risk, wells, wellhead protection and drinking water and has responsibilities through the federal Safe Drinking Water Act. Pesticide and fertilizer regulations, as well as a selected number of other agricultural issues including sustainable agriculture and integrated pest management, reside with the Department of Agriculture. The department is responsible for implementing the

federal Insecticide, Fungicide and Rodenticide Act in Minnesota.

The Pollution Control Agency dominates the water quality management arena and is responsible for implementing the federal Clean Water Act in the state. Portions of the federal Resource Conservation and Recovery, the Comprehensive Environmental Response and Liability and Clean Air Acts, all administered in Minnesota by the PCA, also deal with water quality. The PCA is the only one of the four governed by a citizen board; however, all make use of formal and informal citizen, expert and stakeholder committees and task forces. The commissioners of these four cabinet level agencies are appointed by the governor.

Minnesota Planning provides coordination through the Environmental Quality Board and the Land Management Information Center. The center manages a statewide geographic information system and various databases and, in addition, develops standards for data compatibility. Coordination and water policy integration among state agencies as well as with local, regional and federal bodies is assigned to the EQB. The board is composed of the heads of the departments of Natural Resources, Agriculture, Health, Public Service and Transportation, the Office of Environmental Assistance, Minnesota Planning, the Pollution Control Agency and the Board of Water and Soil Resources, as well as five citizen members and a chair appointed by the governor. Water duties are assigned to its Water Resources Committee. Many interagency water reports and activities require EQB review or involvement.

The Board of Water and Soil Resources plays a lead role in working with counties, soil and water conservation districts, watershed districts, watershed management organizations and other local governments. It provides financial, technical and administrative assistance through such programs as Reinvest in Minnesota Reserve, Cost-Share and Local Water Management and coordinates activities among local, state and federal governments. Much of the funding for local government relating to water planning and management issues is distributed by the board. It is composed of governor-appointed representatives from soil and water conservation districts, watershed districts, watershed management organizations, counties and the general public, and includes nonvoting representatives from the departments of Natural Resources, Agriculture and Health, the Pollution Control Agency and the Minnesota Extension Service. Its executive director is appointed by the board.

Other Agencies are Involved in More Limited Activities and Areas. The Department of Trade and Economic Development manages the state's revolving loan fund and offers an array of financial assistance for water, wastewater and other environmental needs. The University of Minnesota's Minnesota Geological Survey conducts geological research, prepares maps and interprets Minnesota's geology. It works with the Department of Natural Resources to develop county geologic atlases and regional geologic and sensitivity analysis. The university's Minnesota Extension Service provides educational programs and materials to individuals and local

governments. The Office of Environmental Assistance provides technical and financial assistance for pollution prevention and managing solid and hazardous waste. In the Twin Cities area, the Metropolitan Council plans for water management and operates a regional wastewater treatment system.

Local Government Structures Tackle Water Issues

Local units of government complete the picture of Minnesota's water resource management system. Their responsibilities include implementing projects to solve problems and provide services, developing plans to deal with issues and prevent problems, and helping citizens understand the importance of their actions. All general purpose local units of government — counties, cities and towns — are involved in issues that directly or indirectly affect water resources. Zoning, land use decisions, local ordinances and permit actions all can affect water resources. In addition, there are cities and sewer and water authorities that operate water and wastewater facilities.

Counties outside the Twin Cities area have a special role through their authority to develop and implement county comprehensive water plans. These plans emphasize watershed management and bring together and coordinate many previously disparate resource management efforts at the local and state level. Every county outside the Twin Cities area has an approved plan. Within the Twin Cities area, counties are authorized to prepare county ground water plans.

Five types of special purpose districts have significant roles in water resource management — soil and water conservation districts, watershed districts, lake improvement districts, watershed management organizations and lake conservation districts. The first three are initiated by citizen or local government petition. Watershed management organizations were mandated by the Legislature, while lake conservation districts are formed by it. Functions and degree of autonomy of these special purpose local governments vary widely.

Soil and Water Conservation Districts Blanket the State. Begun in the late 1930s primarily in response to serious soil erosion problems, the purpose of soil and water conservation districts has expanded to conservation projects dealing with land, surface water and ground water. Many districts are involved in comprehensive water planning and managing elements of the state's Reinvest in Minnesota Reserve Program and Wetland Conservation Act. Districts provide technical and financial assistance to landowners for conservation practices and work closely with local U.S. Department of Agriculture Natural Resources Conservation Service staff, Minnesota Extension Service agents, counties and state agencies. Many counties rely on districts for input on various natural resource issues, including feedlot permitting.

There are 91 soil and water conservation districts in the state. All are organized along county lines, except for those in Beltrami, Marshall, Otter Tail, Polk and St. Louis counties, which split counties. Districts are governed by an elected board of five supervisors

and have no taxing authority. Most of their funding comes from counties and the state, but they also raise funds by charging for various services. The Board of Water and Soil Resource is the state administrative agency for soil and water conservation districts.

Watershed Districts Cover About One-Third of the State. Watershed districts, authorized by the Legislature in 1955, have broad authority to address a wide variety of water-related issues. Districts protect resources through planning, flood control and other projects. Most were formed to address specific issues. In the northwest, the primary concern of many watershed districts is flooding. Many districts in central Minnesota focus on water quality protection. Twin Cities area districts deal primarily with the effects of urban development on flooding and water quality.

Minnesota currently has 42 watershed districts. Watershed districts are primarily located in the northwest, central and southeast parts of the state. Districts follow watersheds rather than political boundaries and may include all or part of numerous counties, cities and townships. All watershed districts are in one or more soil and water conservation district.

Watershed districts are governed by a board of managers ranging in size from three to nine members. Board members are appointed by county boards with land in the watershed districts. Watershed districts also have citizen advisory committees appointed by the board of managers. Districts have taxing authority, eminent domain and other land use and regulatory authorities. The Board of Water

and Soil Resource is the state administrative agency for watershed districts.

Minnesota has 10 Lake Improvement Districts. Lake improvement districts are generally established to preserve the natural character of a particular lake and its shore land environment and can be formed by county boards, with approval of the Department of Natural Resources, or by the DNR commissioner. Wright County has three districts, while Chisago, Kanabec, Polk, Ramsey, St. Louis, Scott and Stearns counties each have one. Districts boundaries overlap with soil and water conservation districts and with watershed districts or watershed management organizations in Polk, Ramsey, Scott and Stearns counties. Lake improvement districts can deal with a lake's entire watershed, but they generally include only shoreline properties.

County boards delegate powers to lake improvement districts. These include constructing and operating a lake control structure, acquiring equipment to improve navigation, constructing and maintaining water and sewer systems, maintaining public facilities and regulating water surface use. The actual duties vary greatly. Lake improvement districts have no taxing authority of their own. The county board specifies the type of funding arrangement when the district is established. Districts generally pass their budget recommendations through the county board for approval and funding.

Lake improvement districts are governed by a board ranging in size from five to nine members. The directors must be property

owners in the district, and a majority of the directors must be residents of the district. The Department of Natural Resources is the state administrative agency for these districts.

Watershed Management Organizations are Charged with Water Planning in the Twin Cities Area. The Metropolitan Water Management Act of 1982 mandated watershed management organizations and development of watershed management plans for the minor watershed units wholly located in the seven-county metropolitan area. These organizations must protect and preserve natural water storage systems, identify means to prevent soil erosion and protect and improve water quality and establish consistency across governmental units for water management.

There are 46 watershed management organizations in the Twin Cities area. Thirty-five are joint-powers organizations run by a board appointed by the governing bodies of the member cities and towns. The other 11 are watershed districts, which can take on responsibilities for their respective watersheds. Watershed management organizations have limited land use powers and taxing authority, although many joint-power organizations have chosen not to use this authority. Soil and water conservation district and watershed management organization boundaries overlap.

Minnesota has Two Legislatively Created Lake Conservation Districts. The Lake Minnetonka Conservation District, established in 1967, and the White Bear Lake Conservation District, established in 1971, have a variety of regulatory powers over their

respective lakes. These include the power to regulate the types of boats and motors that can be used, regulate public facilities, limit the times and places of use, regulate boat speeds and conduct research. Both districts are contained entirely within watershed districts.

Lake conservation districts are composed of the municipalities that have property on the lake. Their boards are elected by the governing bodies of the member municipalities. These municipalities also fund districts, which do not have taxing authority. The lake conservation district's budget is proposed by its board and either modified or approved by the governing bodies of the municipalities. The governing bodies of each of the municipalities pay a share of the total budget, within defined statutory limits.

Inventory of Improvements

The state's agencies and local governments have taken numerous actions to improve water resource management over the past six years that relate directly to the outcomes outlined by the Legislature. This inventory highlights many of these actions within the four outcome areas. It is not intended to be exhaustive.

Streamline and Integrate State's Water Resource Management and Protection Efforts

Overall

- Governor established the Environmental Cluster, composed of heads of environmental agencies, to coordinate program and policy issues; includes departments of Agriculture, Health and Natural Resources, Pollution Control Agency, Board of Water and Soil Resources, Office of Environmental Assistance, Environmental Quality Board and Minnesota Planning.
- Environmental Quality Board established the Water Resources Committee to coordinate interagency water resource issues; includes departments of Agriculture, Health and Natural Resources, Pollution Control Agency, Board of Water and Soil Resources, Office of Environmental Assistance and Metropolitan Council.
- Red River Water Resources Council brings together federal agencies and Minnesota, North Dakota and Manitoba state and local governments and citizens.
- Minnesota River Joint Powers Board brings local governments together for protection and rehabilitation of Minnesota River.
- U.S. Geological Survey unites state, local and federal agencies for National Water Quality Assessments of Red River of the North and the Upper Mississippi River basins.
- Departments of Agriculture and Natural Resources locate field staff in same offices on a pilot basis.

Program Coordination

- Comprehensive State Ground Water Protection Program, Framework and State Assessment, a multiagency effort led by the Pollution Control Agency and coordinated through the Environmental Quality Board, identified existing authorities and programs, gaps and opportunities for improvement.
- Nonpoint Source Management Program, led by the Pollution Control Agency with federal, state, local and citizen input, laid out issues and strategies for the state.
- Minnesota Pesticide Management Plan, a multiagency effort led by the Department of Agriculture, outlined strategies to prevent, assess and respond to problems.
- Feedlot and Manure Management Advisory Committee involves all agencies and coordinated feedlot management legislative initiative defined roles and responsibilities.
- Well Head Protection Program, led by the Department of Health, pulls together the departments of Health and Agriculture and the Pollution Control Agency to protect public water supplies, work with local governments and share data, technical assistance and guidance documents.
- Effective and consistent implementation of the Minnesota Environmental Response and Liability Act facilitated by Department of Agriculture and Pollution Control Agency agreement.
- Water and Wastewater Operator's Certification Council and rule-making coordinated by Department of Health and Pollution Control Agency.
- Wetland Interagency Coordination Team coordinates activities of local, state and federal agencies and implements procedures to streamline permitting and strategies. Agencies streamlined delivery of services through joint application forms, wetland delineations and other means.
- Interagency Water Quality Standards Advisory Committee advises the Pollution Control Agency.
- Interagency Ground Water Coordination Group and Ground and Surface Water Monitoring Program pull together state, federal and various regional and local jurisdictions.
- Monitoring and Assessment Strategy, led by the Pollution Control Agency, strives to coordinate activities.
- PCA Ground Water Sampling Guidance: Development of Sampling Plans, Protocols, and Reports ensures accurate, reliable sampling results from state and local governments.

■ Red River of the North Total Maximum Daily Load Interagency Workgroup, led by the Pollution Control Agency, develops permit limits to protect river in low-flow conditions.

■ St. Louis River Action Plan pulls together Pollution Control Agency, Department of Natural Resources, U.S. Environmental Protection Agency and others for monitoring and remediation.

■ Great Lakes Initiative Advisory Committee develops water quality criteria for the basin and involves agencies throughout the basin.

■ Metro Interagency Team coordinated plan reviews for Local Water Planning.

■ Department of Natural Resources provides the Board of Water and Soil Resources with hydrologic modeling assistance in preparing watershed management organization plans.

■ County Geologic Atlas Program encourages cooperation among Minnesota Geological Survey, Department of Natural Resources and counties.

■ Consolidated system for collecting fees and taxes from businesses that handle or generate hazardous materials and waste under development by Pollution Control Agency and Department of Revenue.

■ Individual Sewage Treatment System roles and responsibilities being defined by Department of Health and Pollution Control Agency.

■ Interagency team finalizing a lakes management guide.

■ Department of Health consolidated programs with small numbers of staff to share support services and reduce management.

■ Infectious waste program eliminated by the Department of Health in response to changes in federal rules and program need.

Compliance and Enforcement

■ Criminal Case Screening Committee for review of potential cases involves Pollution Control Agency, departments of Agriculture, Natural Resources and Transportation, and Attorney General.

■ Departments of Health and Natural Resources cooperate in developing law and regulating public water suppliers' water conservation plans.

■ Responses to private and municipal well contamination coordinated between Pollution Control Agency and Department of Health.

■ Waste pesticide collection conducted cooperatively by departments of Agriculture and Transportation, Minnesota Extension Service, Pollution Control Agency and local governments.

■ Hazardous waste enforcement, inspection, remediation and incident response coordinated among Pollution Control Agency and departments of Agriculture and Health, including incidents of potential contamination of groundwater caused by release of hazardous substances from improper handling.

■ Field citations for illegal disposal of waste jointly issued by Pollution Control Agency and Department of Natural Resources.

■ Inspection of wastewater treatment facilities serving mobile home parks, resorts and campgrounds coordinated between Pollution Control Agency and Department of Health.

■ Feedlot-related environmental violations jointly investigated and enforced by Pollution Control Agency and Department of Natural Resources through agreement.

■ Construction sites inspected for compliance with Storm Water Permit Program for Construction Activity by soil and water conservation districts under agreement with the Pollution Control Agency.

Financial Assistance

■ Board of Water and Soil Resources' Block Grant consolidated some grants from the board, the Pollution Control Agency and the Department of Natural Resources to local governments and grants administration.

■ State Revolving Fund expanded to provide loans for nonpoint source pollution abatement projects through Pollution Control Agency, Board of Water and Soil Resources and Department of Agriculture with administration of fund provided by the Department of Trade and Economic Development.

■ Clean Water Partnership and federal Clean Water Act grant applications reviewed by inter-agency team.

Inventory of Improvements

Partnerships with Local Governments, Citizens and Industry

- Hydrologic modeling and other services provided through partnerships between Department of Natural Resources and local water management organizations.
- Ground water monitoring cooperatives established among state agencies and local governments, including efforts in Wadena and Stearns counties and nine counties in southeast Minnesota.
- Agencies use soil and water conservation districts as clearing-houses for wetlands information.
- State Community Health Services Advisory Council advises commissioner of the Department of Health.
- Citizen volunteers provide lake gaging and precipitation monitoring information to the Department of Natural Resources.
- Citizen Lake Monitoring Program volunteers help the Pollution Control Agency collect information on lakes.
- Responsible parties expedite the cleanup of environmental contamination through the Pollution Control Agency's voluntary investigation and cleanup program.
- Great Lakes Sport Fish Advisory Council advises the Department of Health and others.

Tailor Water Resource Management and Protection Efforts to Customer's Needs

Brochures and Guides

- *Minnesota Surface Water Guide and Ground Water — A Directory of Minnesota's Programs and Resources*, prepared by the Pollution Control Agency with input from other agencies.
- Fact sheets on agency issues, programs, pollution prevention activities and regulations and environmental profiles of legislative districts prepared by the Pollution Control Agency.
- Brochures, fact sheets, newsletters for regulated parties and annual report card on the quality of drinking water supplies prepared by the Department of Health and interpretive manuals to accompany regulations are being developed.
- Department of Agriculture produces *Update* and reports on water quality.
- Agencies jointly developed a brochure on wetland regulations.

Outreach

- Department of Agriculture conducts clinics, which the department and other agencies use to distribute information.
- Department of Health provides materials at health fairs and county fairs and holds annual training and technical assistance schools and conferences on water policy.
- World Wide Web sites on the Internet are being created by all agencies.
- An electronic bulletin board service gives the public online access to Pollution Control Agency fact sheets, program guidance and lake resources.
- Pollution Control Agency strengthened regional operations and service delivery systems through its Regional Operations Division, formation of regional compliance units and placement of personnel covering public information, leaking underground storage tank cleanup, tank compliance and other efforts in regional offices.

Information Management

- Ground water information is managed and transferred to users through the Pollution Control Agency's Integrated Ground Water Information System, the Land Management Information Center's State Well Index, the Minnesota Geological Survey's County Well Index, and the Obwell Program.
- The Pollution Control Agency is developing DELTA, a comprehensive database for permitting actions. The agency's Master Entity System database provides location information on current and potential contaminant sources.
- County Geological Atlas preparation continues to improve the understanding of state water supplies.
- Department of Natural Resources prepared 1:1,000,000 watershed maps.
- Pollution Control Agency Water Quality Division and others developed geographical information systems.

Simplify Permitting and Other Decision-Making Processes

Delegate and Decentralize

- Bridge and culvert general permit authority offered to local governments by the Department of Natural Resources.
- Permitting and other decisions delegated to Department of Natural Resources' field staff.
- Most decisions delegated to Board of Water and Soil Resources' field officers.
- Feedlot program delegation offered to counties by the Pollution Control Agency.

Consolidate

- Statewide licensing of on-site treatment system professionals, including designers, installers, pumpers and inspectors, by the Pollution Control Agency streamlines process for contractors needing multicounty licensing.
- Interagency wetlands coordination committee developed joint permit application that is accepted and used by permitting agencies.
- Project XL, spearheaded by the Pollution Control Agency, consolidates permits and gives flexibility to permittees.
- Pesticide licensing functions consolidated in the Department of Agriculture's Agronomy and Plant Protective Service Division.

Simplify

- Metro Water Planning 509 Coordination Committee, with representatives from state agencies and the Metropolitan Council, jointly reviews local actions with respect to state standards.
- Legislation requires agencies and local governments to take action on permits within 60 days.
- General permits issues by the Pollution Control Agency for storm water and other activities allow applicants to start work 48 hours after filing.
- Operating procedures and check list define Department of Health needs in feedlot permitting for Pollution Control Agency permit applicants.
- The Permit Quality Action Team, a joint effort of the Pollution Control Agency and the U.S. Environmental Protection Agency, reviews and evaluates procedures.
- Pollution Control Agency policy guidance on impoundments helps applicants understand agency expectations and streamlines process.

Orient Efforts to Account for Overall Environment, Natural Resource and Human Needs

Sustainable Development

- Sustainable Development Initiative launched by the Environmental Quality Board.
- Interagency state plan for sustainable agriculture and integrated pest management implemented by the Department of Agriculture.

Resource-Based Efforts

■ Agro-eco regions based on natural resource variables defined by the University of Minnesota, the Department of Agriculture and an advisory team.

■ Fish community biocriteria used by the Pollution Control Agency and the Department of Natural Resources in Red River Valley ecoregion for national water quality assessment.

■ Pollution Control Agency uses basin management as main policy for phosphorous control.

■ Statistically based/random-site water quality monitoring program is underway in St. Croix basin, jointly by Pollution Control Agency, U.S. Environmental Protection Agency, and Department of Natural Resources.

■ Metropolitan Ground Water Model is helping the Pollution Control Agency to produce a computer-based model for better coordination of basin-wide protection efforts.

■ Pollution Control Agency implementing statistically based ground water monitoring statewide and ground water trends monitoring in developing areas.

■ Acceptable risk and land use standards are becoming basis for Pollution Control Agency cleanup levels.

■ Use of ground water for once-through-cooling phased out and prohibited for lake augmentation by the Department of Natural Resources.

Polluter Pays

■ Pesticide and fertilizer regulatory, service and educational programs of the Department of Agriculture supported by fees and surcharges.

■ Waste pesticide and pesticide container recycling programs of the Department of Agriculture funded by fees through registration and licensing of pesticide products and pesticide users.

■ Agricultural Chemical Response and Reimbursement Account funded by surcharges on pesticides and fertilizers.

■ Cleanup costs of superfund sites involving agricultural chemicals recovered from responsible parties.

■ Cleanup of contaminated landfills funded through user fees.

■ Storm water permit program funded completely by permit fee revenues.

■ Users of ground water for once-through-cooling pay high Department of Natural Resources' fees.

■ Violators pay double the permit fee to the Department of Natural Resources and violations require restoration.



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Land Management Information Center

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296-1211
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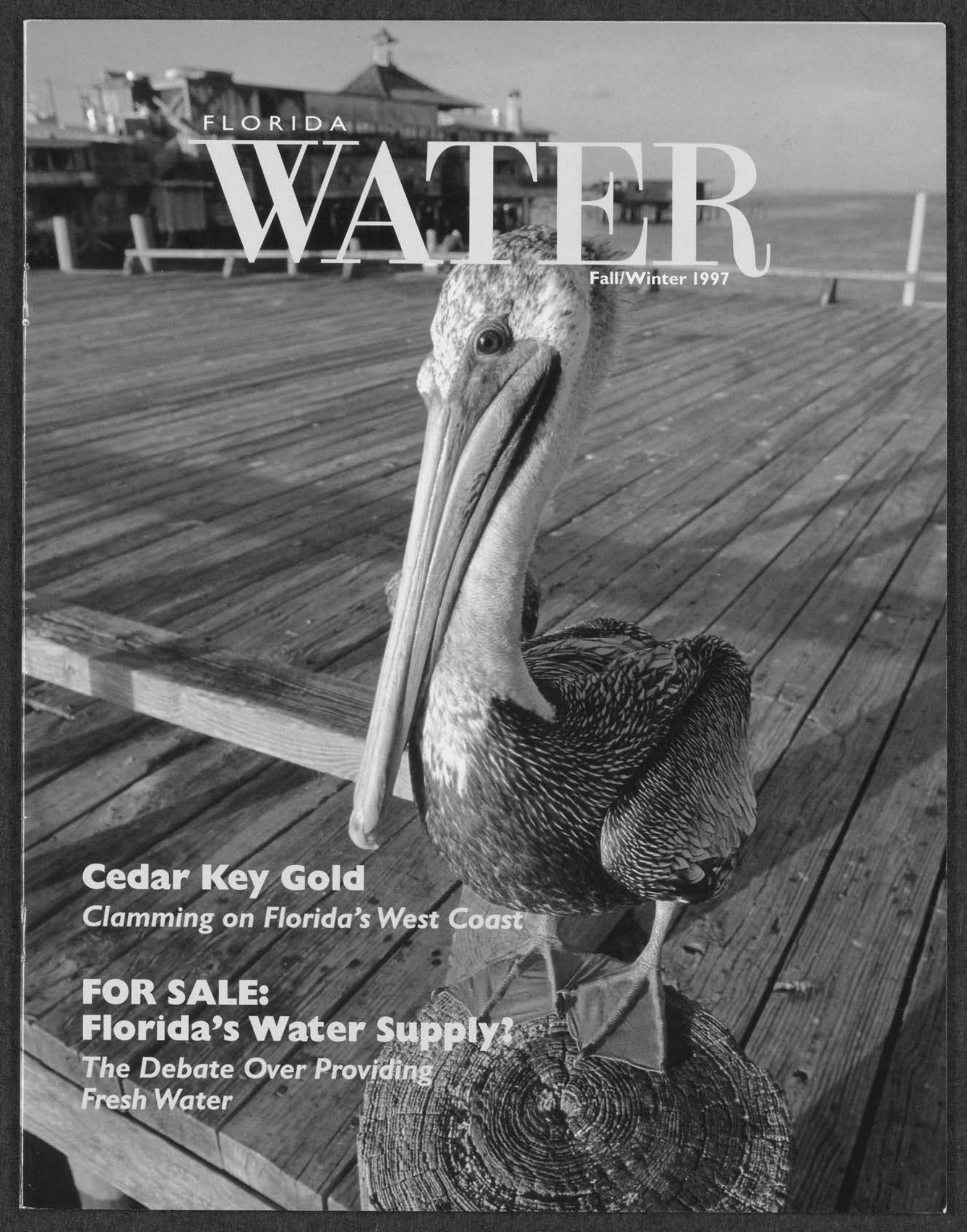
296-2557

Environmental Quality Board

296-2603

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FLORIDA

WATER

Fall/Winter 1997

Cedar Key Gold
Clamming on Florida's West Coast

FOR SALE:
Florida's Water Supply?

*The Debate Over Providing
Fresh Water*



Water
management district
lands are a ...



bird lover's
paradise.



Volume 6, Number 2 • Fall/Winter 1997

Florida Water is published to generate awareness of the need to conserve and protect state water resources and dependent natural ecosystems.

Florida Water is the biannual magazine of Florida's five water management districts: Northwest Florida Water Management District (NFWMD), St. Johns River Water Management District (SJRWMD), South Florida Water Management District (SFWMD), Southwest Florida Water Management District (SWFWMD), and the Suwannee River Water Management District (SRWMD).

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FLORIDA WATER

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On the Cover:

Photographer Mat O'Malley captures the aura of Cedar Key. His specialty is wildlife and landscape photography and he had no trouble getting this Cedar Key native to pose. O'Malley is also a communication specialist; during an interview, he was successful in getting Mr. Pelican to admit that his beak can hold more than his belly can.

Back Cover:

A clam harvester drops his "gold" at the market for sorting. Photo by Mat O'Malley.

IT'S BEING COMPARED TO
THE CALIFORNIA GOLD RUSH,
AND FOLKS ALONG FLORIDA'S GULF COAST
ARE LINING UP TO STAKE THEIR CLAIMS.

NO, MAKE THAT CLAMS.

Cedar Key Gold

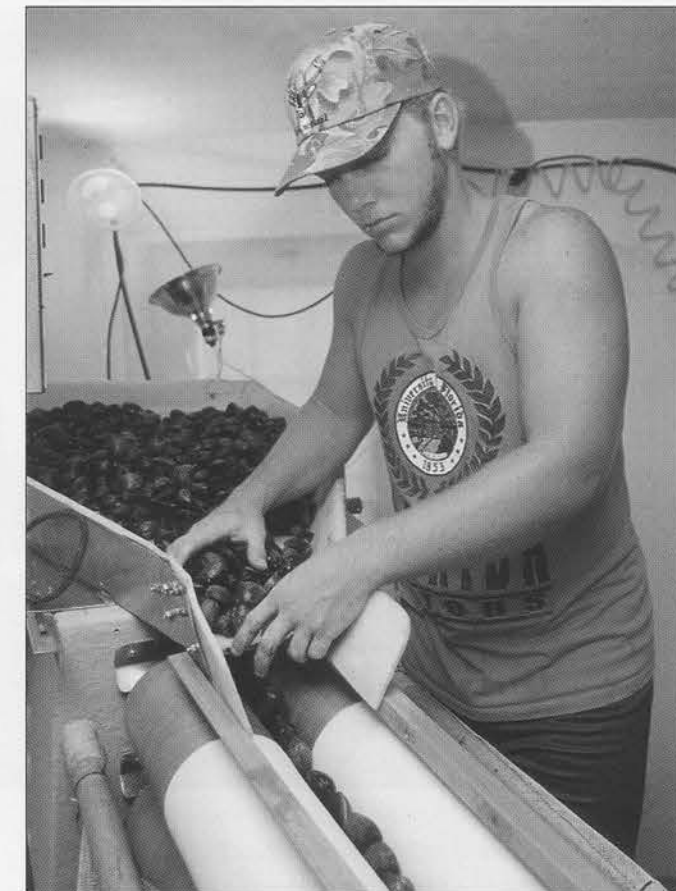
By CINDY JOHNSON

Having learned to weather many boom-'n-bust times, Cedar Key residents are betting on a new "gold mine" to help them recover from an economic decline brought on by the state's gill net ban in 1995. The hot new prospect is clam farming, and it seems nearly everyone in this coastal village is catching the fever.

From casual conversations in local eateries to lessons in the classrooms, clamming is becoming the talk of the town. Tourism remains the anchor of Cedar Key's economy, to be sure. But aquaculture is gaining ground, as Florida's west coast is becoming a major production area for farm-raised clams. Yet not long ago, neither aquaculture nor clam farms even existed in the region.

In just two years, eligible participants from four Big Bend counties completed an 11-month, federally funded training course called Project WAVE (Withlacoochee Aquaculture Vocational Education), in which instructors from the University of Florida's (UF) Cooperative Extension Service and the Harbor Branch Oceanographic Institution taught displaced net fishers how to initiate, manage and derive income from clam farming. For many of these modern-day pioneers, making the transition from commercial fishing to clam farming was not easy, but it may prove to be a sound business decision.

According to Leslie Sturmer, UF aquaculture extension agent, 69 WAVE graduates each



Kevin Beckham processes and bags clams harvested for his family's lease.

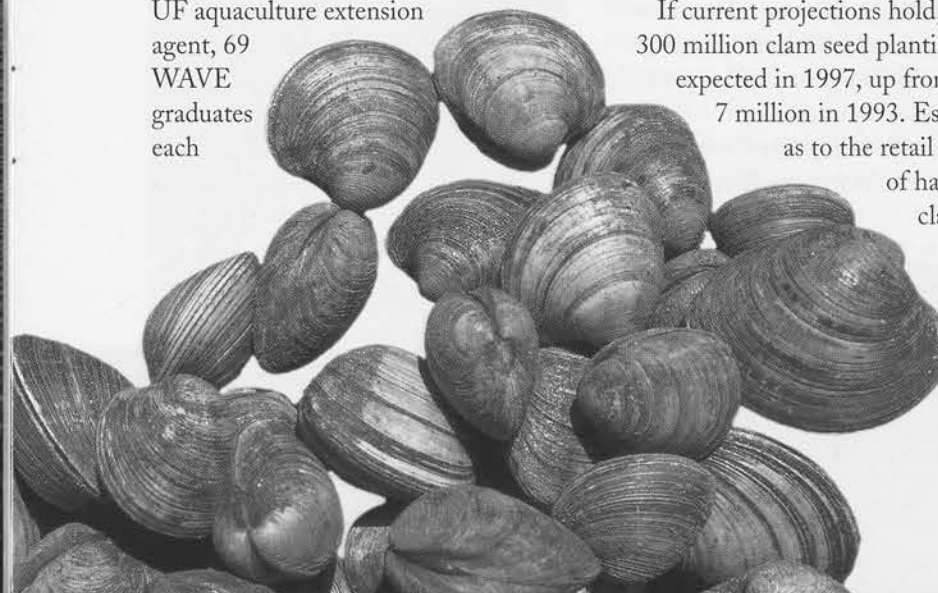
received a two-acre aquacultural lease on state-owned submerged lands in the Gulf, providing an opportunity to start a small business with an expected annual profit potential of \$30,000 to \$35,000 after two to three years of experience. In addition, 76 participants were trained in land-based nursery techniques, allowing them to operate seed production facilities. Currently there are over 35 such facilities in Cedar Key.

If current projections hold, over 300 million clam seed plantings are expected in 1997, up from 7 million in 1993. Estimates as to the retail value of hard clams for

1997 and beyond vary, but if the latest figures from the Florida Agriculture Statistics Service are any indication of market trends, Florida's clam farmers have reason to rejoice. The value of sales for hard clams jumped from less than a half-million dollars in 1987 to \$5.4 million in 1995.

The promise of prosperity has created a new excitement and common bond among the many individuals and personalities that make up this small, closely knit community. Even those who do not farm clams can reap profits indirectly by processing and distributing them. Or by manufacturing mesh nursery and growout bags. Or by serving clam cuisine at local restaurants. (Let's see, there's clam chowder...clam gumbo...fried clams... steamed clams...cajun clams... clam kabobs...)

Even businesses that cater to tourists have long recognized that that's good for the clam industry —

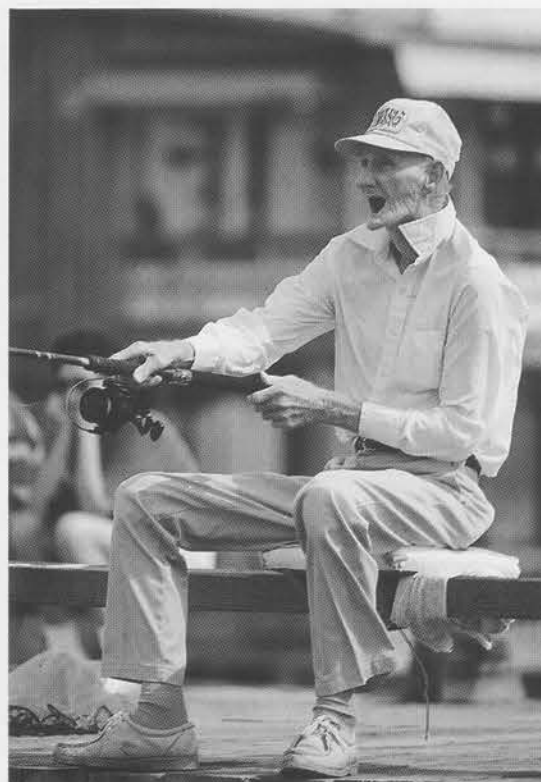


clean water — is good for them, too. So, with a renewed sense of purpose and cohesion, the people of Cedar Key are working together to promote their two key livelihoods — aquaculture and tourism — and above all, to protect the coastal waters so critical to the success of these ventures.

Haunted by memories of the economic disaster that befell the neighboring town of Suwannee in 1991 when pollution — caused in part by inadequate, malfunctioning septic tanks — forced the closure of Suwannee Sound estuary to shellfish harvesting, folks seem determined to prevent a similar catastrophe in Cedar Key.

That fiasco crippled the Town of Suwannee's annual \$1-million shellfish industry, which still has not rebounded. Residents there are hopeful, however, that the gulf waters will once again be declared suitable for harvesting, now that the town's new wastewater treatment system is up and running. The \$9.7-million system will eliminate 850 septic tanks, many of which did not meet state standards. The project was funded with state and federal grants and loans, and additional assistance from the Suwannee River Water Management District.

At Cedar Key's first annual Water Quality Conference co-hosted this summer by the city and local Chamber of Commerce, citizens formed several advisory groups to work closely with state and local agencies and elected



officials in the planning and implementation of a wide range of water quality activities. These include stormwater and wastewater treatment, and environmental education. High on everyone's agenda is the elimination of the two main culprits of nonpoint pollution in the Cedar Key area: stormwater runoff and septic tanks.

"Our goal is to get everyone, within Cedar Key proper, on a central wastewater system," explains David Still, director of resource management at the Suwannee River Water Management District. "For obvious water quality purposes, we also don't want to see any new development go up in Cedar Key unless they are on (sewer) line," he adds.

Through its Quality Communities program, the Suwannee River district will pay for a preliminary scope of services

for a proposed study on the expansion of Cedar Key's sewer system.

The Suwannee River district also is looking for other ways to help Cedar Key meet the goals and objectives of its comprehensive plan, adopted in 1990. It is providing technical assistance to the City of Cedar Key for a \$500,000 Community Development Block Grant, administered by the Department of Community Affairs, for stormwater quality management.

The Suwannee River district also plans to use DOT (Department of Transportation) mitigation money to repair or replace wetlands and estuaries in Cedar Key that have been damaged or lost due to stormwater influences, and to provide a master stormwater plan for pollution abatement from stormwater.

"By protecting these water resources, we're also helping to preserve the heritage and character of one of Florida's most scenic and historic places," notes Suwannee River District Executive Director Jerry Scarborough.

Historic, indeed. More than 100 buildings and archeological sites, many dating back to the early 1800s, are located in and around Cedar Key. Thirty-six of these sites may be viewed on a self-guided walking tour prepared by the Cedar Key Historical Society.

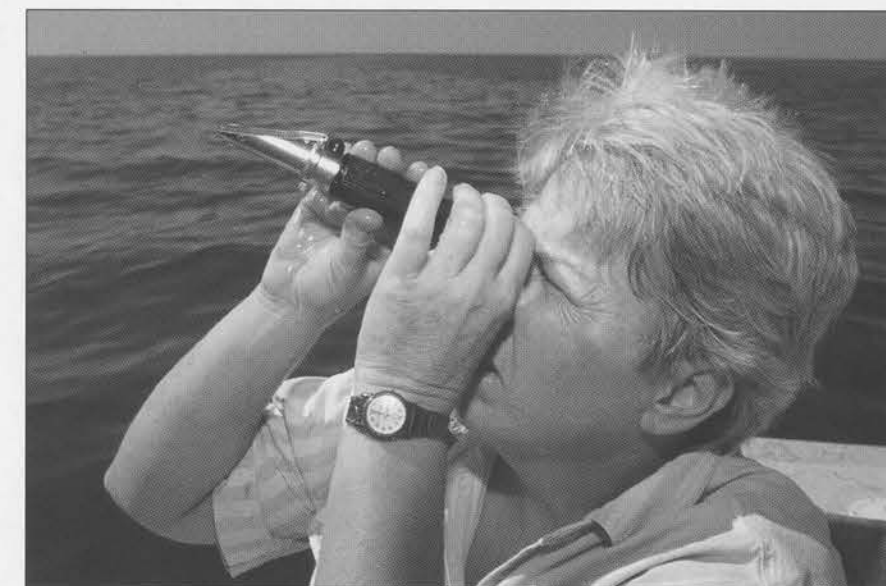
The citizens of Cedar Key face some tough challenges and choices in the days ahead — choices about the environment and the economy. Choices about preserving the town's history and heritage. Choices that for many individuals, as well as for the community, could make the difference between boom or bust. 

Making Sure the Coast is Clear

Once a month, Harriett Smith hops aboard a homemade skiff — a recent birthday gift from friends — and heads for the open waters of the Gulf of Mexico at Cedar Key.

Opening the throttle, she skillfully navigates through the watery "drive-ways" that guide boat traffic between clam lease boundary markers, until she reaches the number four channel. There she drops anchor and, leaning over the side of the boat, plunges two empty gallon jugs into the water until they are full. Setting the jugs aside, she next dips a round disk attached to a cord into the water to measure the water's depth and clarity. Finally, using a scope resembling a miniature spyglass, Smith tests a water sample for salinity.

After carefully recording the measurements on a clipboard, she hoists anchor and sets off for the next of several more sites where the process is repeated. When finished, Smith cruises back to the dock, slowing occasionally to refill her motor's small gas tank or to retrieve trash floating on the water.



After unloading her samples and equipment, Smith returns home to her makeshift lab, where she prepares the water samples for transport to the University of Florida's (UF) Fisheries and Aquatic Sciences lab. There they will be analyzed for total nitrogen, total phosphorous and chlorophyll.

All up and down central Florida's gulf coast, others like Smith are doing the same thing on the Suwannee,

Waccasassa, Steinhatchee, Weekiwachee, Homosassa, Crystal, Withlacoochee and Chassahowitzka rivers, and around the town of Horseshoe Beach. They are part of a network of trained citizen volunteers who perform sampling for the UF's "Project Coast," a cooperative water quality monitoring program of the Suwannee River and Southwest Florida water management districts.

The project is paid for with funds from the state's SWIM (Surface Water Improvement and Management) program and appropriations from

Southwest district's Withlacoochee Basin Board.

A long-time Cedar Key resident and clam grower/processor, Smith takes pollution of these coastal waters personally. Her livelihood, after all, depends on the health of the natural

The Big Bend region has some of the most pristine and extensive areas of salt marsh and seagrass habitat in Florida

system where clams and other shellfish are harvested. Project Coast, she says, offers her the chance to make a special contribution toward helping to protect the water resources.

"The economy of the Big Bend region is geared almost exclusively to the productivity of its coastal waters and, by extension, the water quality," agrees Dr. Tom Frazer, Project Coast coordinator.

Aquaculture of hard clams, a newly emerging and lucrative industry for Cedar Key and other small gulf

Cedar Key Field Station

Until recently, the idea of taking dozens of schoolchildren on a field trip to Cedar Key was enough to send teachers into a tailspin. This coastal community did not have a public facility large enough to accommodate such an active and energetic group. Now it does.

The Department of Environmental Protection's (DEP) sparkling new Cedar Key Field Station is every educator's dream. Equipped with a spacious classroom, wet and dry labs, and an interactive multimedia

educational program called EcoVentures, the center offers new hands-on opportunities to study Florida's marine life.

The \$1.7-million, 10,000 square-foot facility officially opened with a dedication ceremony in September 1997. Managed by the Florida Marine Research Institute, it serves primarily as a scientific and technical field lab for DEP's Division of Marine Resources.

Here, scientists collect recreational and commercial fishes in order to monitor population trends, define essential habitats, and evaluate the health of the environment.

Other partner agencies sharing space at the field station are the Office of Fisheries Management and Assistance Services, DEP's Florida Marine Patrol, University of Florida's Institute of Food and Agricultural Sciences Extension Service, and the Bureau of Resource Regulation and Development's Shellfish Environmental Assessment program, which monitors shellfish waters and shellfish health and safety.

George Shipp, DEP's regional aquatic education coordinator, said teachers may arrange to use the classroom and lab equipment after they have attended one of several workshops scheduled throughout the year.

Vicki Crisp, director of the Northeast Florida Educational Consortium is coordinating the Cedar Key Field Station training.

Anyone wishing to register for a workshop can reach Vicki Crisp at (904) 329-3800.



coast towns, is becoming one of the fastest growing industries in the state. Other important commercial fisheries include blue and stone crab, grouper, oyster and shrimp.

"The Big Bend region has some of the most pristine and extensive areas of salt marsh and seagrass habitat in Florida, and is regarded as a critical nursery for exploited fishery resources," Frazer explains.

Recreational fishes include such inshore species as spotted sea trout, red drum, flounder and sheepshead. Offshore species include grouper and snapper, and scallops are also abundant in nearshore seagrass beds.

Frazer voices some concern for the health of the system, however, due to increasing nitrate concentrations detected in the Suwannee and other spring-fed river systems within the Big Bend.

"It appears that much of the nitrate is reaching the estuaries, where increased nutrient input can lead to increased production of phytoplankton, altered habitat, and changes in trophic structure," he explains.

Data collected from Project Coast will provide the baseline information that will aid in detecting such changes should they occur. Frazer plans to submit a final project report to the water management districts in the summer of 1998. 

Note: Harriet Smith is author of The Naturalist's Guide to Cedar Key, Florida (Cedar Key, FL: H. Smith, 1987)

CLAMS

Chest of Learning Activities for Marine Science



Kids and teachers are learning more about the marine environment through CLAMS (Chest of Learning Activities for Marine Science), a project initiated by the Suwannee River and St. Johns River water management districts in cooperation with the Northeast Florida Educational Consortium.

Funded through a grant from the Florida Advisory Council on Environmental Education, the project gave 35 North Florida elementary school teachers an opportunity to attend one- and two-day training sessions on the Gulf and Atlantic coasts.

Topics included marine awareness, aquatic and marine ecosystems, historical and cultural aspects, human impacts, economics of the marine environment, and influence of

watersheds and inland communities on marine systems.

Teachers received extensive hands-on field experiences, and were sent back to their classrooms with a teacher's guide and large "sea chest" packed with activities, books and field equipment. Each teacher is now expected to plan and implement



CLAMS action projects in their schools and communities, while exploring the wonders of the marine environment with their students.

During one recent action project, teachers from Inverness brought 150 students to Cedar Key to see first-hand how clams are raised. The adventure included a trip to the waterfront, where students learned how to "plant" young clams in mesh bags for eventual harvest. Next was a visit to a clam raceway or nursery (left), where they discovered how tiny clam seeds are grown into shells large enough to plant. The students also received a lesson in economics by interviewing local residents about how their livelihoods are linked to the coastal resources.

The Original Cedar Key

From a vantage point on Cedar Key's downtown fishing pier, Atsena Otie Key looks like an undiscovered paradise. Thick with trees and devoid of any apparent human activity, this quiet place offers no clue that it once was a busy hub for trade and commerce up and down the Suwannee River.

In the 1800s, Atsena Otie (Creek Indian for "Cedar Island") served as army headquarters and supply depot for General Zachary Taylor. It later grew into a prosperous city complete with a school, hospital, post office, and several sawmills, one of which belonged to the Eberhard Faber cedar pencil manufacturer. Atsena Otie was, in fact, the original site of Cedar Key.

But as with most barrier islands, Nature ultimately determined the fate of Atsena Otie. A series of devastating hurricanes — one of the worst occurring in 1896 — sent residents fleeing. The island has been uninhabited now for decades, and its recent acquisition by the Suwannee River Water Management District guarantees its protection from future

private development.

Today, the only remnant of its former life is a historic cemetery. There are no "comfort stations" or other facilities for visitors, who can get there only by boat. Mosquitos are plentiful within the interior of the island, especially during the summer months.

The surrounding gulf waters are home to the Gulf sturgeon, Atlantic turtle, green turtle, Kemp's Ridley turtle, dolphin and West Indian Manatee. Mammals are limited on the island with grey squirrel and raccoon the most obvious.

Bird life is much more abundant, from large waders such as white ibis, various egrets, and heron species, to several tern, gull, and shorebird species. Brown pelicans and osprey are always visible, while bald eagles can occasionally be seen fishing nearby and peregrine falcons move through during spring and fall migrations.

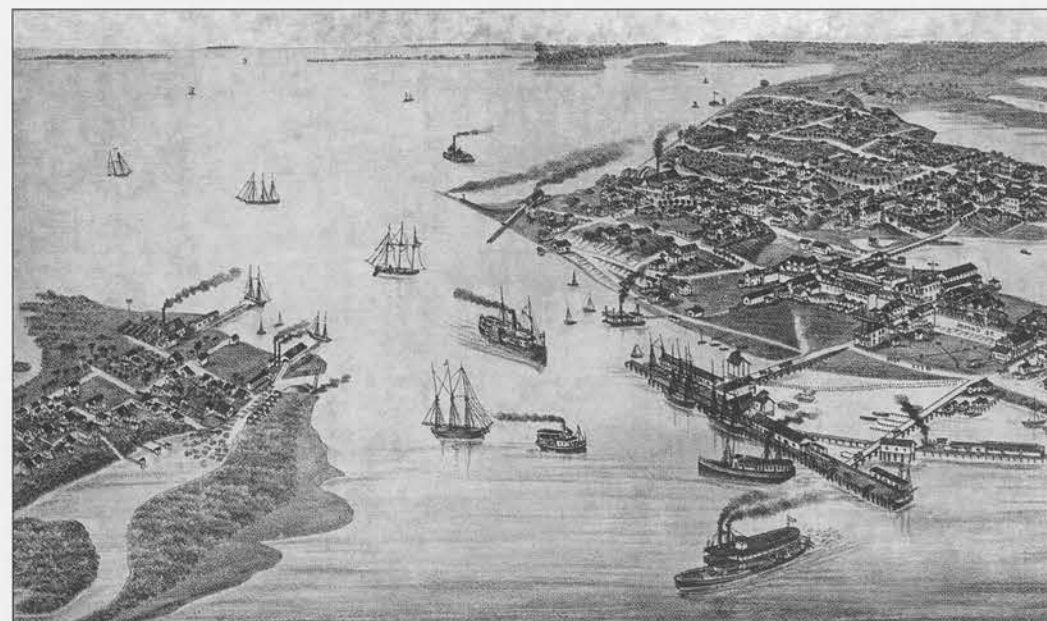
Fringing the island are salt marshes — smooth cordgrass, black rush, sea lavender, marsh hay cordgrass, seashore saltgrass, saltwort and

glasswort. Some black mangroves are interspersed with the marsh, but this is the northern limit of this tropical tree. Also flourishing in the higher sand ridges are sand live oak, red cedar, red bay, cabbage palm, palmetto, wax myrtle, yaupon holly, beautyberry, and coontie.

In what Lt. Governor Buddy MacKay called "a great success story," the Suwannee River district rescued this 60-acre island from residential development when it purchased it from private owners through the state's Save Our Rivers program in March 1997.

While under private ownership, plans were underway to convert the property into a residential community of 57 half-acre home sites. Cedar Key residents and other concerned citizens fiercely opposed the proposed development, fearing its septic tanks and stormwater runoff would harm both the coastal environment and the local shellfish industry. Because of the historical as well as environmental significance of the island, several efforts were made to place the island under public ownership.

In 1993 Atsena Otie was placed on the state's CARL (Conservation and Recreation Lands) priority



This bird's eye view illustration of Atsena Otie (left foreground) and the site of present-day Cedar Key shows just how much things have changed.

Keeping Busy at Cedar Key

Fresh seafood, arts and crafts galleries, breathtaking sunsets and historical sites await visitors to this charming coastal village. Discover Cedar Key's rich past and present by visiting:

CEDAR KEY STATE MUSEUM

Follow signs north from State Rd. 24.

- Managed by Florida Department of Environmental Protection, Division of Parks and Recreation.
- Historical dioramas, household items and a shell collection.
- Open Thursday through Monday, 9 a.m. to 5 p.m.
- Small admission fee.
- Call 352-543-5350 for information.

CEDAR KEY HISTORICAL MUSEUM

State Rd. 24 & 2nd St.

- Photographs, Indian artifacts, minerals, woodworking tools. Books, guides for sale.
- Winter hours: 11 a.m. to 5 p.m. daily.
- Admission: \$1/adults, 50 cents/children.
- Call 352-543-5549 for information.

SHELL MOUND PARK

Follow signs off Hwy 347 on CR 326 just outside Cedar Key.

- Prehistoric Indian mound and nature trail.
- Camping, boat ramp, picnicking.
- Call 352-543-6153 for information.

WACCASASSA BAY STATE PRESERVE

31,000-acre preserve between Cedar Key and Yankeetown.

- Offers limited access to canoeists and campers for freshwater and saltwater fishing, photography and historic site exploration.
- Call 352-543-5567 for information.

CEDAR KEYS NATIONAL WILDLIFE REFUGE

- 1850s Lighthouse, seabird rookery on this group of islands in the Gulf of Mexico.
- Boats are available at Cedar Key.
- Call 352-493-0238 for information.

LOWER SUWANNEE NATIONAL WILDLIFE REFUGE

- 50,000-acre refuge between Cedar Key and Chiefland.
- Nature driving and hiking trails for wildlife observation and photography, boardwalk access to famous Suwannee River.
- Call 352-493-0238 for information.

MANATEE SPRINGS STATE PARK

State Rd. 320 west of Chiefland.

- First magnitude spring.
- Camping, diving, swimming, picnicking, concessions, boat ramp, canoe rentals, elevated boardwalk through primordial cypress wetlands to the Suwannee River.
- River boat tours available, 9 miles of hiking/biking trails.
- Call 352-493-6072 for information.

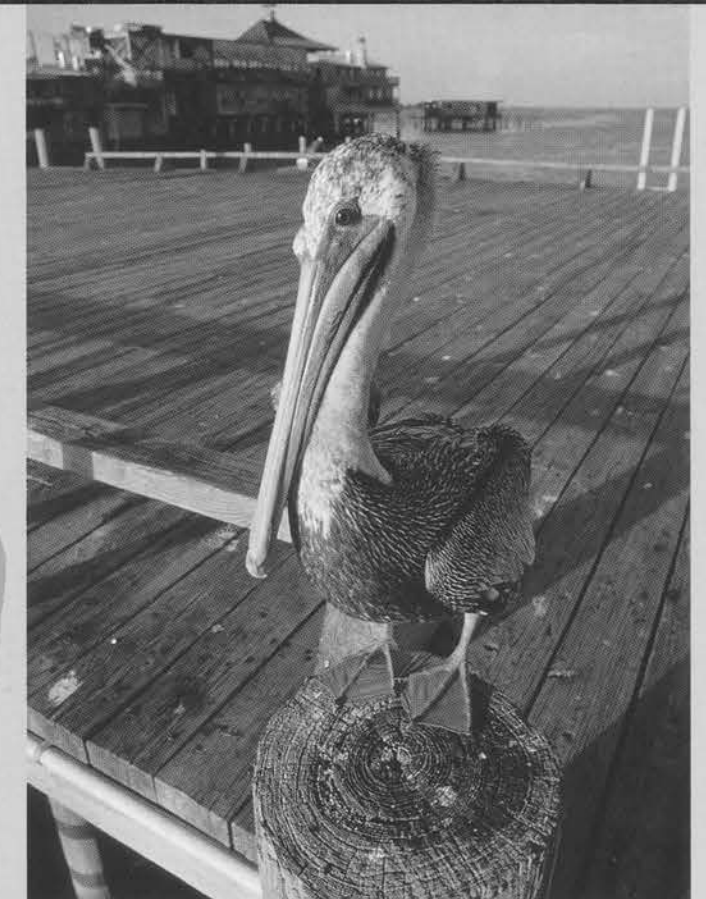




PHOTO COURTESY OF CEDAR KEY HISTORICAL MUSEUM

acquisition list. Efforts to acquire the island were abandoned, however, following protracted and unsuccessful negotiations.

In 1996, Levy County and the City of Cedar Key filed a joint application for a Florida Communities Trust Program grant which they hoped would provide the funding necessary to purchase the island.

However, with the grant still pending and its status uncertain, the Suwannee River district governing board agreed in March 1997 to step in and purchase the island for \$3.1 million to ensure its protection and preservation. Cedar Key Mayor Mike Davis praised the acquisition, saying it will help the region's economy, which is dependent upon the aquaculture and tourism industries, by protecting water quality along the coast.

In May 1997 the Suwannee River district and U.S. Fish & Wildlife Service entered into an agreement giving the Lower Suwannee National Wildlife Refuge responsibility for managing the island.

Refuge manager Ken Litzenberger says the island is open to the public for swimming, hiking,

fishing and nature observation. As with all national wildlife refuge areas, camping and campfires are not allowed, and visitors must carry their trash out when they leave. It is also unlawful to remove any artifacts from the island.

"We want to make the island available for public enjoyment, but at the same time we hope to preserve, protect and maintain it in its natural state," Litzenberger explained.



Photos by Mat O'Malley

Sprucing up of the property has already begun, with inmates from Lancaster Correctional Institution performing work such as clearing brush and collecting trash, under the close supervision of guards.

Litzenberger meets regularly with the Friends of Atsena Otie, a local citizens group whose members provide input as to management of the island. Plans under discussion are the maintenance of existing trails and the historic cemetery, construction of educational kiosks, development of interpretive walks, and modifications to the existing boat dock.

"It's possible that Nature, with its hurricane wind and waves, may one day ravage the island again," says Charlie Houder, director of land acquisition and management for the Suwannee River district. "But we should do all we can to make sure that man never does."

"With proper management, we will be helping to preserve Atsena Otie as it was always meant to be — a piece of paradise." 

St. Sebastian River State Buffer Preserve

BY JEFF COLE

Warm rays of sunlight filter through longleaf pines towering over a woodland floor teeming with Florida wildlife. Hawks and eagles soar overhead, relishing the thousands of acres of undisturbed wilderness.

Nearby, manatees lumber in the warm freshwaters flowing into the St. Sebastian River, offering visitors a glimpse of a gentle, endangered species that continues to intrigue and engage.

Coveted for its natural beauty, the St. Sebastian River State Buffer Preserve in east-central Florida is a diverse wilderness of 16,683 acres straddling Interstate 95 in Brevard and Indian River counties. Stretching along the north and south prongs of the St. Sebastian River — a tributary of the Indian River Lagoon — and bisected by Canal 54, which feeds freshwater into the St. Sebastian River, the Preserve has become a popular refuge for horseback riders, hikers, bicyclists and anglers. Fifteen miles of trails wind through pine flatwoods and oak hammocks that truly reflect old Florida.

Since first opening to the public in October 1996, the Preserve has hosted more than 3,000 visitors on day trips and overnight camping excursions. Horseback riding has become the most popular pastime at the Preserve, with winter manatee viewing from an observation deck along Canal 54 running a close second.

"The main focus of the Preserve is protecting the ecosystem, and at the same time, we're fortunate to be able to provide the public with a beautiful



PHOTO BY MAT O'MALLEY

Florida Scrub — an important habitat



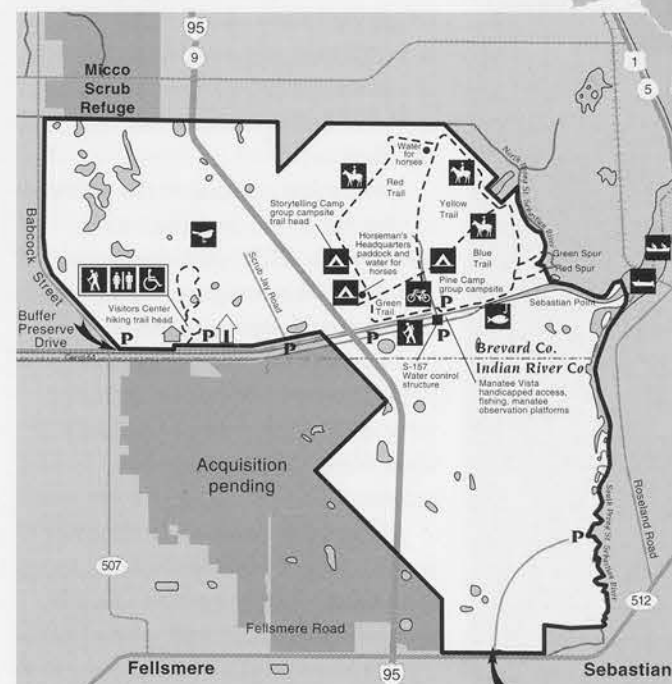
Two species of threatened wildlife make their homes on public lands owned by the St. Johns River Water Management District.

If it weren't for the District and the state purchasing the land to protect water resources in Indian River and Brevard Counties, the habitat which provides a home for the scrub jay and the red-cockaded woodpecker could virtually disappear.

Both birds make their home in a Florida preserve that contains a mosaic of scrub and flatwood habitats. Scrub and flatwood habitats are characterized by patches of sandy, bare soil, and scrub oak and low evergreen shrubs. Unfortunately, this area of Florida is and has been rapidly disappearing as hundreds of people daily move to the Sunshine State.

The St. Sebastian River State Buffer Preserve is one area where homes for man won't replace homes for the wildlife which need the habitat conditions found at the Preserve.

SCRUB JAY PHOTO (ABOVE) BY MARCUS MARTIN, UNIVERSITY OF MINNESOTA



In fact, scientists at the District are studying ways to make the Preserve even more inviting for wildlife. For example, the woodpecker needs older, softer wood trees in which to build its nests. Land managers are investigating the possibility of drilling holes in some trees to provide nesting areas where there are no older trees.

The scrub jay is referred to as an "indicator species," meaning that it is a species that can only live in certain types of habitat. Scientists can tell if the habitat is threatened and what condition the habitat is in based on the condition of the scrub jay.

Florida scrub jay need thickets of scrub oak in which to hide their nests. They need patches of bare sand in which they bury their food supply. Each bird buries thousands of scrub

oak acorns and later digs them up to eat in winter and spring. These jays also eat many scrub insects. Open scrub habitat is needed by the scrub jay so they can easily see enemies such as hawks and snakes.

While the Preserve provides a home for the scrub jay, it provides a place for scientists to continue studying the woodpecker. The St. Johns District's Governing Board recently approved a \$30,000, two-year study so scientists can learn more about this bird.

Land managers have counted about 20 nests on the Preserve and believe that the adult woodpecker population is about that number too. Found only in the southeastern United States, this colony of woodpeckers is believed to be one of the last such colonies.

Through its studies, the St. Johns District hopes to protect the scrub jay and red-cockaded woodpecker, as well as water resources in the area, for future generations to enjoy.

BY BETH HICKENLOOPER

How To Get There

From the south — Travel north on Interstate 95 to the CR 512/Fellsmere exit in Indian River County. Travel west 3 miles to Broadway Street, and follow Broadway Street north to South Carolina Avenue. Turn left and drive west to CR 507 (Babcock Street). Turn right on CR 507 and drive 3.5 miles north across Canal 54 into Brevard County. On the north side of Canal 54, turn right onto Buffer Preserve Drive, and drive less than a mile east to the Visitor Center.

From the north — Travel south on Interstate 95 to the Palm Bay/Malabar exit, No. 70, in Brevard County. Travel east to CR 507 (Babcock Street). Travel south on CR 507 12.5 miles to Buffer Preserve Drive at the southern boundary of Brevard County, just north of Canal 54. Turn left onto Buffer Preserve Road, and drive less than a mile east to the Visitor Center.

area in which to enjoy nature," said Susan Carl, environmental specialist with the Florida Department of Environmental Protection (DEP). "We'd love for more people to visit the Preserve and enjoy all that's here."

Florida's Preservation 2000 program provided acquisition funds to create the Preserve, which forged a partnership between the St. Johns River Water Management District and DEP.

Local citizens embrace the property and consider themselves stewards of the Preserve. More than 40 volunteers have donated greater than 1,300 hours, with their labors of love including bird surveys, exotic plant removal, trail blazing and searches for red-cockaded woodpecker cavity trees.

"The Preserve supports 18 rare plant and 23 rare animal species, including the Florida scrub jay, Florida manatee, southern bald eagle, indigo snake and

red-cockaded woodpecker," said Jennifer McMurtry, St. Johns District land manager. "It offers protection to 16,683 acres of important wildlife habitat, including 8 miles of riverfront on the St. Sebastian River. It is the largest upland property in public ownership in the region."

The Preserve supports 18 rare plant and 23 rare animal species

The Preserve lies north of Sebastian and Fellsmere, extending both north and south of the easterly flowing Canal 54. The north Preserve of 9,543 acres is open to the public, and an additional 7,140 acres to the south are scheduled to open by the summer of 1998. Another addition by summer will be an access point on the river's North Prong for canoeists.

"The canoe take-out point will be a nice spot to

stop for a picnic or just to take a break from canoeing and enjoy the Preserve," McMurtry said.

The Preserve may offer canoe launching on the river's South Prong in the future.

For more information about the Preserve, call the Visitor Center at (407) 953-5004. To order a free copy of the St. Johns District's *Recreation Guide to District Lands*, which includes information about the Preserve and other publicly accessible land on St. Johns District property, call (800) 725-5922.



PHOTO BY STEVE NESBITT, GAME AND FRESH WATER FISH COMMISSION

The St. Johns River Water Management District has a 28 page coloring and activity booklet to educate all ages about the endangered Florida scrub habitat.

It is available at no charge by calling 1-800-RALLY-22.

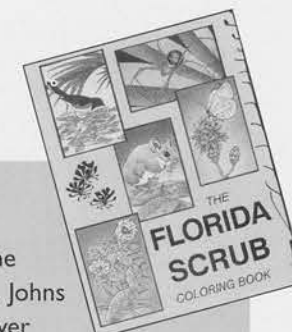
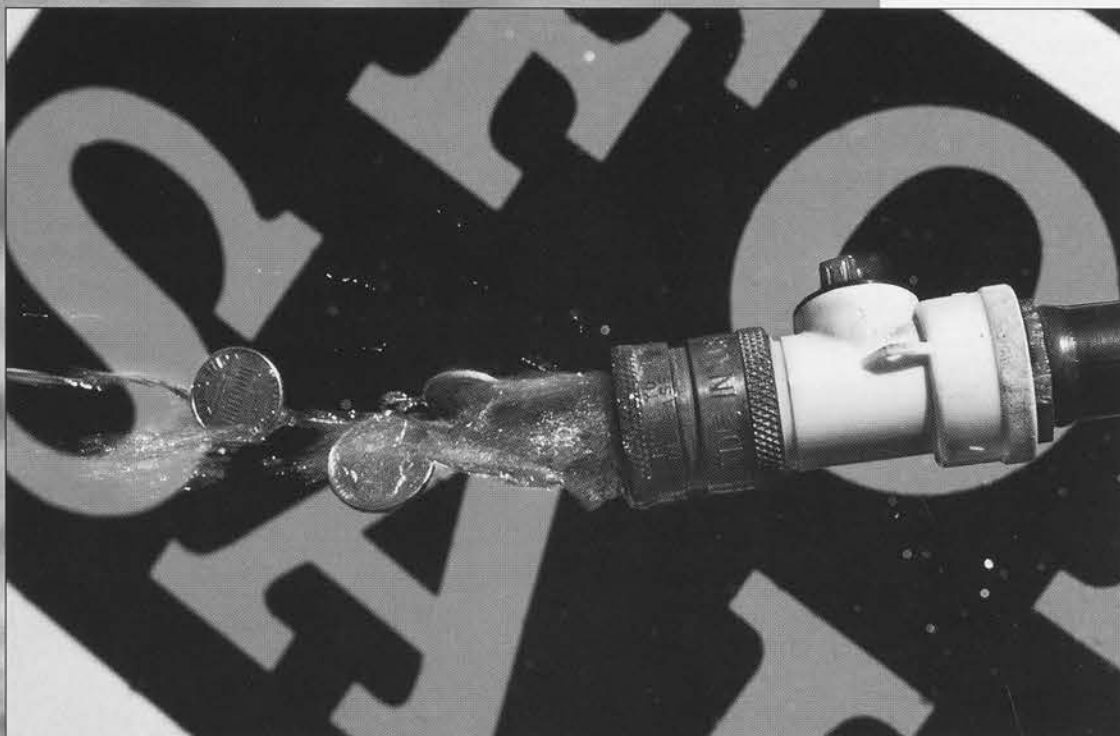


PHOTO BY MAT O'NEAL

The St. Sebastian River Buffer Preserve offers a wide variety of recreational opportunities. Camping (at left), manatee spotting and horseback riding are popular activities on the property.

FOR SALE: Florida's Water Supply?

BY YVONNE GSTEIGER
AND JAN P. LOFTIN



Debate stirs over Florida's water laws and policies for providing fresh water.

Mother Nature played favorites when she endowed Florida with a climate that provides a seemingly endless supply of fresh water. However, until about 30 years ago, most wondered if all this fresh water was a blessing or a curse. From 1870 to 1970, ridding itself of excess water was the state's century-long effort to manage water. During the same period, mild winters – another aspect of Florida's special climate – turned the state into a food basket for the nation and the perfect winter home for those seeking warmth. Since the 1940s, agriculture, urban development, and tourism have fueled phenomenal growth which has only intensified in recent years. And a century of drainage, while purging the landscape of excess water, diminished availability of fresh water for use as cheap water supply.

As this picture comes into focus for the water-savvy, debate stirs over Florida's water laws and policies for allocating water supplies. Presently, water supply is allocated with public interest as a central theme. The premise is water resources in the state are owned by and managed for the good of all citizens and are not privately owned rights. Some would propose changing Florida law to mirror

water law in some western states where it is viewed as a commodity tied to land ownership. Rights to water are held privately and bought, sold, and traded as a commodity in an economically-driven water market. Such markets flourish where no alternatives exist to economically develop new sources for water supply (places such as

the mostly desert or arid southwestern United States). There, natural systems get little or no replenishment from the existing water supply.

Florida's climate delivers an average of four to seven times more rainfall than the arid southwestern regions of the United States receives which gives the state an amazingly large replenishing stream of fresh water. So, what's the problem? In south Florida, drainage efforts to support growth cause most of that replenishing stream to be discharged to sea and leave too little of it in lakes, streams, wetlands, and groundwater systems for use during the driest times.

In other areas of Florida, present

uses consume all the water supply reserves and leave none for future growth. Given the state's abundant rainfall (an average of 54 inches per year), Florida has the ability to develop new water supply sources and can continue to meet all reasonable demands if proper plans are developed and implemented.

In 1997, the Florida Legislature embraced this challenge and amended the 1972 Water Resources Act to require water management districts to meet present and future demands through comprehensive regional water supply planning. Florida's future, both economically and in quality of life, depends on this being successfully achieved.

The Water Resources Act

The Water Resources Act of 1972 (Chapter 373, Florida Statutes), largely based on the Model Water Code, is the enabling legislation for water policy and water management in Florida. For the past 25 years, Florida's water law has provided a framework for balancing the competing demands of urban and agricultural users, as well as the natural system. Today, the law continues to be heralded as the bellwether throughout the nation.

Florida's system for allocating water supplies is regulatory in approach, requiring water users to obtain water use permits for a specific quantity of water for a defined duration. One provision in the law specifically requires water management districts to fairly distribute a finite supply of water among competing water users through the permit system. Until recently, supply exceeded demand. Today, in some areas of the state, demand has outstripped available supplies, requiring the development of new water supply sources and additional water conservation practices.

Some water users fear a short-

age because Florida water law does not guarantee rights to existing users. Many existing users now question the "fair distribution" principle and the premise that water is a state-owned resource to be shared. Instead, some water users now advocate that water is individually owned property and that "sharing" is neither required nor is it fair. In modifying this principle, water transfers and water markets would likely evolve and much water management of the state would likely be "privatized" without regard to natural resources.

Without altering its structure and framework, in 1997, state legislators amended Chapter 373, in several important ways. Legislators recognized: 1) that there is a limit beyond which further withdrawals of existing surface and ground water sources is not possible, and 2) that permittees desire certainty in the amount of water they may consume. The amendments require the water management districts to engage in comprehensive planning to identify areas that will face water shortages and, based on that information, to devise strategies to develop and

begin implementing new water supply resources. This will help ensure supplies are developed to prevent existing and future users from having to compete for a limited supply.

The amendments should stem the growing policy debate over how water supply is allocated. To assure needs are met, water management districts must meet the challenge of this legislation. Partly because of its innovative water laws and water management, millions of Florida's citizens and visitors are able to enjoy an outstanding quality of life. Natural systems are protected and maintained while meeting mankind's water supply needs. Meeting those needs are provided in a fair and equitable way, avoiding the dilemma of private water rights that would favor the rich water users over the poor ones in being able to "buy" rights to water.

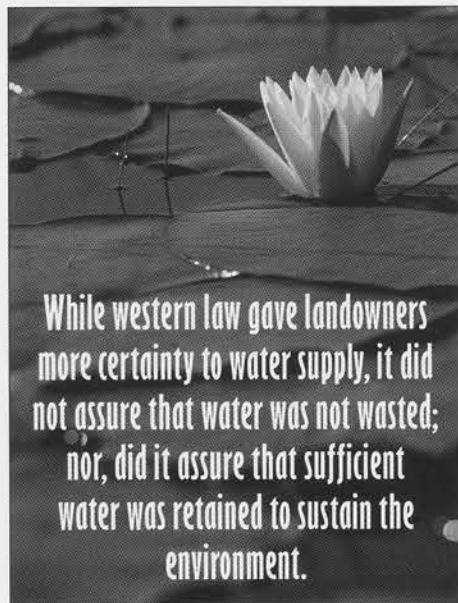
Historic Water Law

Prior to 1972, Florida's entire system for managing and allocating water among different users was based on eastern water law (also called the riparian system). Under this law, a riparian



Given the state's abundant rainfall (an average of 54 inches per year), Florida has the ability to develop new water supply sources and can continue to meet all reasonable demands if proper plans are developed and implemented.

landowner (one who owned the shore) had the right to use water on or under his property so long as it: 1) didn't interfere with another user and 2) was considered a reasonable use. The courts, on a case-by-case basis, resolved disputes arising between parties as to whether a use interfered with



While western law gave landowners more certainty to water supply, it did not assure that water was not wasted; nor, did it assure that sufficient water was retained to sustain the environment.

another use or whether a use was reasonable. While this system ensured water was not wasted, it did not provide landowners any certainty of water supply. Because eastern water law developed in areas where water was generally plentiful, there was little need to formulate precise rules governing allocation. If conflicts arose, courts typically granted water rights to riparian owners or those needing water for domestic uses.

Western water law (also called the prior appropriation doctrine), on the other hand, was based on a concept of "first in time, first in right." Under this system, water is a property right and that right is based on the historic claim to the water. Historically, a person who first claimed ownership to a supply of water, had rights over another person's later attempt to use or claim part of that water supply. This right would be upheld in court, irrespective of the reasonableness of the first user. These

1997 LEGISLATIVE ACTION

(RELEVANT TO CHAPTER 97-160)

• Establishment/ Implementation of minimum flows and levels (MFLs):

The law requires the water management districts to establish minimum flows and levels (MFLs) for priority surface waterbodies. It directs the water management districts to implement a recovery or prevention strategy if a waterbody falls below, or is projected to fall below its established MFL.

• Priority Waterbodies:

The law requires the water management districts to annually submit to the Department of Environmental Protection for approval a list of waterbodies and a schedule for establishing minimum flows and levels.

• Peer Review Process:

The law requires that the water management districts provide a scientific peer review process for validating the data, methodologies and models employed by the districts in establishing MFLs.

• Water Supply Planning:

The law requires the water management districts to project the water needs for existing and future water users using a 20-year horizon. Based on that information, the districts are required to initiate water resource development to ensure that water is available for these users as well as the environment.

• Twenty-Year Permits:

The water management districts are directed to grant 20-year permits if an applicant wants and can provide reasonable assurances that the permit conditions can be met. The water management districts may require five-year compliance reports from the permit holder.

• Water Management District Budgets:

The law gives the Governor additional oversight over the water management district budgets.

water rights were perpetual unless they were abandoned due to non-use.

This system encouraged waste by the first user to maintain rights to the detriment of "downstream" users. Therefore, western states eventually modified their strict concept of "first in time," and incorporated a concept of "beneficial use." This test required an analysis of the most beneficial uses among competing users. A use had to be beneficial, as well as be economical, when compared with other demands for that water.

While western water law gave landowners more certainty to water supply, it did not assure that water was not wasted; nor, did it assure that sufficient water was retained to sustain the environment. Further, it was difficult for new users to get water if no existing rights have been abandoned or are available for sale. As an incentive to give up this perpetual right, market transfers have evolved in some states to allow users to gain economically by selling their water rights when the water is no longer needed. The right to transfer is designed to prevent users from wasting water just to retain the right to the water, and it delays the need to build more expensive alternative water sources.

Water Markets

Water markets establish values for water and water rights. Water is treated like a commodity and is bought, sold, and traded in the market system. The goal of water markets in the west is to insert economic efficiency and flexibility into the water supply allocation process. Market systems are thought to provide a privatized process for valuing water based on the economy's tendency to transfer a commodity to its "highest and best" use. That is, through market forces, it is believed that water will be diverted to produce products and services that would provide the greatest economic benefit to the public in general. It is argued that

this market-based economic efficiency is missing from Florida's water law.

The value of water markets is questioned in areas where the costs of buying or transferring water rights are greater than the cost of developing new water supply sources. Although some of the sources of cheap water will be inadequate to meet all needs in the future, Florida has an array of water supply options not fully developed, not to mention an abundance of annual rainfall to capture, store, or treat.

While some advocate that Florida should treat water more as a commodity and allow water markets to allocate water, the framers of the Model Water Code and the legislators who drafted Florida's Water Resources Act and its recent amendments have devised a flexible system and balanced water policy. It is a system that: 1) prevents water waste by guaranteeing permittees water for a specified time; 2) provides certainty to existing users when new users are competing with them for a limited water source and the uses equally serve the public interest by granting them preference for water rights over new uses; 3) provides all potential uses equal right to obtain water, irrespective of economic power; 4) protects natural resources by requiring the water management districts to ensure the sustainability of the natural systems, and to establish minimum flows and levels; and 5) provides certainty of water supply to all existing and reasonably anticipated uses by requiring the water management districts to engage in comprehensive planning and water resource development.

Florida's Current Water Allocation System

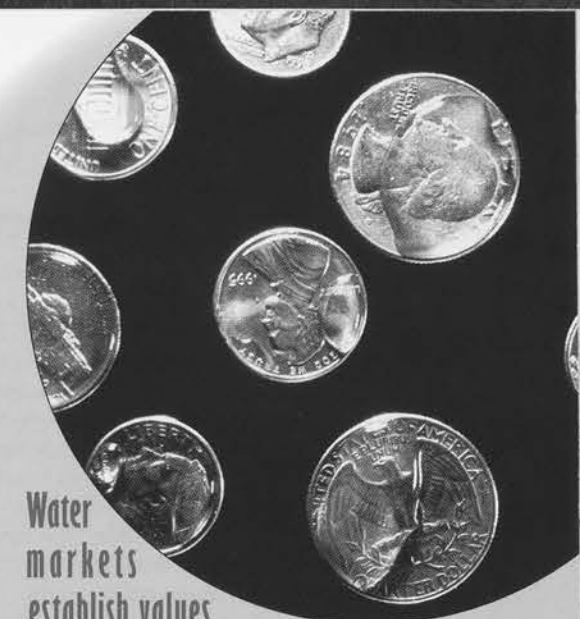
The right to use or withdraw water is granted by the water management districts through the issuance of consumptive use permits. When initially enacted, the law gave pre-existing users a grace period to apply to the appropriate water management

district to convert their common law rights to a permitted right. Consumptive use permits do not give a property right to the allocated water. The right to water exists only for the duration of the permit, which can range up to twenty years.

Permittees must meet a three-pronged test before receiving a permit. This test requires that a proposed water use: 1) be reasonable-beneficial; 2) not interfere with existing uses of water; and 3) be consistent with the public interest. Each water management district adopted rules specifically for its region that implement this three-pronged test. These rules generally require that the permittee incorporate criteria for demand management and conservation, for resource protection, and for the prevention of interference with other existing uses.

When a permit expires, in order to continue use, a permittee must renew the permit. At permit renewal, a user must demonstrate the water use meets current permit criteria — criteria which may have been amended since issuance of the initial permit (in order to incorporate new technical factors or changed conditions).

One provision of the law recognizes that users may be required to compete with each other for use of a quantity of water from a source deemed to have potential harm from overuse. This provision has never been used to resolve a competing application situation, most likely due to the water management districts' successful efforts in assisting the parties in amending their proposed withdrawal locations or sources. An incentive to find such technical solutions may be that ultimately a governing board will determine among competing interests



Water
markets
establish values
for water and water rights. Water is
treated like a commodity and is
bought, sold, and traded in
the market system.

which use
"best serves the public interest." If the projects are equally in the public interest, then renewal requests are favored over new requests.

Equal Right to Obtain Permits

Even proponents of water markets recognize that not all users can compete for water equally. Under the market system, private transactions between two users can often exclude potentially affected users from the transaction. Likewise, users who may have legitimate water supply needs, but are economically unable to pay market prices, are prohibited from engaging in their otherwise rightful activities. Therefore, markets favor rich users over poor users irrespective of a user's intent to conserve appropriately or to achieve other societal goals as a result of the use of water. In this manner, a market system redefines "need" and fair distribution of water as a public resource to a commodity, commercially bought, sold and traded.

Florida's law guards against such inequities. All users competing for the same resource are able to vie for it on equal footing. In situations where supplies are sufficient to meet the

Florida's Water Law Framework

- Created by state legislation in 1972 ("Water Resources Act" - Chapter 373, Florida Statutes)
 - Five regional districts; boundaries based on natural hydrologic basins
 - Integrated ecosystem/watershed-wide responsibilities for water supply, water quality, flood and drought mitigation, and natural systems protection
 - Report to: Governor, Legislature, and citizens of Florida
 - Authorized to levy ad valorem
- (real property) taxes based on voter-approved constitutional amendment in 1975
- Governor has authority to veto proposed annual budgets
 - Legislature has authority to adjust statutory millage caps; create/abolish agency mandates and responsibilities
 - Appointed lay Governing Boards (must be approved by Senate) establish policy
 - Executive Directors must also be approved by Senate
 - Periodically reviewed/audited for accountability:
- 1988-90** - "sunset/sun-down" rules; reenacted both Chapter 373 and the districts, adding new guidelines for financial and program reporting

1994-95 - Water Management District Review Commission; found the districts' programs and operations "generally adequate;" developed 80 recommendations for some improvements, but suggested no wholesale changes to the existing framework for regional water management

1997 - Legislature amends the Water Resources Act (see inset on page 16)



vate owners, make allocation decisions and can determine, based on science, when a source is over-allocated and can no longer be used. Both when the Water Resources Act was written in 1972 and amended in 1997, legislators recognized the need for a governmental body to protect the natural systems. For example, the 1972 legislature, in recognizing the damage that could be wrought upon natural systems by the over withdrawal of any surface or groundwater source, required the water management districts to establish "minimum flows and levels" for water bodies. This requirement ensures the sustainability of the environment in a way that a market system cannot.

Likewise, in 1997, legislative intent language was added requiring sufficient water to be available for all existing and future reasonable-beneficial uses and including natural systems. Using a 20-year planning horizon, the water management districts are required to conduct water supply assessments to determine whether water supplies are adequate "to sustain the water resources and

related natural systems." If supplies for the planning horizon are inadequate, detailed planning to develop additional supplies must begin. The legislators explicitly tasked water management districts to protect natural systems when water allocation decisions are made.

Also, in 1997 legislation, the criteria for establishing minimum flows and levels is further clarified. Minimum flows and levels is another mechanism in law which protects the environment in a way that a market system cannot. Minimum flows for water courses identify the point beyond which water supply or other withdrawals would cause significant harm to the water resources and ecology of the area. For ground water and surface water, the minimum level is the point beyond which water supply or other withdrawals would be significantly harmful to the water resources of the area (i.e. saltwater intrusion).

Comprehensive Planning

Recognizing that without comprehensive regional water supply planning, more areas would begin experiencing chronic water scarcity, the 1997 legislature established a well-defined process to ensure the availability of water for all existing and future anticipated uses. In this process, each water management district must develop a district

water management plan for water resources within its district. This planning effort is to be integrated with local needs and water sources in order to provide local governments, private utilities, and other users with identifiable sources for meeting their water supply



needs. Additionally, each regional water supply plan must address development of new water supply, must identify those projects that support water supply development, and must identify the costs of and potential sources of funding for such projects. These regional plans are to guard against any sources being over-allocated.

Florida's system for water management is unique and considered by many water policy experts to be a model for others. It blends the best of the western and eastern water law systems, ensures the sustainability of the natural system and protects existing and future users. Additionally, because water management districts are required to engage in comprehensive regional water supply planning and water resource development, new sup-

plies will be developed as demand grows, ensuring that competition for a shrinking resource will not occur.

While water markets may solve some water supply allocation problems in regions of the United States where it is not feasible or not possible to develop new supplies, water markets in Florida could harm the many existing and future water users and limit the ability to develop new water supply sources as needed. Florida's system provides water users rights to specific quantities of water for specified periods, while ensuring that each use is efficient and economic. This fairly serves the public good. 

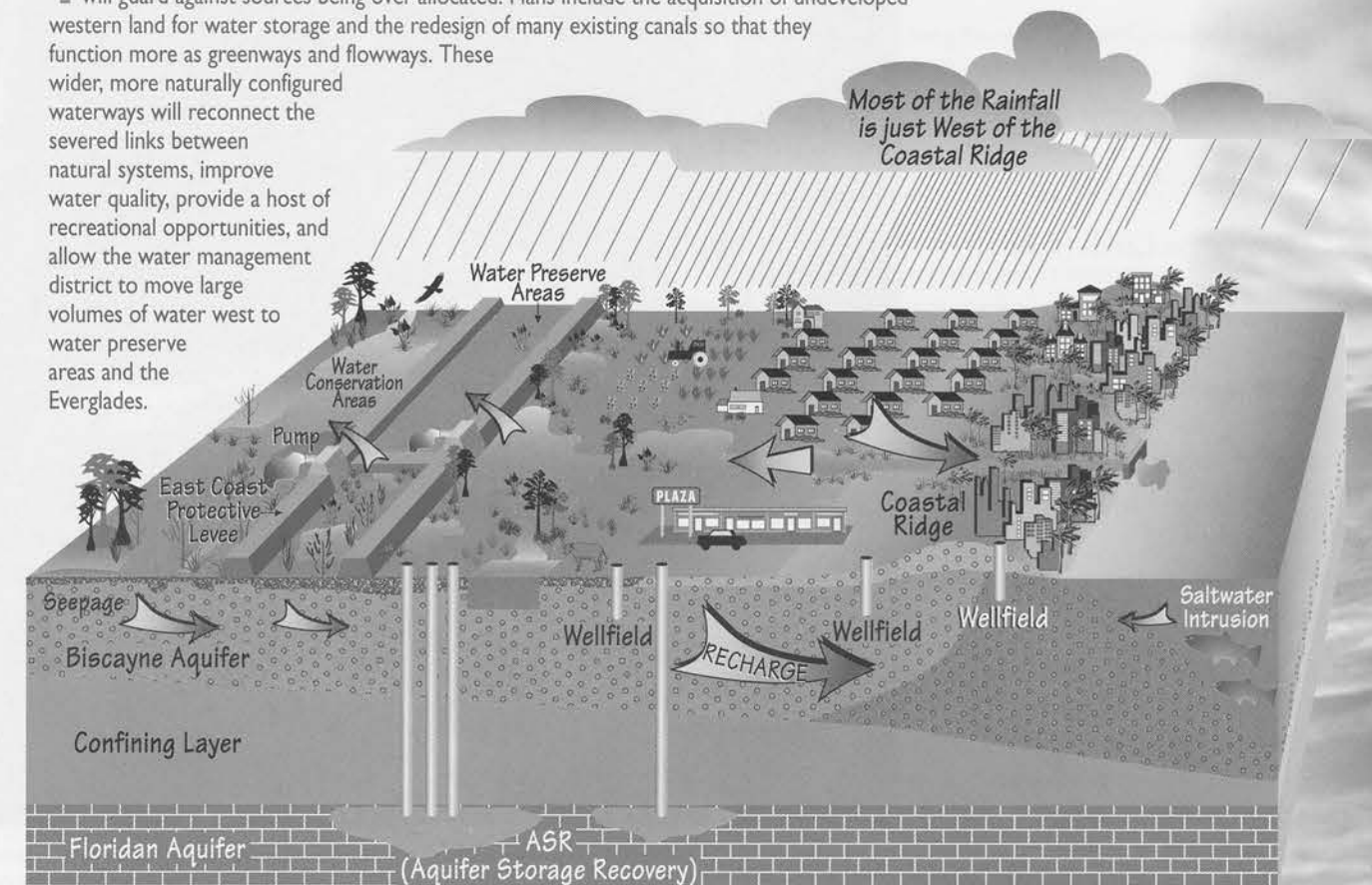
The following articles were used in the writing of this article: *Getting the Most Valuable Water Supply Pie: Economic*

Efficiency in Florida's Reasonable-Beneficial Use Standard by Phyllis Park Saarinen and Gary D. Lynn; *Slicing the Water Supply Pie: Competing Applications Under Florida's Water Resources Act* by William Earl and Thomas T. Ankersen; *Water Allocation: The Reasonable-Beneficial Use Standards* by Susan Fleming; *Florida's New Water Resources Law* by Frank E. Maloney; and *Reasonable Beneficial Water Use Standard: Have East and West Met?* by Frank E. Maloney, Lynne C. Capehart, and Robert S. Hoofman.

The principal writer, Yvonne Gsteiger, is the South Florida Water Management District's legislative liaison in Tallahassee. Other contributors were Bruce Adams and Cecile Ross, also from the South Florida District. Photos by Patrick Lynch.

Water for Today and Tomorrow ... PROPOSED LONG-TERM SOLUTION TO ENHANCE WATER SUPPLIES

The South Florida district's lower east coast water supply plan is an example of a regional plan that will guard against sources being over-allocated. Plans include the acquisition of undeveloped western land for water storage and the redesign of many existing canals so that they function more as greenways and flowways. These wider, more naturally configured waterways will reconnect the severed links between natural systems, improve water quality, provide a host of recreational opportunities, and allow the water management district to move large volumes of water west to water preserve areas and the Everglades.



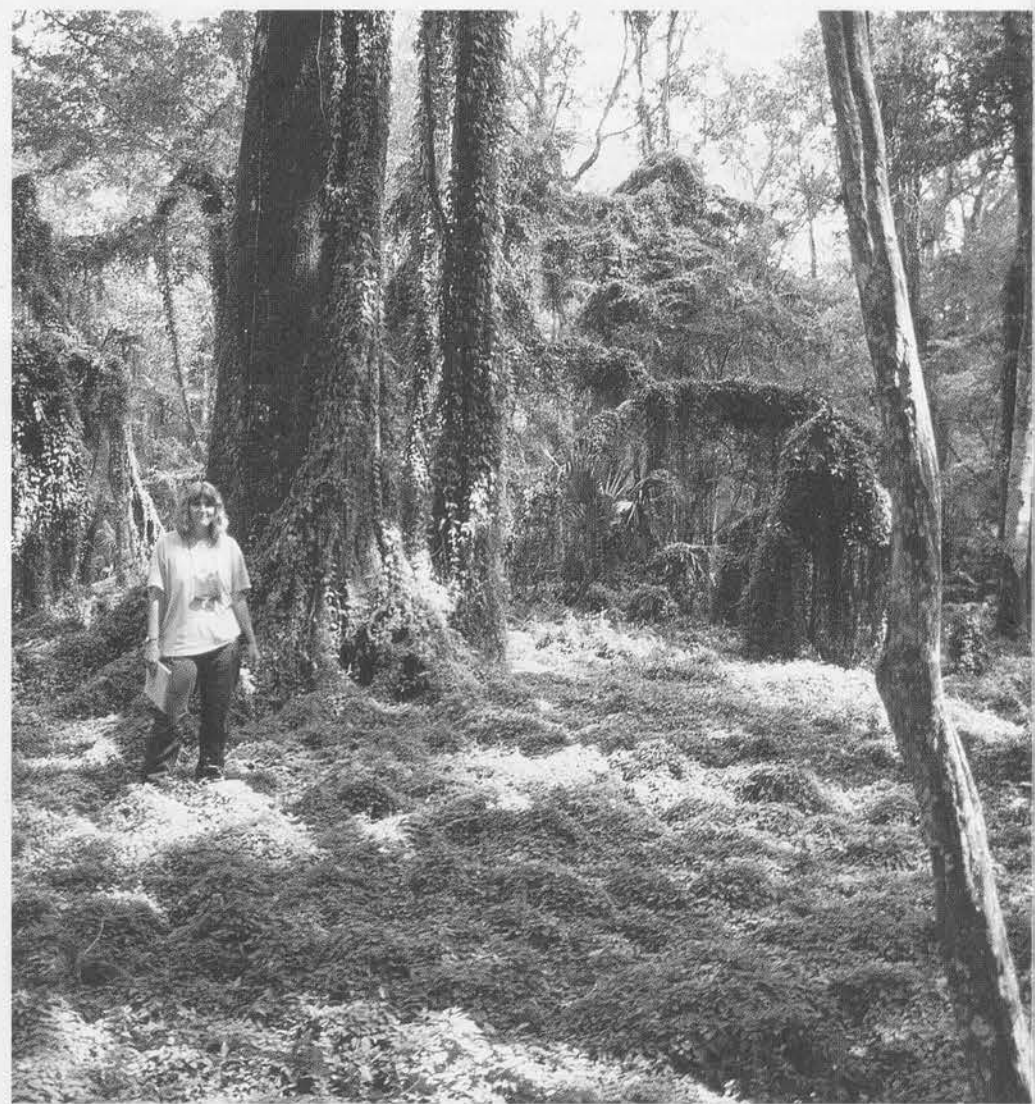
Reckoning with the Dirty Dozen

Twelve categories of exotic plant species top an inter-district list for management and control.

Rapid urbanization across the state places pressure on remaining undeveloped areas to support the natural habitats which make Florida unique. Through programs such as Save Our Rivers, Preservation 2000, Conservation and Recreation Lands (CARL) — among others — state agencies strive to keep pace by preserving and protecting environmentally sensitive lands.

As land managers look over their shoulders, they find, yet, another fast-growing problem defacing the landscape...

BY C. DEAN RUSK



Illustrated in this photo of infestation and native displacement, skunk vine is especially detrimental to rare tropical hardwood hammocks.

Encroachment of highly invasive, exotic plant species poses substantial hazards to the balance and survival of native plant communities. These include alteration of natural fire and flooding patterns, navigational obstruction, and even decimation of entire native habitats. Once established, a successful, small unchecked colony can soon spread to a large-scale infestation. To compound our problem, Florida is the only region in America where temperate, subtropical and tropical species actually coexist — creating an environment of exponential threat from exotics of all three climatic zones.

Simply put, native species coevolved with parasites, herbivores, diseases and climate, achieving an equilibrium within an established community. They are defined as those species occurring before European settlement.

Exotic species are those non-native species, introduced both intentionally, for example, to prevent erosion or as an ornamental, and unintentionally, for instance, as an escapee from cultivation.

But the variable threat for disruption of a balanced system occurs when an exotic species can proliferate and actually out-compete native plants, hence becoming invasive to an established community.

In 1996, an Inter-District Exotic Plants Committee was formed to assess and present efforts for the management of exotic species. In May 1997, the committee issued its report, *Exotic Plant Invasion on Florida's Water Management District Lands*. This cooperative inter-district report describes actions taken by the water management districts, and identifies the

"dirty dozen" — a short list of the most destructive exotics on public lands under stewardship of the water management districts.

The districts' goals are to eliminate populations, or adequately control invasive exotics while minimizing costs and not adversely impacting natural resources. Standardized inventories, management plans and practices, public partnerships, legislation and education are strategies being used and under development to help achieve

maintenance control.

To learn more about exotic invasives, visit your local library, browse the Web, or write the Inter-District Exotic Plants Committee. You may request a free copy of its report or address queries to committee chair Tony Richards at the Southwest Florida Water Management District. 

Just what are the Dirty Dozen?

First, they're not a dozen at all! Twelve general categories were created from these 15 exotic species to aid public awareness.

1. **Brazilian Pepper** — out-competes native species, including mangroves in saltwater habitats
2. **Melaleuca** — quickly displaces native vegetation; extremely flammable; disrupts water flow
3. **Japanese and Old World Climbing Fern** — blankets native tree canopy, shading and eliminating understory; acts as "fire ladder"
4. **Skunk Vine** — blankets canopy and ground cover; weight and proliferation of vine may kill canopy and sub-canopy trees; may act as "fire ladder"
5. **Tropical Soda Apple** — occurs in high densities, displacing native vegetation
6. **Cogon and Torpedo Grass** — displacement of native vegetation; cogon grass is extremely flammable, creating intense heat, destroying native species which would normally survive fire
7. **Australian Pine** — quickly colonizes beach dune communities, excluding all other plant species; root system may preclude sea turtle nesting
8. **Waterhyacinth and Hydrilla** — forms water surface canopy mat, prohibiting sunlight, lowering dissolved oxygen, out-competing natural vegetation
9. **Air Potato** — blankets native tree canopy, shades understory
10. **Chinese Tallow** — displaces native species; nutrient load of leaf drop; leaf litter may be toxic to invertebrates
11. **Waterlettuce** — surface mat prohibits sunlight and lowers dissolved oxygen, resulting in displacement of native vegetation
12. **Kudzu** — blankets canopy; weight and proliferation of vine may kill canopy and sub-canopy trees, as well as understory vegetation

Illustrations courtesy the Information Office of the University of Florida, IFAS

Waterhyacinth

PHOTO BY TONY RICHARDS

A walk in the **WILD**

BY LORIN JOYNER

"In wildness is the preservation of the world."

Henry David Thoreau (1817-1862)

A few hours after dawn on a balmy April morning, the aroma of wildflowers wafted through Florida River Island. On a wooden bridge overlooking the Florida River, a group of Liberty County students stood almost still. After gazing down at the meandering dark stream, their eyes darted back and forth—first into the floodplain forest and then upward into the cloudless sky. Sounds of songbirds, hawks, warblers and woodpeckers echoed overhead.

"Look carefully, listen and move very slowly and quietly," explained Tom Francis, a field specialist for the Northwest Florida Water Management District's (District) Division of Land Management and Acquisition. "We should be able to see a lot of migratory birds today."

Within minutes, several students with binoculars spotted a few majestic birds soaring high above the trees. "Those are Mississippi and swallow-tailed kites," noted Francis, as he flipped through a field guide. "They perform aerial displays in the Apalachicola River and Bay area, especially during the spring."

This outdoor adventure was just one of several that this science class enjoyed at the

Florida River Recreation and Public Use Area, about 20 miles south of Bristol. It was all part of the District's Liberty County Stewardship Program, a unique environmental education initiative designed for middle and high school students.

Begun in the fall of 1996 as a cooperative effort of Liberty County Schools and the District, the program has blended classroom study with research-based field work on District-owned property. It has enabled area teachers to use Florida River Island and other nearby public land as outdoor learning forums.

Led by District staff, which included biologists, foresters and other scientists, students participated in a variety of hands-on, interactive activities. Each learning segment, which lasted about four hours, helped encourage active learning, teamwork and creativity.

The multidisciplinary approach used "enabled teachers to relate theoretical concepts in math, science, history and other subjects to current situations in their community," said District Lands Division Field Specialist John Valenta.

During each field trip, for instance, students used technically sophisticated meters to assess the Florida River's overall health. At strategic locations, they calculated



Students and their science teacher, Jerrold Muza of Liberty County High School, measure the turbidity level of a water sample from Florida River.

the river's flow rate and measured water quality indicators such as turbidity, conductivity, pH, temperature and dissolved oxygen. They collected and analyzed the data, plotted graphs and assessed applicable trends.

Through water quality monitoring and other related activities, "participants gained a better perspective on the importance of a healthy water body and the vital role of a forested floodplain," said Valenta, a longtime forester who led many of the outings. They learned more about the Florida River, which reconnects to the Apalachicola River downstream, and how it can impact Apalachicola Bay.

But that only touches the surface. Often participants would delve into current issues concerning forestry, lands and ecosystem management and hydrologic restoration.

They used clinometers to measure tree height, increment borers to determine tree growth and Global Positioning System (GPS) instruments to map trails through the area's bottomlands.

One of the project's major components paired students with the District's Lands Division and the Florida Trail Association to create an interpretive nature trail on Florida River Island. Students helped District staff design, blaze, mark and map the approximately 2.5-mile trail around Elsie Lake. They also provided infor-

mation for inclusion in an accompanying brochure, which includes a trail map and habitat guide. Completed in November, the Florida River Trail project culminated with a community event to celebrate the students' accomplishments and publicize new recreational opportunities for visitors.

Other hands-on activities included: wildlife and habitat studies; orienteering using maps and compasses; plant and animal identification; biological sampling using aquatic dip nets; hydrological investigation; ecosystem and habitat exploration and journal writing.

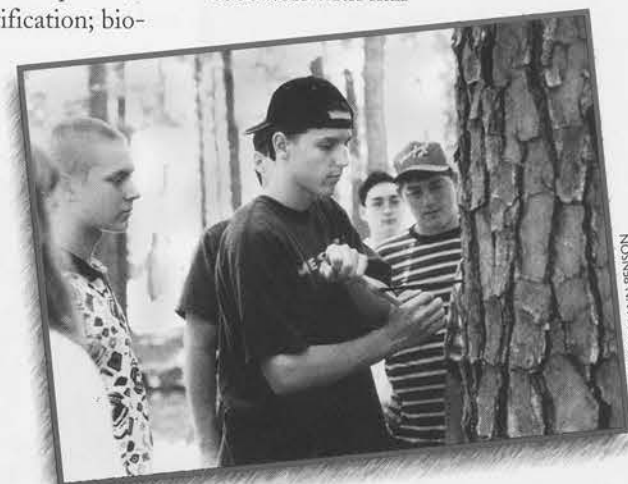
"These interactive experiences helped students link abstract, theoretical ideas with real-life circumstances," said Jerrold Muza, a Liberty County High School science teacher. "They used the outdoor environment as a living laboratory to apply what they have read in textbooks and studied in class."

While the program bolstered existing science curricula, it also helped prepare young people for the future. Through discussions and activities led by professional scientists, students had the opportunity to learn about poten-

tially challenging job opportunities in a variety of scientific fields. They gained a greater understanding of career options in hydrology, botany, environmental engineering, forestry, biology, cartography, zoology and other areas.

"There was something of interest to everyone," noted Janna Hill, a Hosford Elementary and Junior High School science teacher. "Many students with an interest in art took photographs or drew sketches of wildlife observed. Others with an affinity for math enjoyed analytical activities, such as measuring the velocity of Florida River, calculating water flow and hypothesizing about its potential impact on Apalachicola Bay."

Classroom preparation before the field trips generated even more enthusiasm and understanding of the concepts, according to Hill. To assist with lessons, District staff provided participating educators with half-



Students in Duane Barber's science class at Liberty County High School use an increment borer to determine the growth rate and age of a tree at the Florida River Recreation and Public Use Area.

day training workshops, educational videos, brochures and informational guides. They also produced and distributed a teacher training manual, complete with water quality monitoring instructions, field activities and background material.



DO Try this at Home!

OBJECTIVE

To see the effect of excess nutrients on water quality.

MATERIALS

- Five glass or plastic containers
- Fresh water from a clean pond or lake
- Assorted freshwater plants and animals (algae, water lettuce, Daphnia and freshwater shrimp)
- Liquid houseplant fertilizer
- Hand lens or microscope

PROCEDURE

- Number containers 1 through 5. Fill each with equal amounts of water.
- Set container #1 aside. Add one material to each container as follows: Daphnia (#2); shrimp (#3); algae (#4); water lettuce (#5). Label containers.
- Dilute fertilizer, according to package instructions. Put equal amounts (about 1 tablespoon) into containers #2 and #4. Stir.
- Set all containers on a window sill. Examine them daily for three or four days.

RESULTS

What changes occurred in each container? How do fertilizers get into our water bodies? Which of the fertilizer ingredients are nutrients? What could happen if large amounts of nitrogen and phosphorus accumulated in our lakes and streams?

Excerpted from the booklet "Classroom and Field Experiments for Florida's Environmental Resources," available through the Florida Department of Environmental Protection.



"This multifaceted program focused on reinforcing the importance of ecosystem management, conservation and natural resource preservation in the Apalachicola River and Bay basin," said Bill Cleckley, District Director of Land Management and Acquisition. "It promoted the idea of stewardship, which conveys a sense of ownership and responsibility for our land and water resources. By instilling this value, especially among young people, we can help sustain our environment for future generations."

Participating teachers agreed that encouraging the development of environmental stewardship should remain a key goal in science education.

In Liberty County, "the environment, economy, industry and people interconnect so dramatically," said Muza. "Most of my students and their families have been hunting, fishing and camping at the Florida River Island. They have a vested interest in protecting these natural resources."

Participants included more than 120 students in grades 6 through 12. They represented physical science, chemistry and physics classes taught by Muza; general science and biology classes taught by Duane Barber of Liberty County High School; and general science classes taught by Hill and Michelle Gowan of Hosford Elementary and Junior High School.

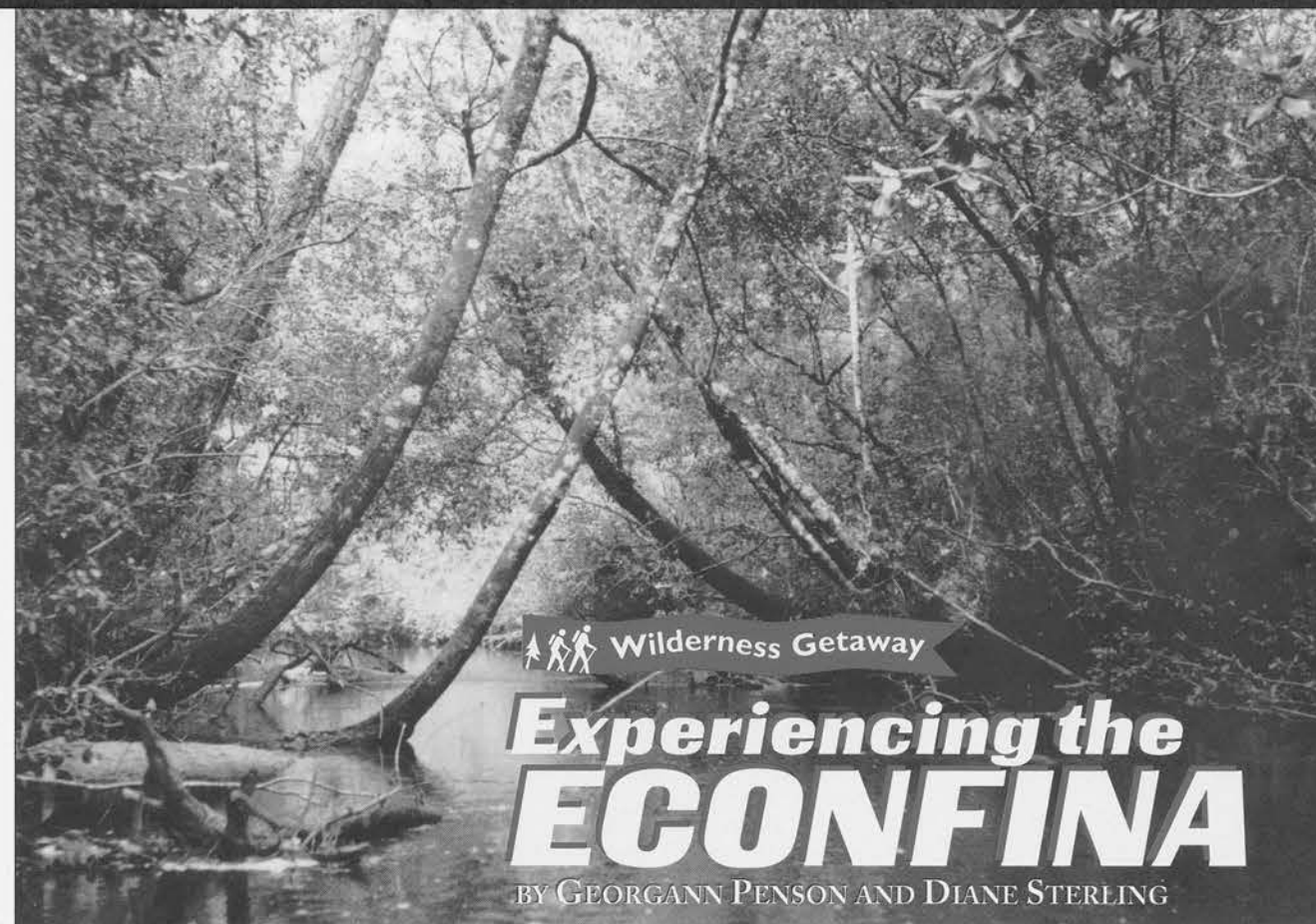
Funding for the program was made possible by a grant from the Florida Advisory Council on Environmental Education, through the Florida Game and Fresh Water Fish Commission, and the District.

"This project provided students with enriching and memorable experiences, which will have lasting value," said Muza. "It not only fostered a greater appreciation for nature, but it promoted an abiding concern for preserving the area's natural resources." 



Cypress trees and knees in a slough on Florida River Island.

PHOTO BY GEORGANN PENSION



 Wilderness Getaway

Experiencing the ECONFINA

BY GEORGANN PENSION AND DIANE STERLING

Whether spring, summer, fall or winter, canoeing Econfina Creek is like running a gauntlet of colors and breath-taking scenery that strikes you with every turn as you journey through the narrow canopied passages, wide expanses and rushing waters of this unique northwest Florida waterway.

This 22-mile-long run, just north of Panama City in Bay and Washington counties, is considered a challenge by experienced canoeists, but portions are thoroughly enjoyable by the less experienced.

A designated state-canoe trail, the Econfina is divided into several sections, each with varying degrees of difficulty. The uppermost portion, the longest stretch of the Econfina, is recommended for highly experienced canoeists only.

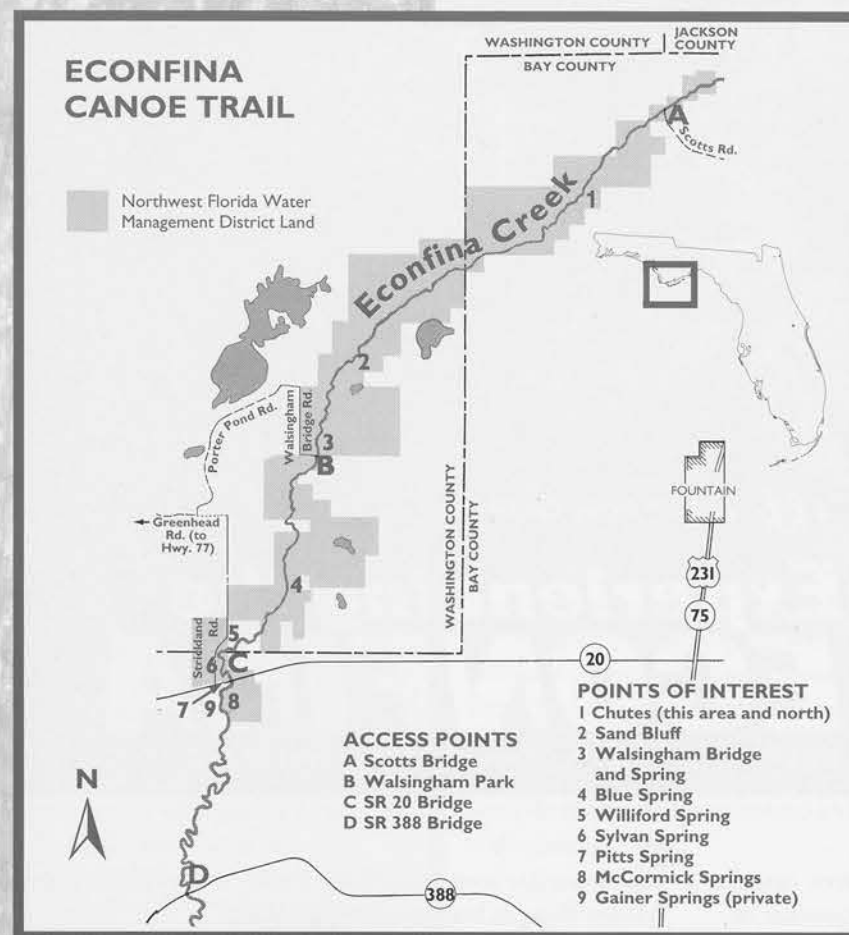
Towering clay banks and steep ravines lead the way through this unpredictable run in the upper reaches. Darkly colored from tannic acid, here the Econfina is in constant motion, rippling around half-submerged tree limbs and rushing over logs and clay shelves. One minute the creek flows with a gentle, predictable current through wide spaces surrounded by lush vegetation. The next minute you are bounding through narrow channels of rapidly flowing water called the "chutes." The force of water rushing through these narrow three-to-four-foot-wide areas has gouged eight-to-ten-foot-deep channels in the creek. Shallow hard-clay ledges bordering the chutes, hairpin turns, submerged trees and branches and a canoe ricocheting from side to side can make this an exciting obstacle course. The

experience has been described as a roller coaster ride and the "closest thing to bumper cars in paddling."

During brief respites from the fast-moving current, one can take a moment to appreciate the several cascading waterfalls created by springs seeping from the steep banks. Flecks of sun light transcending through the dense canopy of trees and dark mossy banks create little prisms of color and jewel-like reflections in the sculpted pools of water at their bases. Further downstream, spectacular yellow sand bluffs which tower as high as 50 feet also provide canoeists with another inspiring sight.

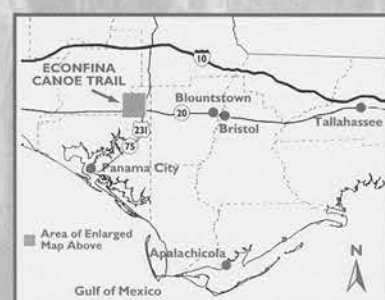
The upper portion is not for the faint-hearted. Chutes, log jams and rapidly flowing water can be a challenge for the most enthusiastic canoeist. Those beginning at the upper portion should be aware that the only take out point is at Walsingham Bridge and, on a good day, the upper portion is a 12-hour trip for experienced canoeists.

Middle and lower portions of the Econfina are easier to canoe. Here, the creek is broader and more serene. The current is slower and submerged logs fewer. There is a sharp contrast between the rapidly moving upper portion and gentleness of the middle and lower portions. Ancient bald cypress can be seen along these stretches and the call of a red-shouldered hawk, and the hum of locust and other insects can be easily heard among the calm waters. Dogwood, redbud, pyramid magnolia, Florida anise, mountain laurel, wild azalea, cardinal flower, maidenhair fern occurring on limestone outcroppings and numerous other plants and trees can be seen throughout the canoe trail.



Access and Take Out Points:

- A.** Scotts Bridge: From U.S. 231 four miles north of Fountain, take Scott's Road west four miles to bridge (no parking at this location).
- B.** Walsingham Bridge: From S.R. 20 turn north on Strickland Road which becomes Porter Pond Road. Follow the fence line on the right and make two right turns where it turns. Take Walsingham Bridge Road to the bridge, then the first right to the canoe launch site.
- C.** S.R. 20 Bridge.
- D.** S.R. 388 Bridge.
- (For those needing to rent canoes, there are two canoe liveries in the area.)



A number of springs feed into Econfina Creek and the most notable can be found south of Walsingham Bridge. Side visits to some of these springs can be made by canoeing up the spring-runs. Blue Spring is one of these. Although small, the spring has a large spring-run and pool and an abandoned oxbow lake connects to the run.

There is a cluster of small springs one mile north of the Highway 20 Bridge. The largest of these is Williford Spring, followed by Sylvan and Pitts. While the current is strong and determined, it is possible to canoe directly up the spring-run to Williford for a glimpse of crystal clear blue glimmering water. The water turns into an intense turquoise color over limestone formations at the cave opening at the mouth of the spring. Sylvan can be accessed by a spring-run but Pitts cannot because it is a designated swimming area.

Immediately south of Highway 20 is Gainer Springs (privately owned) which is one of Florida's 27 first magnitude springs. Gainer Springs discharge about 159 cubic feet of water per second into the Econfina Creek. Across from Gainer Springs is McCormick Spring which has a long spring-run that during the summer harbors some of the largest tadpoles that can be found anywhere.

While the Econfina Creek run is only 22 miles, it cannot be undertaken in one day. If a one-day trip is desired, then begin at the District's new canoe launch and picnic facility just south of Walsingham Bridge and take out at Highway 388. This will take about eight to nine hours with ample time to explore the numerous springs along the way. Beginning at the Highway 20 access point will provide about a five-hour trip.

Through its land acquisition programs, the Northwest Florida Water Management District (District) has acquired about 38,000 acres in the Econfina Creek area. These lands include approximately 17 miles of frontage along Econfina Creek. Acquisitions in the Econfina Creek area have been a priority for the District so the water supply for Panama City and the surrounding area can be protected. Econfina Creek is the major tributary to the Deer Point Lake reservoir, the area's water supply source.

In addition to canoeing, limited seasonal hunting (with quota hunts for deer and turkey), bank fishing, horseback riding, hiking, picnicking, bird watching and primitive camping at designated sites are other recreational activities allowed on District lands. Exclusive use of several of the spring areas for group picnicking or camping is possible with a "special use permit" from the District (camping and picnicking: Blue and McCormick; picnicking only: Williford). For information, contact the District's Division of Land Management and Acquisition: (850) 539-5999.



Above: Sunlight illuminates the richly colored waters of the Econfina. Downed trees and logjams are ever-present obstacles for even experienced canoeists.

Left: Several small waterfalls from spring seeps can be viewed along the way.

A NOTE OF CAUTION:
Do not canoe the Econfina during a storm or after a heavy rain. The narrow channels, especially on the upper portion of the creek, are subject to rapidly rising water, and flash flooding could make canoeing extremely dangerous. Caution should be exercised when the water level is above four feet.

ECONFINA PHOTOS BY DIANE STERLING



LETTERS

Editor's note: We received many letters regarding the Camp W.E.T. program which was featured under the Nature's Classroom flag in the Spring/Summer 1997 issue of Florida Water magazine.

Camp W.E.T.

My daughter was recently enrolled in the Environmental Studies Center Camp W.E.T. program and I would like to take a minute to inform you of her experiences.

She has never been to any summer camp before, but thanks to the South Florida Water Management District's sponsorship, I was able to send her to camp this summer. She learned how to snorkel at Camp W.E.T. and saw, for the first time, a whole new world underwater. She went seining and saw creatures she never knew existed. Consequently, she has a new-found respect for our waters and the environment and wants to protect it.

If I were going to sponsor anything, I could not think of a better program anywhere as Camp W.E.T. Both the kids and the environment benefit and this time, as my daughter says, summer wasn't boring!

Cynthia Lauderdale
Stuart

I am thrilled to be able to write to you today. My son, Nicholas Lowe, received a two-week scholarship to Camp W.E.T. at the Environmental Studies Center thanks to the South Florida Water Management District. I had hoped he would enjoy himself and the outdoors. I never expected him to truly become aware of our fragile ecosystem in such a hands-on learning experience. He not only has opened his eyes to what most of us take for granted, he has become a teacher to all of us. The knowledge of the waterways and the ooze is something I thought I knew about; yet, he has such a grasp of the definitions that I have been learning more as he explains. He

wants to start working on his science project for fifth grade NOW.

I, too, was afforded the advantage of the Environmental Studies Center through my elementary school years. The South Florida Water Management District has made it possible to take that one-day learning to the next level where the children understand concepts and how they can affect their surroundings with a positive force. This is not an easy thing to come by. For this, I thank you and the Environmental Studies Center for good education is costly to us all, yet ignorance we all pay for.

Shirley Saunier
Palm City

Editor's note: Due to demand, we have reprinted two Florida Water articles in brochure form. The article, "On the Waterfront", which features aquascaping (planting low-maintenance, habitat-friendly plants along any shoreline) is now in its third printing.

Another reprinting is "The Circle of Life Continues in the Savannas", which describes a unique property on Florida's Treasure Coast. The Fort Pierce Tribune wrote the following: Enclosed with the Savannas newsletter recently received was a reprint of an excellent article about the Savannas State Reserve. It contains valuable educational material and this reporter learned more about the Savannas from its content and illustrations than ever dreamed.

If you would like to receive either of these brochures, please contact Jan Loftin at 1-800-250-4100 or 561-223-2603.

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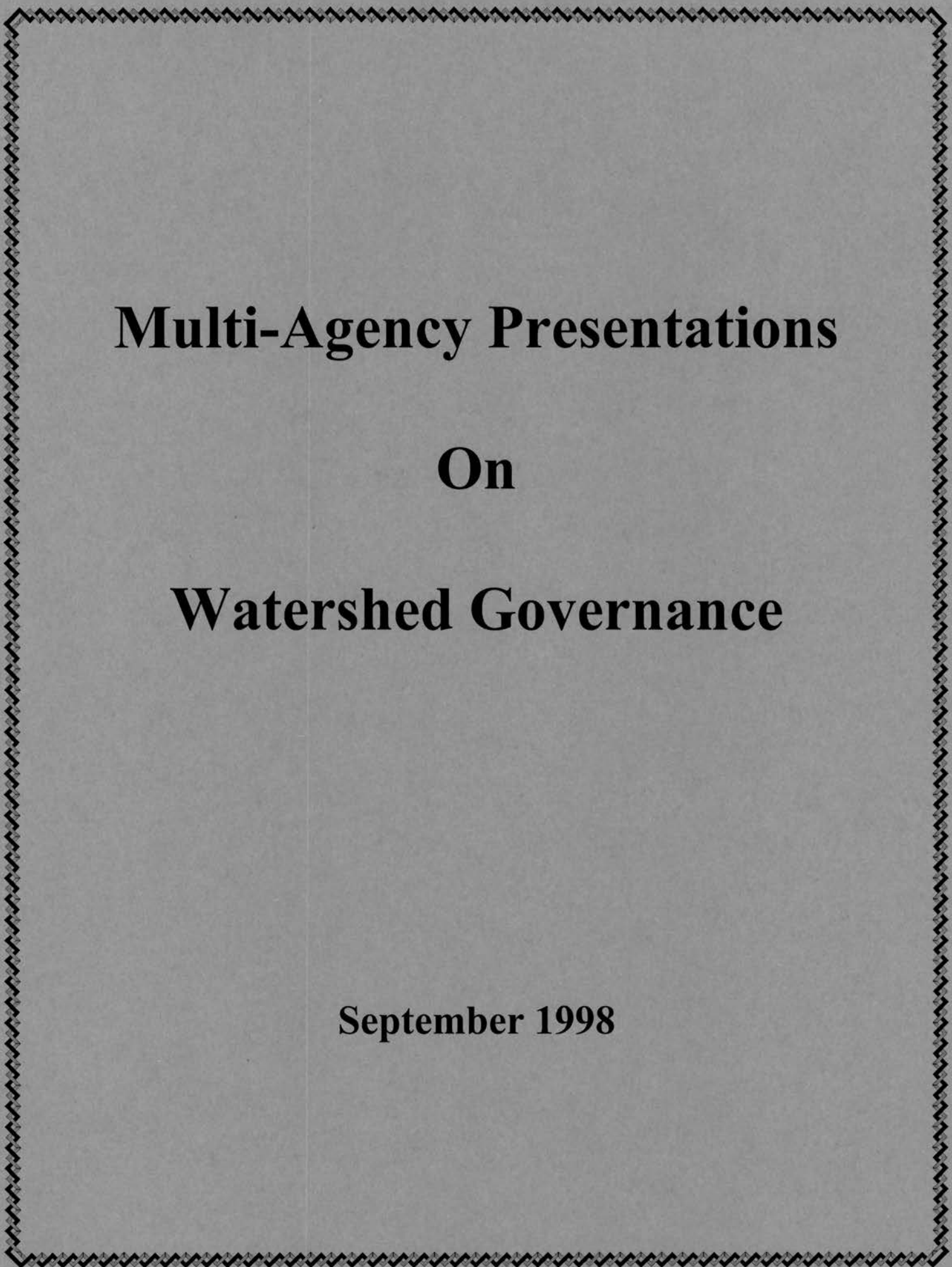
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Multi-Agency Presentations

On

Watershed Governance

September 1998

Bio and Summary of Presentations

- Bob Doppelt, Institute for Watershed and Community Health, Springfield, Oregon -- "New Approaches to Managing Valuable Human, Fiscal and Watershed Resources"
- Dave Fisk, Assistant Executive Director, Suwannee River Water Management District, Live Oak, Florida -- "Regional Water Management - Florida's Story"
- Dayle Williamson, Director of Natural Resources Commission, Lincoln, Nebraska -- "Challenges of Consolidation and Modernization and Charting a Course for the Future"
- Dave Jelinski, Director, Land and Water Resources Bureau, Madison, Wisconsin -- "Wisconsin's Locally Lead Approach"
- Jerry Griswold, USDA/NRCS Chesapeake Bay Liaison, Annapolis, Maryland -
- "Chesapeake Bay"
- Cliff Aichinger, Administrator, Ramsey-Washington Metro Watershed District, Maplewood, Minnesota -- "New Strategies for America's Watersheds"

PERSONNEL AND QUALIFICATIONS

FACTOR₁₀ Inc. was co-founded by Bob Doppelt and Peggy Bloom. In addition to his work with the firm, Mr. Doppelt is President of the Center for Watershed and Community Health, a non-profit institute at the Mark O. Hatfield School of Government at Portland State University, Portland, Oregon. He is also a Senior Fellow with the Columbia/Pacific Institute and an Adjunct Associate Professor of Government (sustainable development and watershed management) at Portland State University.

Mr. Doppelt has over 14 years experience in sustainable economic development, environmental issues and watershed management. He co-owned a small business for ten years. He developed the "Salmon Safe" program which certifies agricultural practices which conserve water quality and fish habitat. He crafted the Jobs-In-The-Woods program adopted by the Clinton Administration to employ dislocated loggers and fishermen in watershed restoration. He established a Green Business Recognition Program in Hood River, Oregon. He devised a program to recruit, expand and establish waste-based businesses in rural Oregon communities. He also created a program to help non-profit housing groups develop recycling and reuse businesses which employ low income populations.

Mr. Doppelt founded, and for ten years directed, the Pacific Rivers Council. During that time he helped link watershed conservation with sustainable development. He was the lead strategist behind the landmark 1988 Oregon Omnibus National Wild and Scenic Rivers Act, still today the largest river protection act in U.S. history. He was key in establishing the Aquatic Conservation Strategy as part of the Northwest Forest Plan, the largest watershed management and restoration program ever adopted in the U.S.. Under his leadership, various elements of the ACS have been adopted nationwide. He developed the initial proposal which led to the creation of hundreds of local watershed councils across the west. He is also an authority on watershed governance structures.

Mr. Doppelt served on the Western Division of The President's Council on Sustainable Development. He also served on the U.S. EPA National Council for Environmental Policy and Technology. He is a Natural Step Trainer. He has a Professional Sequence Award in ISO 14000 from U.C. Santa Cruz, and is a member of the U.S. Technical Assistance Group to the International Standardization Organization 14000 Environmental Standards. He is also a graduate of the International Program on the Management of Sustainability, Ziest, The Netherlands, and a founding member of the International Green Planners Association, The Netherlands.

Mr. Doppelt is a frequent speaker at conferences and workshops, is lead author of the acclaimed book *Entering the Watershed* (Island Press, 1993) and has authored numerous other articles and publications.

Peggy Bloom has a background in education and computer sciences. She has extensive experience in providing executive support for watershed projects. Ms. Bloom handles the administrative work of the firm. She also provides administrative support for selected watershed projects.



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**EMERGING APPROACHES TO
WATERSHED GOVERNANCE**

**A Report To
The Minnesota Board of Water and Soil Resources**

**Presented by Bob Doppelt
President, *FACTOR10 INC.*, Springfield, Oregon, and,
Director, Center for Watershed and Community Health
at Portland State University**

EMERGING APPROACHES TO WATERSHED GOVERNANCE

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EMERGING APPROACHES TO WATERSHED GOVERNANCE

INTRODUCTION

The United States has spent decades creating and recreating governance systems and institutions to manage economic and social well-being in changing environments. This has not been the case for environmental issues in general, and watershed issues in specific. Over thirty years ago, we adopted the command-and-control approach as our primary environmental governance system, and a set of fragmented institutions emerged to administer it. Despite the notable successes that this system can claim, the type, scale and complexity of environmental issues have changed dramatically since then, as have the economy and the public's views of how resource issues should be managed. Yet, most of our watershed governance systems and institutions have remained relatively static.

The challenges faced by many watershed programs and institutions today - including those in Minnesota as described in the excellent 1996 report entitled *Crosscurrents* - should, therefore, be viewed as part of a natural evolution from our early-stage command-and-control system to more integrated approaches to watershed governance. Research on organizational change shows that sound, effective and efficient management systems often emerge only after many years of ad hoc confusion and piecemeal efforts. This underscores that the search for new governance systems is a natural outgrowth of our increasing knowledge about the way watersheds function, the management of complexity, and the design of high performance organizations.

During this natural yet sometimes frustrating period of piecemeal change, important lessons have been learned and some common characteristics of the more successful governance systems and institutions have been observed. This report describes some of these lessons and characteristics. They are offered to help foster and support the development of more effective and efficient watershed governance systems in Minnesota.

The document is written in four parts. In Part I the forces which are generating change in watershed governance structures and institutions are discussed. In Part II, a variety of approaches to watershed governance are discussed. In Part III, the characteristics of some of the more effective and efficient watershed governance approaches are discussed. In Part IV, some of the key issues of watershed stewardship and governance mentioned earlier in the document are discussed in greater detail.

The information included in this report are excerpted from *Emerging Approaches to Watershed Stewardship and Governance*, Doppelt et al., (In Press: full document available Spring, 1999). Apologies are due in advance for our failure to include all of the examples, citations and supportive documentation included with this report. They will be available when the final report is completed.

PART I: THE FORCES OF CHANGE IN WATERSHED GOVERNANCE

Why the search for new approaches to watershed governance? Changing any governance system is extremely time, energy and resource intensive, and politically risky. It makes little sense, therefore, to adopt new systems unless they can address the problems that have generated the search for new approaches substantially better than do current approaches. Hence, it is very important to understand the forces that have converged to stimulate the search for new governance systems. Some of these forces are:

Changing Population and Development Pressures: Population is rapidly growing in some areas while declining in others. The population mix is also changing, as new immigrants arrive (e.g. retirees, high tech industries) while long time residents leave. These changes generate a new mix of business, jobs, housing and recreational demands which compete with or replace traditional users. Most watershed-based laws were enacted for historical uses, some of which are now in conflict with new users and demands. This tension has led watershed programs to seek governance approaches which can better balance the old and the new.

Environmental Issues Have Grown More Complex: Most environmental programs were established in response to single-source, localized pollution problems, such as smokestack emissions and discharges from water-pipes. Most watershed and fisheries agencies still reflect this single-media approach (e.g. water quality, water quantity, fish and wildlife, polluted runoff etc.). When problem sources are fairly obvious and limited in number, the command-and-control system can be effective. Most of today's watershed problems, however, involve non-point pollution, pollution prevention and complex endangered ecosystem issues resulting from the cumulative effects of many diffused sources spread over long time periods and wide geographic ranges. This has stimulated a search for more integrated governance systems that can better manage complex ecological issues.

Legal, Management and Governance Structures Have Grown More Complex: As new environmental laws were enacted in response to each new problem that arose, our legal and institutional structures became characterized by layer upon layer of bureaucracy, conflicting legal requirements, and perverse or competing incentives. The result is that federal, state and local programs are not coordinated and have different legal requirements, planning assumptions, timetables and geopolitical boundaries. The situation is further complicated when single watersheds have intermingled federal, state, local, private and tribal lands. The complexity of the current system has led many to conclude that we must rethink the entire structure to revitalize the resources and establish more effective and efficient governance systems.

Economies are Rapidly Changing: Increased competition and new technologies have accelerated the speed of change in the production of goods and services far beyond the ability of our regulatory system to keep pace. Given the complexity and rapid change in today's economies, those most familiar with it would seem best equipped to devise methods to prevent or resolve environmental problems that result. Yet, our current system

still requires government to establish the practices that individual firms or landowners must use to control their impacts. The scale and scope of this oversight makes permitting, monitoring and enforcement extremely slow, expensive and inefficient. It also stifles creativity needed to develop new pollution prevention methods or the will to go beyond minimum standards. This has stimulated a search for governance systems that can better manage and respond to rapidly changing economic conditions, in cost-effective ways.

Laws and Programs Target "Symptoms" at The End of the Cause-and-Effect Chain:

Most watershed programs seek to identify and resolve problems which show up in-stream (water pollution, endangered fish). In fact we spend millions and send our best and our brightest - scientists etc. - out to study the conditions of our streams. Yet, in-stream problems are often just the end-result - the symptoms - of problems throughout an entire watershed, not the sole problem per se. They are caused by activities in the upstream, mid-stream, and downstream components of the entire economic value-chain. Assessments and interventions aimed solely at the end of the cause-and-effect chain (e.g. add-on and clean-up technologies, minimum riparian buffers) therefore often fail to prevent continued problems. This leads to growing frustration as valuable time and fiscal resources are spent with little gained in return. The failure of our current approaches to address root-causes has led to a search for more effective governance systems. **Table A (1 & 2) outlines this issue.**

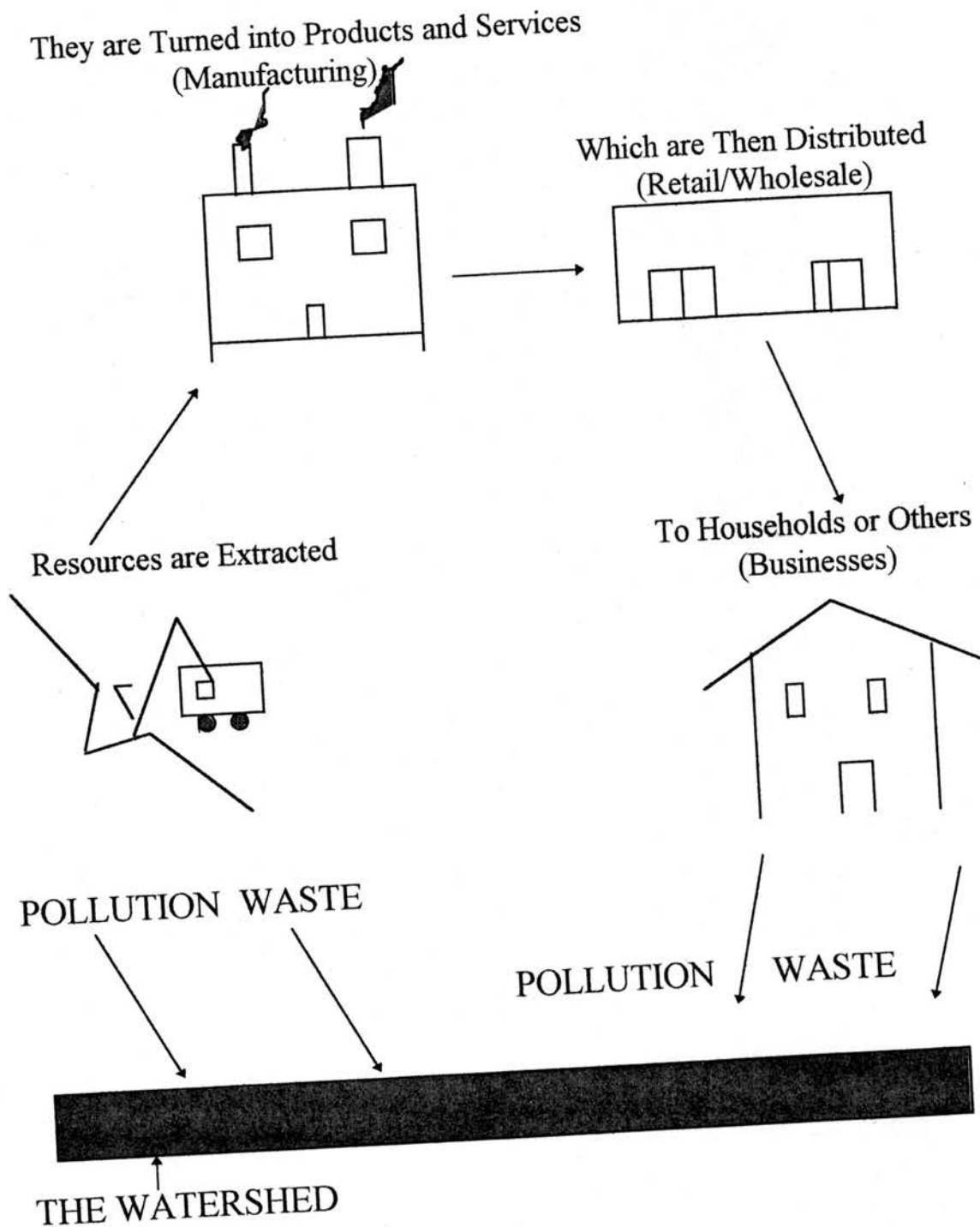
Public Resources Are Declining: Our existing governance system places the responsibility primarily on government to conserve the environment. However, the public resources needed to provide these services are declining, just as the awareness of multiple sources of pollution, the effects of changing population and development patterns, and the pace of economic change increase. This has forced watershed programs across the nation to seek ways to do more, and do it better, with fewer resources.

The Public is Growing More Sophisticated and Demanding: The public increasingly expects more from government. The public has witnessed the changing nature of environmental issues and expects government to make the transitions needed to respond in a fair and balanced manner. They see the private sector adding increased value, quality, innovation and customer service in leaps and bounds, and demand this from the public sector as well. While many watershed programs have successfully reduced management problems such as permitting delays, the public still believes that government is inefficient and does not provide good service or top value for the investment. We live in a world where information, services and products can be exchanged in the blink of an eye. The public wants government to provide these same types of services as effectively and efficiently as does the private sector.

In sum, many forces have conspired to stimulate the search for new approaches to watershed governance. When designing new approaches, it will be important to ensure that any new systems effectively addresses the issues described above. Failure to do so may result in even greater inefficiency, squandered public resources, agency burn out, increased cynicism and decreased performance. **Table B provides a checklist to follow.**

TABLE A (1)

TO UNDERSTAND THE FORCES FOR CHANGE IN WATERSHED GOVERNANCE SYSTEMS, IT IS IMPORTANT TO UNDERSTAND HOW OUR ECONOMY WORKS:



(A-2) WHERE DO MOST EXISTING WATERSHED LAWS AND PROGRAMS
COME INTO PLAY? ...
AT THE END OF THE CAUSE-AND-EFFECT CHAIN!

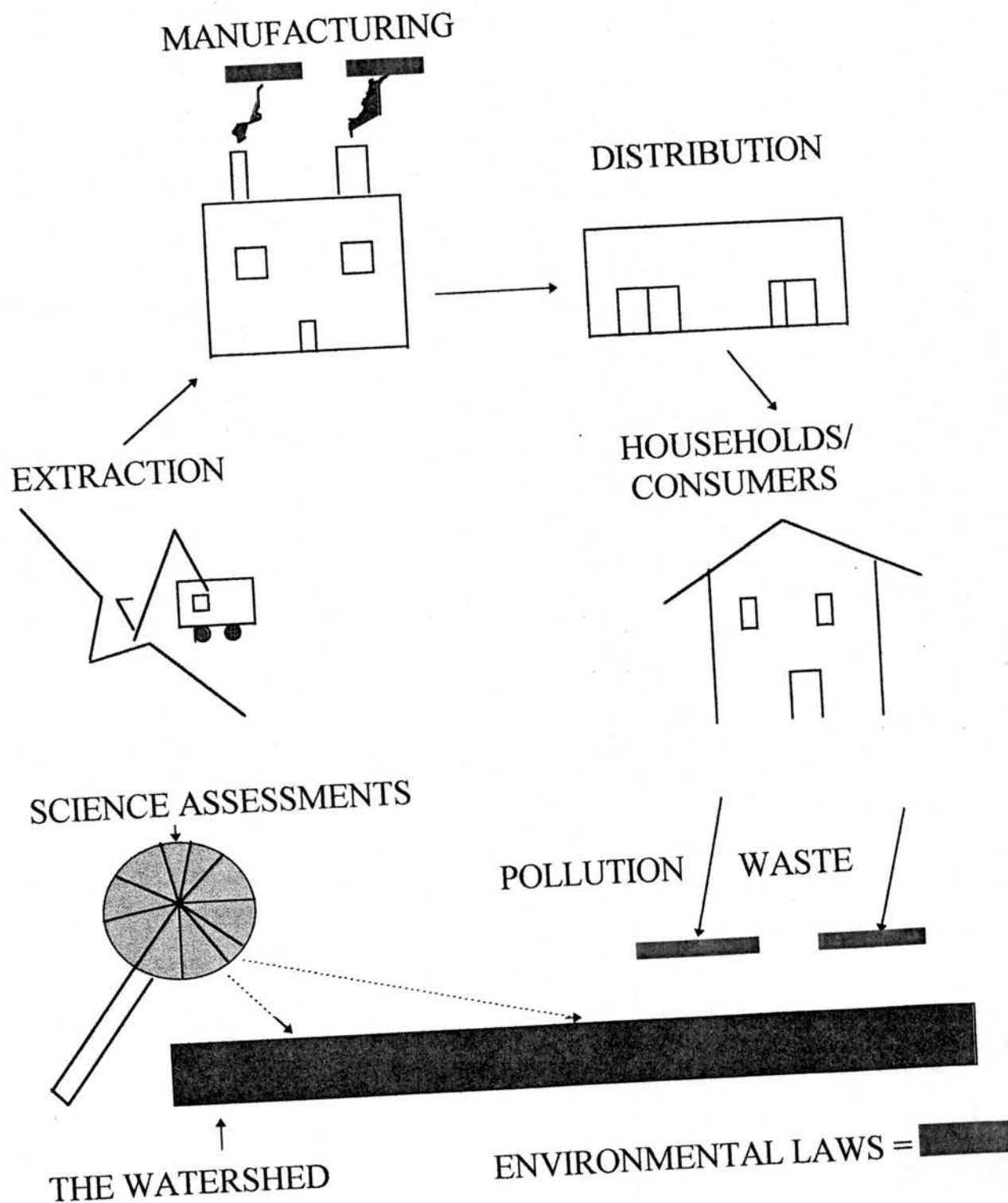


TABLE B

**CHECKLIST OF FUNCTIONAL QUESTIONS TO ASK WHEN DESIGNING
NEW WATERSHED GOVERNANCE SYSTEMS**

Does The Proposed New System Establish More Effective and Efficient Means to Address The Following Issues?		
	Yes/No	Explain
Changing Mix of Population, Development and User Demands		
Increasing Complexity of Environmental Issues		
Increasing Complexity of Legal Management and Governance Structures		
Rapidly Changing Mix of Technologies, Products and Services		
Problems At Many Stages of The Cause-and-Effect Chain		
Decreasing Public Resources		
Increased Public Sophistication and Demands		

PART II: APPROACHES TO WATERSHED GOVERNANCE

A. Policy Instruments and Governance Systems

It is important to make careful distinctions between policy instruments and governance systems. Confusion over these issues can muddle discussions about new watershed governance systems. Taxes, fiscal incentives, specific water or riparian policies, technical assistance programs etc. are *policy tools or instruments* that are used within the context of an overall *governance system*. They are not governance systems themselves.

A governance system involves a complex set of laws, institutions, programs and tools designed to, in concert, achieve a specific outcome. A clear understanding of the outcome desired is important to choosing an effective governance system. The governance system used determines who makes final decisions, how the decisions are made, the role of the public in the decision making process, what entity or actors should communicate with others (i.e. what type and scope of information is needed, who is required to share it with other entities etc.), how decisions are enforced and which entity enforces them.

Effective watershed governance can only be achieved if the system nurtures a balance between the often contrasting right to protect a place in which one can live as one wants, with the need to cooperate with others to achieve a safe and harmonious society and a healthy environment.

This requires a combination of:

- Formal mechanisms (laws and regulations)
- Informal mechanisms (social norms focused on stewardship)
- Interpersonal mechanisms (communication systems)
- Networking mechanisms (exchange systems)

In relatively cohesive societies laws function largely to support social control mechanisms and to fill in the gaps where informal and networking mechanisms fail. Most rules common to a territory cannot be found in any written code. Instead, they are found in the informal social norms about what is required to be good-neighbors and good stewards.

The structure and content of our governance systems therefore reflects the process by which they are made and the depths of our beliefs, principles and vision of how we see the world. Every governance system is a manifestation of our ideas about community. Consequently, the success of any governance system depends more on the clarity and level of support of the shared purpose, principles, goals and vision, than it does on specific management practices and resources, per se, as important as they may be.

It is important to note that watershed governance systems have a number of characteristics that set them apart from other governance systems. For one, they often seek to give prominence and priority to non-human beneficiaries, such as plants and animals. In

addition, watershed governance systems often seek to bank (save) and redistribute environmental benefits to future generations of people. Further, unlike many other policy arenas (including issues such as health care), they typically give science a strong voice in agenda setting and evaluation. Finally, they tend to require more comprehensive and integrated responses than other policy issues because watershed health is typically threshold bound and not attainable through incremental steps (e.g. achieving 90 percent of what is necessary to avoid contaminated drinking water or to prevent fish extinctions still may constitute failure).

B. Five Approaches to Watershed Governance

There are five general approaches to watershed governance. Each addresses "the commons" in different ways, places government in different roles along a continuum, and each affects interest groups in different ways. One the one end, there is total government control over environmental policy, and, at the other end, there is virtually no government involvement and the free market and voluntary efforts control activities. In between, there are combinations of the various approaches, some of which can be very effective.

This continuum provides a framework for assessing existing approaches and developing more effective and efficient watershed governance systems. There is no one-size-fits-all formula. Different combinations and approaches work best based on the geography, ecology, history, politics and issues relevant to the particular region, state or community.

1. Total Government Control "Feudal" Approach

In this system, the government has the total responsibility for environmental protection and management. Command flows downward and information and results flow upwards to the few who make the decisions. The government determines what the appropriate level of a particular pollutant or environmental impact should be, sets the standards, and establishes a way to enforce the standards and gather information about compliance. The government and the property system are basically synonymous - government is both the supreme sovereign and the owner of the environment. Only rarely in this country has this approach been used (for example, when regulating nuclear power). Some could argue that the Endangered Species Act falls into this category, although it does allow for states and local entities to develop recovery plans to meet ESA requirements.

2. Government Controlled "Standards and Enforcement" with Local Implementation

This is a variation of feudal approach, with some very important differences. Beginning in the early 1970s, environmental regulations in this country were formulated by the national government and implemented primarily by state and local governments. State governments also set policies that were to be implemented by local counties or municipalities. In this system, a government body determines what the appropriate level of a particular pollutant or environmental impact should be, and sets a standard. State and local governments

adopt rules, issues permits, and establishes a way to enforce the standards and gather information about compliance. On occasion, some substances may be banned outright or constrained to specific zones.

In this approach, property is separate from government. In fact property rights are seen as a bulwark against government intrusion. Laws are passed and enforced as a buffer between government and property (a "government of laws, not men"). Society is viewed as a group of semi-autonomous individuals which means property owners have the right to do what they want on their lands except for general laws applicable to all.

While this approach has been responsible for major environmental improvements since the 1960's, as previously discussed, it has a growing number of limits. For example, as laws were established to address new problems as they emerged, a tangled web of policies and hierarchical bureaucracies emerged to manage them. The mechanistic command and control approach seeks to manage for constants, uniformity and efficiency from the top down. However, our greatest need when dealing with watershed issues is to coordinate variability (every watershed is different), complexity (ecosystem function does not follow a linear cause and effect chain) and sound performance by multiple sources (desired outcomes).

3. Performance-Based Within Carefully Monitored Framework

This is a combination of the other approaches. It emphasizes horizontal and vertical alliances and partnerships to achieve coordinated action. Many of the new and emerging local watershed programs fall into this category. They focus is on using the best combination to achieve outcomes, not on dogmatic adherence to any particular hierarchical process. Yet, they also seek to provide assurances that "the commons" are protected for all.

These programs often adopt governance principles that are fundamentally different than the traditional "standards and enforcement" approach. For example, they seek to *reverse the burden of responsibility* for sound environmental management from government to those contributing to environmental problems. Government becomes a partner in the management process, playing multiple roles, yet serving as the final quality control arbitrator of stewardship issues. The principle of *subsidiarity* is also followed - keeping the locus of decision making as close to the people and appropriate scales as possible. There is a heavy reliance on communication and information flow, and an emphasis on local networking, flexibility, and adaptation.

The emergence of this approach tends to strain traditional watershed programs which stress hierarchy and control, fixed jurisdictions, and reliance on formal rules. It also can elicit strong objections from those who believe that only clear government mandates and regulation can protect the environment, especially when "the commons" is involved.

4. Market and/or Voluntary Approaches with Some Government Controls

In this approach government is involved with environmental management, but only to the extent that it establishes taxes or affluent charges or some other type of monetary measure to provide polluters with an incentive to find the most cost efficient means to limit their environmental effects. The approach is based on the assumption that the payment of high enough fees will prevent the discharge of pollutants above specific standards set by government.

One of the problems with this approach is that appropriate environmental costs are very difficult to calculate. They also can have adverse or unintended consequences, or effect specific populations unfairly. This approach is also fraught with the limits described in approach #5 below.

5. Complete Voluntary and/or Market-Based Approach

This is essentially the free-market option. It relies on individual self-interest to provide the necessary environmental safeguards, and on volunteerism. No government intervention is involved to correct for problems related to "the commons." In some ways it runs counter to the view that laws serve as a buffer between government and property by establishing a "government of individuals, not law."

One version of the free market approach is to establish property rights in "the commons." This, in theory, gives individuals a stake in the appropriate management of the now private resources. For example, the "privatization" approach has often been promoted as a means to forest management. Another recent example is the Oregon Coastal Salmon Restoration Initiative, which (until the recent ESA listing of coho salmon) almost completely relied on the volunteer efforts of landowners to restore coastal watersheds and endangered salmon.

As many watershed problems cannot be regulated, volunteerism is a vital component of any effective watershed governance system. The reliance on appropriately set prices and market mechanisms can also be important contributors to effective watershed stewardship and governance. However, full environmental costs are seldom internalized in market prices and environmental property rights are rarely - and are very difficult - to define. Government subsidies and other market distortions often encourage environmentally harmful practices such as oversupply or overconsumption of non-renewable resources. Decades of experience across the globe, therefore, underscores that the free-market and volunteer approach alone is not a reliable solution to problems related to "the commons."

Table C provides a comparison of the approaches to watershed governance.

TABLE C: Comparative Approaches To Environmental Governance

<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
Complete Voluntary or Market-Based Approach	Market and Voluntary Approaches W/Some Gov't Controls	Performance- Based Within Carefully Monitored & Regulated Framework	Government Controlled With Local Implementation	Total Regulatory Approach

C. Many Watershed Programs Today Focus on Two Extremes (Approaches #1-2 and/or #5)

As previously discussed, our primary watershed governance system remains approaches #1-2. In these programs, the Clean Water Act, Endangered Species Act and other federal or state laws dictate the governance systems. Increasingly, many regions have begun to adopt components of a governance system which could be considered at the opposite end of the scale - #5 free market volunteerism. Conservation efforts are done opportunistically by those who need regulatory approval for new activities or are willing to voluntarily participate.

While these programs can claim many notable successes, our research has found that the more effective programs have adopted systems that fit between the two extremes. The next section discusses the characteristics of these systems.

Table D provides a checklist to assess existing or emerging watershed programs against the various governance options.

TABLE D

**CHECKLIST TO HELP DETERMINE THE TYPE OF EXISTING OR
PROPOSED WATERSHED GOVERNANCE SYSTEM**

Which Approach To Governance Does Your Existing or Emerging Watershed Program Employ?		
	Yes/No	Explain
Complete Market and Voluntary Based System		
Market and Voluntary Approach With Some Government Controls		
Performance-Based Within A Carefully Monitored and Regulated Framework		
Government Controlled With Local Implementation		
Total Regulatory Approach		

PART III: CHARACTERISTICS OF MORE EFFECTIVE AND EFFICIENT WATERSHED GOVERNANCE SYSTEMS

What are the characteristics of some of the more effective and efficient watershed governance systems? How do they differ from those that exist today? The answers to these questions can help guide the development of local programs.

Our research indicates that there are three primary components of the emerging more effective and efficient watershed governance systems:

- Scientifically sound sideboards to guide stewardship of watershed resources, particularly those associated with "the commons."
- Real-time integration of economic and environmental objectives within the watershed context; and,
- The effective and efficient delivery of those services through the development of high-performance organizational structures.

Each watershed governance system differs due to historical, cultural, political, economic and environmental traits. While we found no program that provides each of the three components state above perfectly or completely, many have adopted ways to deliver one or more components very effectively.

A. Scientifically Sound Sideboards to Guide Watershed Stewardship:

The concept of stewardship is often difficult to define. Few government bodies have clear stewardship mandates. Even fewer private landowners have been required by law to practice stewardship. In fact, our understanding of watershed stewardship is not very concrete. Most watershed-based laws simply *constrain* what can be done or identify the most obvious good and bad actions in relation to stewardship. But a majority of activities that effect watersheds fall in the middle ground, which is often very muddled.

There is an old saying, "If you don't know where you are going, any path will get you there." Without clear stewardship guidelines, it should be no wonder that many watershed governance systems and institutions seem to struggle to be efficient and effective.

While the particulars of stewardship may be difficult to define, one universally agreed upon purpose is to conserve "*the commons*." This means conserving the "ecological services" that all of society depends on, yet no one entity can own in entirety, such as clean water, clean air, productive soils, fish and wildlife etc.

Conserving "the commons" seems to involve, at a minimum, three components:

- Establishing management *goals* that are consistent with *scientifically sound stewardship principles* within a watershed.
- Making the *management goals* consistent *across territorial (land ownership) boundaries*:
 - between public-private landowners
 - between public land management agencies
 - within each public land management agency
- Developing consistency between *management actions* and *stewardship goals* across administrative boundaries throughout a watershed.

Effective stewardship requires that scientifically sound management goals be aligned *between* and *within* territorial boundaries (land ownerships). Incongruent management goals are *more important* in causing ecological harm than incongruity between administrative and ecological boundaries. Said differently, even if administrative and ecological boundaries are perfectly aligned, different management goals within different land units will still cause ecological harm.

Therefore, while it may help to adjust agency jurisdictions to better align with ecological boundaries, or to merge agencies or agency offices, *the most important need is to make management goals compatible across territorial boundaries.*

Characteristics of Effective Watershed Stewardship Systems

Our review of programs in this nation and across the globe found that programs that do the best job of operationalizing the three overall components of sound watershed stewardship have some or all of the following characteristics. They:

- ***Establish Clear Vision and Goals for the Watershed:*** Traditionally, watershed programs focus on *what* to do, and not on *why* to do it. The most advanced programs realize that the most important initial step is to clarify the strategic goals and overall vision of a watershed plan. The type of stewardship plan developed will hinge on the vision and goals. Government, fully informed by the public, establishes the vision and goals. In contrast, failure to do this is a common problem with many programs (e.g. many federal agencies have a difficult time clearly stating their goals and objectives).
- ***Develop Credible Scientific Analysis of Baseline Conditions and Needs:*** A "credible story" is developed about the problems, causes and solutions to motivate people to adopt new behaviors. This begins with a credible scientific assessment of baseline conditions, trends and risks. Government (or its delegates) establishes the means to continually generate credible scientific information and to monitor progress, subject to a thorough scientific peer review process.

- **Establish Measurable Objectives.** Once credible baseline information exists, the best programs translate national, regional, state and local water resource goals into measurable objectives. These are the quantification of macro level goals. Where knowledge is incomplete, the best available data or science assessments are used within a framework of careful monitoring and adaptive management.

Measurable objectives: a) provide the best assessment of what is needed to achieve an acceptable level of improvement; b) send clear messages to all contributors; c) stimulate a better, more focused debate; d) focus attention on outcomes, not the process and instruments; e) focus attention on the portions of contributions required per sector or actor; f) allow businesses to incorporate changes into their normal planning and investment processes; g) help all parties monitor progress and provide trigger points to adjust strategies when needed.

- **Identify All Priority Issues and the Effects Which Must Be Changed:** Rather than focusing just on the easy to identify or control problems, all the priority issues are identified. Clear priorities helps business, communities and government develop specific implementation steps and to measure the progress. This also help government monitor progress, which satisfies legal requirements and the needs of the public.

The traditional single-issue approach to watershed management often leads to the transference of impacts from one environmental media to another to resolve a problem (e.g. pushing water emissions into the air). To avoid this, the more advanced programs seek to address all priority environmental issues simultaneously, which leads to an integrated and comprehensive stewardship program.

Priority Setting Through a Watershed Problem and Solution Matrix

Table E outlines a way to approach priority setting and responsibility identification using a sector-based approach. This matrix links problems with solutions. For example, if a sector contributes 20% of water quality or riparian habitat problems, they must be 20% of the solution. The key question to start with is what is the approximate individual contribution of every key sector or actor to each environmental problem area. They need to add up to 100%.

Rarely will the ultimate end goals be known initially. The initial focus must not be on the specific end-points (e.g. 59 or 65 degree water temps), but on the *direction*, *degree* and *speed of change needed* (e.g. the approximate percentage of reduced municipal runoff required within 5 years). Over time, as more information is known, the specific levels of change can be quantified. If you add up all the costs and find that some sectors or actors contributions are too expensive, the matrix provides a way for sectors to make trades within and between sectors. The trade-offs can be measured against risk factors.

TABLE E

**SAMPLE
ISSUE AND SOLUTION MATRIX**

KEY ISSUES	KEY CONTRIBUTORS (KEY GROUPS)										
		Industries	Agriculture	Transport	Pulp and Paper	Construction	Forestry	Municipal	Dams	Fishing	100%
	Riparian Habitat Loss	2.5%	25.0%	15.0%	2.5%	20.0%	20.0%	10.0%	5.0%	0.0%	100%
	Point Source Contamination	30.0%									
	Stream Bank Erosion	2.5%									
	Non-Point Source Contamination	20.0%									
	Stream Chanel Modif.	10.0%									
	Genetic Diversity Loss	20.0%									
	Groundwater Polution	10.0%									
	Fish Passage	5.0%									
	Other										
	TOTAL \$	\$	\$	\$	\$	\$	\$	\$	\$	\$	

THE PERCENTAGES ARE SAMPLES ONLY. THIS MATRIX SYSTEM CAN BE USED TO IDENTIFY CONTRIBUTIONS AND POTENTIAL SOLUTIONS WITHIN A SPECIFIC SECTOR OR SUB-SECTORS. IT CAN ALSO HELP IDENTIFY POSSIBLE TRADES AND EXCHANGES BETWEEN SECTORS.

Follow The Principle of Subsidiarity. Once the priority issues are identified, they emphasize action at every level needed to resolve problems. Yet, they also emphasize devolving decision making down to the most appropriate level possible. This means that emphasize local implementation, innovation and responsibility wherever possible. This also means giving responsibility for the development of stewardship strategies to those who know their industry or economic sector best, with monitoring and enforcement provided by government. Flexibility is provided to encourage innovation, yet a carefully monitored framework is developed to ensure accountability.

Table F describes the levels needed for action.

TABLE F

WATERSHED ISSUES DIVIDED INTO SIX SPATIAL SCALES AS A BASIS FOR ACTION	
Effective Watershed Stewardship Requires Action At All Levels:	International
	National
	Regional
	State
	Watersheds (Sub-State Eco-Regions)
	Local

- **Organize Around "Nested" Hydrologic Units (Watersheds) For the Development of Coordinated, Integrated Management Plans.** Natural hydrologic units are used as the focal point in which federal, state, local, private and other entities develop integrated and coordinated management plans. Steering and coordination methods are established to accomplish this. While many agencies often feel constrained by existing mandates from full cooperation and integrated planning with other agencies, in reality this is more a matter of organizational history, culture and mindset than legislative constraints. A nested approach is used to build planning and management up or down from first to third or fourth order watersheds.
- **Establish Clear, Easy to Understand, Policy Relevant Scientific Principles to Guide All Levels of Management.** The basic principles of aquatic ecology, the first and second laws of thermodynamics, and other scientific principles are used to guide planning and management. They are stated in clear, easy to understand terms which are translated into how the principles relate to outcomes on the ground (for firms, landowners and communities).

- ***Seek to Align Management Goals Within, and Between, Territorial Boundaries (Land Ownership/Management Units) in a Watershed.*** Rather than placing a major emphasis on aligning administrative and ecological boundaries, emphasis is placed on developing consistency between the management goals practiced on the land ownership units within watersheds. Watershed level goal identification and alignment fosters the development of well defined stewardship strategies.
- ***Develop Integrated Basin Level Budget Coordination Processes.*** Federal, state and local agencies coordinate and display their budget proposals to show how they achieve the stewardship goals within a watershed. Full public disclosure and public comment on the activities and budgets which agencies propose have been found to be one of the best means to develop scientifically sound, integrated watershed management plans.
- ***Clearly Identify Responsibility By Reversing the Burden of Responsibility.*** There are simply too many sources of non-point pollution or endangered ecosystem problems for government to regulate (i.e. all of us). This requires a fundamental change in governance systems. Those that know their industry best are best able to develop scientifically sound and cost-efficient strategies to prevent and resolve environmental problems. This awareness has led to a variety of strategies to place responsibility on the primary contributors of environmental problems to develop strategies to achieve the management objectives.
- ***Use Outcome or Performance-Based Management Systems.*** The traditional government focus on rules and procedures serves many purposes, but experience in watershed management clearly shows they are an inadequate substitute for results. To reverse the burden of responsibility, government changes its role from strict adherence to rules and procedures to setting environmental performance objectives and then helping the key contributors of environmental problems develop their own, least-cost path to achieve these goals. Government then reviews, monitors and enforces the plans. Permitting flexibility, priority for technical assistance, fiscal support and other incentives and benefits are provided to those that develop and abide by their own conservation strategy. Measurable objectives are needed to transition to a performance-based system. If performance objectives are established, the specific instruments used don't matter as much.
- ***Maintain the Regulatory System But Use It Differently.*** Rather than using regulation as the sole or dominant management tool, it is used primarily to establish baseline conditions, as a back-up to regulate "free-riders", to assure a level playing field for all actors, and to monitor efforts and provide feedback for adaptive management.
- ***Move Upstream in the Cause and Effect Chain To Prevent and Solve Problems at Their Source.*** Rather than focusing solely on solutions applied at the end of the cause-and-effect-chain (e.g. add-on or clean-up technologies or minimum riparian standards), prevention at the source of the problem is pursued. For example, toxic substances may be phased out in favor of bio-products rather than investing in expensive and less

effective collection ponds or scrubber technologies. This requires that issues be address as far upstream in the cause-and-effect chain as possible.

- ***Use Inter-Linked "Horizontal-Vertical" Problem-Solving Strategies Involving Sector-Based and Place-Based Solutions.*** Most watershed problems are the result of business decisions made in response to the economic and political pressures within the economic sector in which a business operates (firms or landowners). The more innovative programs develop public-private partnerships to help local businesses identify, prioritize and develop effective responses to these economic forces. These can include sector-wide strategies, exchanges between sectors (e.g. emissions trading, land purchases or exchanges), or exchanges between major players within a sector.

Table G provides a schematic overview of how these characteristics can fit together in a comprehensive program.

It is important to remember that the characteristics described above will change over time as new ideas and methods emerge. They are provided simply to provide a form of benchmarking to help existing programs evaluate their current and proposed methods and directions.

Table H provides a checklist to help determine the extend to which an existing or emerging watershed program includes the characteristics describes above.

TABLE G

**SCHEMATIC VIEW OF COMPREHENSIVE
WATERSHED STEWARDSHIP PLAN**

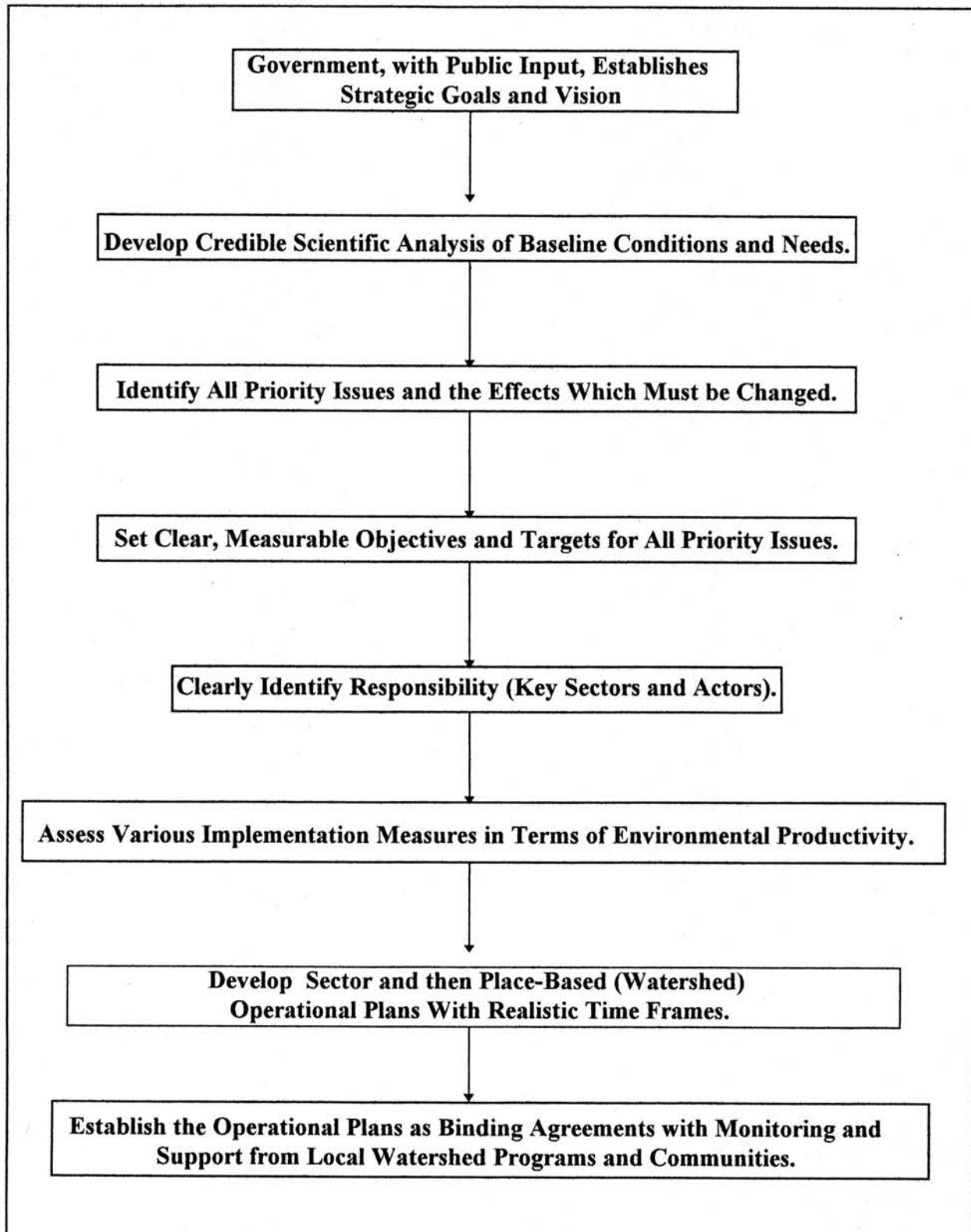


TABLE H
CHECKLIST TO DETERMINE THE CHARACTERISTICS OF WATERSHED
STEWARDSHIP PROGRAMS

Which of the Following Stewardship Plan Characteristics Does Your Watershed Program Include?		
	Yes/No	Explain
Clear Visions and Goals Have Been Established for the Watershed		
A Credible Scientific Analysis of Baseline Conditions and Needs Has Been Completed		
Measurable Objectives Have Been Established.		
All Priority Issues Have Been Identified		
The Principle of Subsidiarity is Followed		
Coordinated, Integrated Multi-Agency Management Plans Are Organize Around "Nested" Hydrologic Units		
Clear, Policy Relevant Scientific Principles Exist Which Guide All Levels of Management		
Management Goals Are Aligned Within, and Between, Territorial Boundaries in the Watershed		
Integrated Basin Level Budget Coordination Processes Are Used		
Responsibility Has Been Clearly Established By Reversing the Burden From Government to Key Contributors		
Performance-Based Management Systems Are Used.		
The Regulatory System Is Maintained But Used Differently		
Problems are Resolved At Their Source Where Possible		
Inter-Linked "Horizontal-Vertical" Problem-Solving Strategies Are Used When Possible		

B. Real-Time Integration of Economic and Environmental Goals

The most advanced watershed governance systems seek to explicitly link economic and environmental goals. This is sometimes called sustainable development. Another way of saying this is to help business, communities and households to *increase* their *environmental productivity* by *decoupling* economic productivity and competitiveness from environmental effects.

The last century witnessed huge increases in labor productivity. As market pressures and environmental concerns increase, the future is more likely to be characterized by substantial increases in environmental productivity. This means increased economic growth and profitability coupled with dramatic reductions in energy and raw material consumption, pollution, habitat impacts and waste generated per unit of product or GNP.

As with labor productivity, the growth in environmental productivity will be largely based on technical and management advances which reshape the way business, government and communities function. Efforts to increase environmental productivity are fundamentally different from the traditional watershed focus of trying to minimize the economic impacts of environment policy. They generally require a concerted effort on the part of a blue ribbon team of economists, scientists, policy analysts, business leaders, bankers, government officials and key members of each economic sector involved.

One way to begin the process of increasing environmental productivity is to calculate (even through rough estimates on the "back of the envelope") the current amount of soil runoff per farm, or per unit of farm product by sector, or the current amount of polluted urban storm water runoff per unit of GNP in a community or statewide. Once these rough estimates are determined, establish programs to examine a variety of options to decouple these variables by increase profitability or competitiveness while decreasing emissions per unit or product of GNP.

Four approaches can be pursued:

1. Government Led Initiatives
2. Combined Actions by Key Sectors and Government
3. Key Sector Led Initiatives
4. Early Adopter Individual Actor (Firm or Landowner) Initiatives

Some questions that may help steer the investigation of means to increase environmental productivity:

- What actions can *firms and land owners* take to increase productivity or competitiveness within a watershed while reducing their contribution to watershed problems? (e.g. efficiency measures, new technologies, Strategic Environmental Management, Value-Chain Programs).

- To what extent are problems the result of factors within the economic sector in which a firm or landowner operates? Could sector-based problem-solving be a more effective and efficient means to help the firms or landowners resolve their problems? How would sector-based initiatives be organized?
- What actions can *government and communities* take to help foster increased productivity or competitiveness while helping to reduce their contribution to problems? (e.g. infrastructure investments, technology transfers, fiscal incentives).
- Which actions are clearly necessary and which are more uncertain to meet the environmental quality standard needed or to reduce known problems ?
- Which actions can contribute most cost-effectively today to solving the problems, and what would a step-wise phase-in look like? (Short term "low hanging fruit").
- What actions may take more time to phase-in but provide potential great returns? (i.e. what new technologies or process oriented abatement measures could be phased in during normal business investment cycles?)

Table I provides a means to assess existing or emerging sustainable development programs.

TABLE I

**CHECKLIST TO ASSES HOW YOUR WATERSHED PROGRAM LINKS
ECONOMIC AND ENVIRONMENTAL GOALS**

Which of the Following Watershed-Based Sustainable Development Initiatives Does Your Program Include?		
	Yes/No	Explain
Government Led Initiatives		
Combined Actions by Key Sectors and Government		
Key Sector Led Initiatives		
Early Adopter Individual Actor (Firm or Landowner) Initiatives		

C. High Performance Organizational Structures Which Facilitate Efficient and Effective Delivery of Products and Services

To effectively and efficiently deliver the services requires to guide sound watershed stewardship and to link economic-environmental goals, public agencies reinvent themselves into what some have called "high performance organizations." This means they carefully evolve from hierarchical, centralized, command-and-control oriented organizations to flexible, dynamic, outcome and performance-based entities. In short, they recreate themselves in the image of the changing nature of watershed issues and the environmental productivity services that they have chosen or been mandated to deliver.

Our review of many programs identified several common characteristics regarding efficient and effective *high performance organizations*. They:

- ***Are Clear About Their Missions and the Changes They Need to Make to Achieve It.*** They are mission oriented, not program or project oriented. The mission is developed through a comprehensive diagnostic process involving stakeholders and employees which honestly examines all aspects of past, current and potential future activities. It is used to set the framework for future activities and for assessing future watershed stewardship and/or sustainable development organizational performance.
- ***Use Performance-Based Systems and Are Results Oriented.*** As with the stewardship strategy, they phase out prescriptive, rule based management and adopt performance-based organizational systems that define the specific outcomes the organization will achieve to accomplish its mission. The performance measures are tools the organization uses to focus on results.
- ***Focus on Continual Improvement.*** They know that achieving their missions will require continued effort. They set interim benchmarks to guide their progress and seek to consistently improve their organizational performance.
- ***Fully Involve Stakeholders and Employees in Defining Their Goals.*** The development, measurement and application of performance goals requires the full involvement of stakeholders, employees and leadership.
- ***Unleash the Creativity of Their Workforce.*** Traditional organizational boundaries are removed. Employees are empowered to form alliances, collaborate across work groups and departments and between agencies to develop new decentralized approaches that help them best meet the outcomes and mission of the organization.
- ***Develop Protocols to Allow For Quickly Adjustments to Changing Circumstances.*** Just as watershed conditions change in rapid and unpredictable ways, high performance organizations develop internal protocols that allow them to quickly adjust to change.

- ***Are Committed to Reaching Out and Involving Customers and Stakeholders.*** They emphasize quality, value, customer satisfaction and results rather than compliance with rules and regulations. They fully involve their stakeholders - whether perceived to be adversaries or friends - in the process. Clear and efficient communication systems are developed within the agency and between the agency and stakeholders and customers.
- ***Employ Participatory Decision Making.*** They encourage, not fear, contrary or adversarial public comment and participation. They realize that the plurality of positions and ideas (from agencies, citizens, economic interests) helps to make better decisions. It also reinforces democratic values and helps establish trust and faith in government. They therefore encourage meaningful participation to develop the information needed for better decision making. This also helps generate the support of key constituencies.

Table J provides a checklist to assess the high performance characteristics of existing or emerging organization structures.

Table K provides a comparative assessment of traditional and emerging watershed governance structures and institutions.

TABLE J

**CHECKLIST TO ASSES THE HIGH PERFORMANCE
CHARACTERISTICS OF YOUR ORGANIZATION**

Which of the Following Characteristics of High Performance Organizations Does Your Agency Include?		
	Yes/No	Explain
We Are Clear About Our Missions and the Changes Needed to Achieve It.		
We Use Performance-Based Systems and Are Results Oriented.		
We Focus on Continual Improvement		
We Fully Involve Stakeholders and Employees in Defining Our Goals.		
We Promote Creativity of Our Workforce		
We Have Developed Protocols to Allow For Quick Adjustments to Changing Circumstances		
We Are Committed to Reaching Out and Involving Customers and Stakeholders		
We Employ Participatory Decision Making		

TABLE K
COMPARATIVE DESIGNS OF TRADITIONAL AND EMERGING
WATERSHED GOVERNANCE SYSTEMS

Components	Traditional Systems	Emerging Systems
Basic Perspectives	Priority on Industrial Economy Program & Project Oriented Single Media Focus (Air, Water) Rigid Procedure and Rules	Focus on Increasing Economic & Environmental Well Being Systems Oriented Coordinated Ecosystem Focus Outcome Based
Resource Orientation	Minimize Damage Minimum Impact Standards "Near Stream" Environment	Prevent Problems at Source Scientifically Sound Sustainability Principles Watershed Perspective
Intervention Focus	End of Cause-and-Effect-Chain Add-on or Clean-up Technology Political Conservation Strategies General Narrative Standards	Up and Mid-Stream in Cause-and-Effect-Chain Process Oriented Abatement Strategies Scientific Conservation Approach Measurable Goals and Objectives
Economic-Enviro Focus	Prevent Economic Impacts Assess Economic Effects of Environmental Policies	Increase Environmental Productivity Seek Approaches that Enhance Both Economic and Environmental Well Being
Structure	Rigid, Hierarchical Segmented Media Specific Programs Functional Departments	Flat, Flexible Integrated Programs Multi-Level Departments
Decision Systems	Centralized Hierarchical Closed	Dispersed Flat or Flexible Hierarchy Open
People	Narrow Expertise Reductionist Viewpoints	Multi-skilled Focused on Wholeness and Issue Connections
Values	Compliance Oriented Routine Behaviors	Involvement Oriented Promote Innovation, Cooperation

PART IV: FURTHER DISCUSSION OF SOME KEY ISSUES IN WATERSHED STEWARDSHIP AND GOVERNANCE

A. Principles and Strategies For Designing More Effective And Efficient Watershed Stewardship and Governance Systems

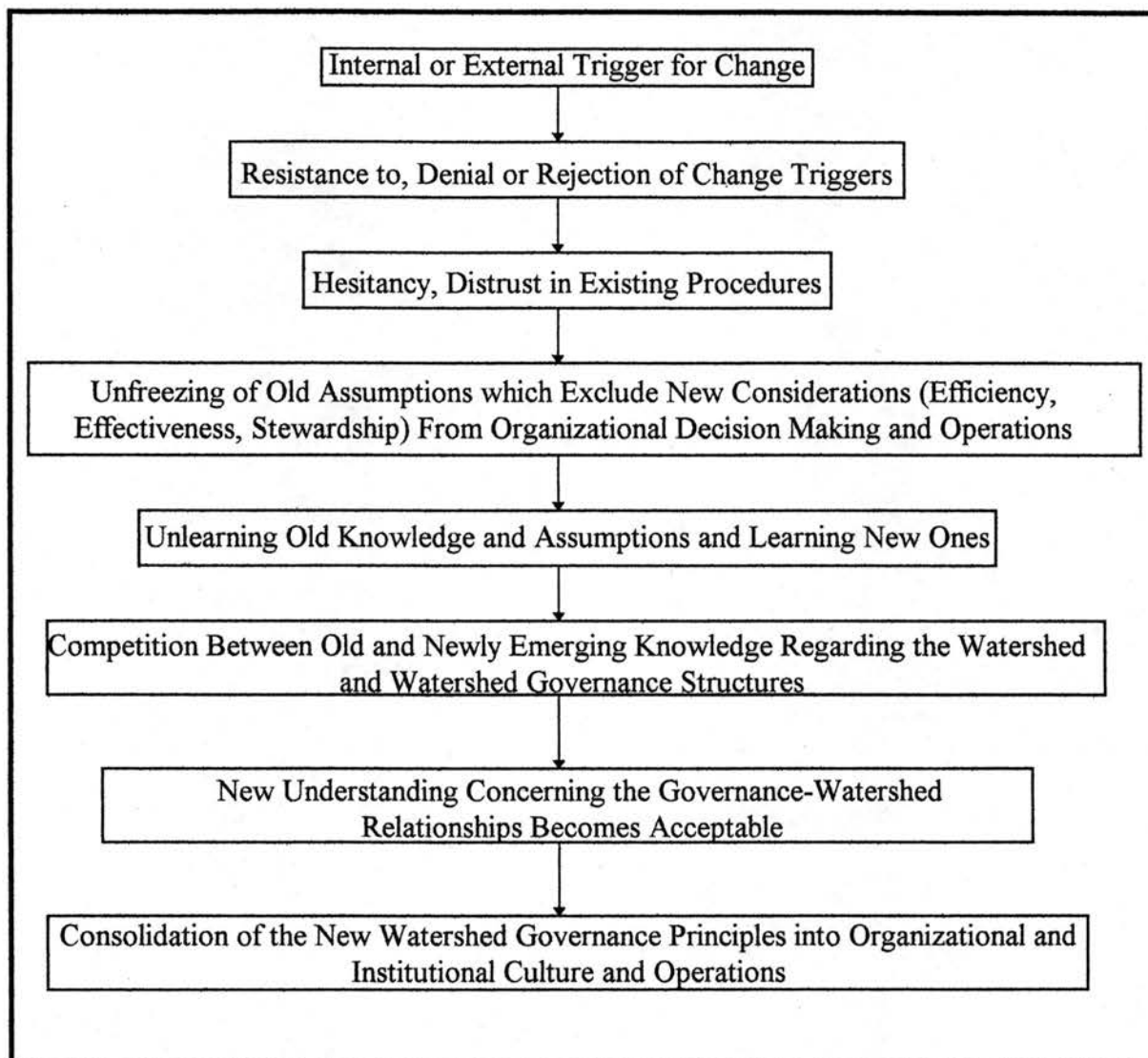
1. The Importance of Careful Diagnosis

Shifting from a traditional watershed governance system towards new approaches requires that certain assumptions and customs that exclude the new approaches be unlearned. It also requires that new assumptions and customs be learned and incorporating into the very heart of the management and governance system. While the specifics change organization to organization, it is possible to distinguish different phases of this change process within many organizations. **Table L** illustrates the organizational change process.

The following principles are offered to help guide the process:

- To develop more effective and efficient watershed governance systems, a major initial emphasis must be placed on the *diagnosis* of obstacles and constraints.
- The diagnosis stage must include an assessment of the *human, social* and *institutional* obstacles and constraints - not just programmatic or financial issues.
- All employees and stakeholders that are affected by a governance system should participate in the *diagnosis* stage, as the diagnosis must be grounded in the experience and perceptions of the entire organization and its members.
- The more fundamental the change required and more deep rooted the obstacles, the more important the diagnosis stage is at all levels.
- Research shows that when employees and stakeholders are involved with the diagnosis of environmental problems, they become more invested and committed to participating in solutions than to almost any other type of work they do.
- Asking questions about obstacles and solutions is implicitly a *change inventory* - once you start asking questions, changes are likely to occur, even without specific directives.
- Be prepared for organizational *tension and discomfort* in the change process. You only learn about systems when you try to change them - the perceived threat mobilizes forces that otherwise lay dormant or are covert in their influence.

TABLE L
PHASES OF ORGANIZATIONAL CHANGE



2. Tools For Diagnosing Watershed Stewardship Problem Areas

Organizational management theorists have developed a range of models for diagnosing organizational and governance problems. Only rarely have they been applied to watershed stewardship and governance. Yet, in depth analysis of organizational culture and operations is essential to identify the underlying factors that give rise to unsustainable watershed management practices and to inefficient and ineffective governance. Indeed, the diagnosis process is an important component of any change process.

When diagnosing organizational operations, it is important to take a broad *systems approach* rather than seeing each and every problem as requiring a specific solution. A review of the research on organizational diagnosis indicates the need for a thorough, holistic and historical organizational diagnosis *before* any new systems are designed.

Table M provides one way to approach watershed problem diagnosis.

TABLE M

A BASIC WATERSHED PROBLEM ANALYSIS FRAMEWORK

Step #1: Assess Physical Symptoms
Step #2: Identify All Potential Actions Causing the Symptoms
Step #3: Assess Problems In Terms of Consequences for Watershed Ecosystems
Step #4: Assess Problems In Economic, Political and Social Terms Throughout The Entire Cause-and-Effect Chain.

A medical analogy may be useful to demonstrate how to use this problem analysis framework. At Step #1 (symptoms) we may find a tired, overweight patient with digestive problems. At Step #2 (behaviors) an investigation reveals that the patient consumes eight units of hard alcohol a day. At Step #3 (natural consequences) the diagnosis may be sclerosis of the liver. At Step #4 (entire cause-and-effect chain) a prediction is made that given the current pattern, a variety of the patients organs and functions may be damaged, but the exact form of the problem and the timespan of the growth of the disease is difficult to predict. At some point, which cannot be easily predicted, the damage will go beyond the point of no return.

Sclerosis of the liver is a good analogy for watershed problems. They both are often caused by the cumulative impacts of activities spread over long time periods, the precise consequences of any one action is difficult to predict, and the timing of the consequences cannot be accurately known. The analogy also illustrates the limits of purely physical symptoms diagnosis, which just measures the results of *past* activities at the end of the cause-and-effect chain. Further, economic and social factors (Step #4) can get in the way of even symptom diagnosis (Step #1) such as when a patient denies physical problems, as well as to barriers to cure (such as a refusal to get treatment). Thus, it is important to explore why the patient drinks so much (or in the case of watersheds to examine the causal factors at the upstream and mid-stream components of the economic value chain)..

Lets now apply the model to watersheds using point source chemical pollution as an example. At Step #1, the physical symptoms in the form of ecological damage may be difficult and take years for humans to detect. It is possible that the consequences, such as deformed fish or contaminated drinking water, may be imperceptible in the short run, with no perceivable effects on existing living stakeholders. They may only show up when a major incident occurs or after many years of systematic discharges.

At Step #2, action diagnosis, a detailed assessment may approximate the number, quantities, sources and historic time frame of chemical inputs into a watershed (e.g. 20 major industries have discharged approximately 10 tons of X number of chemicals each for the past 10 years).

It is then a relatively straightforward process to predict the potential, if not the precise, ecological consequences (Step #3) of these activities from scientific knowledge (e.g. research shows that an accumulation of X chemical at Y concentration levels will cause fish deformities in Z numbers of aquatic species).

It may then take hard work to identify the economic, political or social forces that influenced those decisions and which may be influenced by the ecological consequences (Step #4). For example, pressure from "upstream" chemical suppliers may have led to the use of excessive amounts of particularly toxic solvents. Pressure from "downstream" distributors to keep final sales cost competitive with foreign competitors may have led many firms to delay investments in new technologies intended to phase out old inefficient equipment. As a consequence, the fishing industry, municipal water supply authorities, the tourism operators and other recreational businesses may be directly affected for long time periods, while taxpayers may pay for clean-up and restoration and may face swimming, fishing and drinking restrictions for many years.

Our research on watershed stewardship and governance found that there are few watershed studies and projects that do thorough jobs of searching the entire cause and effect chain to identify the economic, human and social level root causes (Step #4). Many assessments focus on prioritizing the most obvious problems that can be addressed through "practical" solutions (Step #1: symptoms). Some go beyond this to identify the

obvious or significant causes of the most significant ecological problems (Step #2: behaviors). Few go beyond this in any meaningful way to fully assess Steps #3 or #4. This suggests that many watershed management programs may be somewhat selective in their problem analysis. Organizations seem to define the problems that do not question the fundamental nature of their business. Yet, to develop truly effective and efficient watershed stewardship and governance systems, the assessment of ecological consequences (Step #3) must involve asking questions about the total consequences of activities on ecological life support symptoms, and must seek to address root causes. The assessment of causes and effects throughout the entire economic value-chain is vital.

3. Organizational Diagnostic Tools

Watershed stewardship problems must be diagnosed within the context of the organizational and institutional structures that administer the programs. This usually requires a comprehensive organizational diagnosis. Table N describes the elements of this type of diagnosis.

TABLE N

ORGANIZATIONAL DIAGNOSTICS FROM DIFFERENT FRAMEWORKS

The Structural Framework
The Human Resource Framework
The Political Framework
The Symbolic Framework

It is important to diagnose issues from multiple perspectives such as:

- *The Structural Framework*: An analysis of the effect of how the organization is divided into smaller units, the number and layers of management, reporting relationships etc.
- *The Human Resource Framework*: The skills and motivation of people and the interdependence of the organization and staff.
- *The Political Framework*: The distribution of power among individuals and groups in the organization and the use of that power in competition for resources.
- *The Symbolic Framework*: How people create and use symbols to bring meaning out of relative chaos and clarity out of confusion.

4. Ten Key Principles of Adopting Performance-Based Systems

Once a careful diagnosis of the stewardship and organizational issues has been completed, a strategy can be developed to move towards performance-based organizational systems. To help facilitate this, the following principles are offered:

- *The goal of performance-based systems is to generate information that supports and enhances continuous improvement in watershed stewardship and governance.* The purpose is to improve future performance of both employees and stakeholders, not just to evaluate past efforts.
- *Measurement tools are just one component of a complete performance-based management system.* Measurement itself does not itself have enough power to create fundamental change in an organization. Some organizations have measured performance for years with little impact. Measurement systems are one of a number of important competencies that organizations need to use a performance-based system.
- *The audience and purpose of the performance measurements must be clearly defined.* You must carefully determine who the customers and end-users of the measurement system are. What do they think they need from measurement to help them do a better job of watershed planning, problem solving, decision making and governance?
- *Acceptance of the measurement process is essential to its use as a performance improvement tool.* Do not worry about finding the "perfect measurement." Instead, it is the process by which you involve others to determine what to measure, how to measure, and how to utilize the measures to assist employees and stakeholders to continually improve their watershed stewardship and governance that is important.
- *As with organizational diagnosis, the more participation in the process of creating and using the performance measures, the greater the resulting changes.* Full involvement of management, employees and stakeholders is vital. Measurement must be seen to have value well not only as an accountable tool, but as a valuable tool to the entire operation.
- *Drive out fear in your measurement system.* Measurement is often resisted due to perceptions of negative consequences. Start with an experimental approach. Eliminate work quotas and have fun with measurement approaches. Strive to measure and improve things that will make a difference (those with large costs, large customer value, greatest environmental consequences etc.) and are most strategically important, not what is just easy to measure or already being measured.
- *Measure group, team and sector-based outputs, not individual outputs.* Individual performance cannot be measured except over the very long run. Have the team that produces the results develop the measures, perform the measurements, and report the results.

- *Use the adoption of performance systems to make a commitment to service delivery by adding new and deleting old (even if they may sometimes be favorite) activities.* Measure what employees can translate into direct corrective actions.
- *Don't rely just on measurement.* Analyze changes in actions and behaviors, take time to communicate results, reward employee initiatives which are not adopted as well as those that are. Remember, it is the overall process, culture and organizational structure which generates continuous improvement, not just the measurement systems.
- *Finally, adopting performance-based systems is hard and complex work and a complete and effective system will require years to achieve.* One of the reasons for this is that the information needed is not readily available and the resulting uncertainty can dampen enthusiasm for some. As more and better information is generated, the performance system will improve.

Other Things to Remember:

- "End of the cause-and-effect chain" measurement at its best only tells you something about *past* performance. The greatest need within watersheds and organization is to develop systems to measure current and future activities for their ability to achieve desired outcomes.
- No matter how well an employees work is planned, managed and measured, the outcome will depend much more on how passionate the employee is concerning their job. The spirit, shared vision and sense of purpose within the organization is the most important part of any successful organizations plans.
- Problems related to an organizations efficiency and effectiveness are more often related to poor management of the systems than to poor individual performance. An excellent managers superior skills are much more important in fostering continuous improvement than measurement performance.
- Outstanding performance must make a difference in recognition. If everybody is treated the same when all is said and done, then in the long run performance will never become outstanding.
- Successful management: a) completes the right task on time and within budget; b) builds and strengthens the team; c) develops the individual; and d) fosters continuous improvement.

5. Performance-Based Budgeting

There are five characteristics of performance-based budgeting that set the process apart from existing approaches:

- **Accountability:** Rather than focusing on "bean counting" a performance-based system allows responsibility for some fiscal decisions to occur at the most appropriate levels. In return, those who are given this responsibility are held strictly accountable for producing results (rather than for following rules and procedures that may or may not be liked with results). Developing accountability requires careful priority setting and clearly defined performance goals and objectives. Incentives are also needed throughout the organization to ensure that everyone focuses on results.
- **Consequences:** To develop effective accountability systems, there must be consequences to motive organizations. Linking budget decisions to performance measurement creates a better system of accountability and consequences. Good performance should be rewarded within the budgeting process, and poor performers identified and a process established to improve operations and outcomes.
- **Flexibility:** The system of accountability and consequences provides the opportunity for devolving decision making down from a centralized source to other levels that are responsible for program or organizational outcomes. The system should encourage innovation and experimentation, and the budgeting process must support this. Midlevel staff and those in the trenches are often in the best positions to decide how to achieve an outcome, and they need the flexibility to pursue these options.
- **Longer Time Frame:** While most government agencies operate within a one to two year budget cycle, watershed stewardship and effective organizational performance often take much longer. Strategies to plan and budget over longer time periods are pursued when possible.
- **Strategic Insights:** Watershed programs in specific, and public agency programs in general, are faced with complex issues, lack of good information, conflicting goals and objectives, and other problems that making planning and management challenging. The budgeting process should help provide insights into these issues. The process should help clarify which agency or entity may be best able to deliver needed services, what program goals should be emphasized, how they should be used, what the key elements are of successful programs which should be funded etc. This type of information can help an agency plan and deliver services more strategically.

6. Issues to Consider in Organizational Or Administrative Mergers

There have been few studies of the benefits or drawbacks to organizational mergers or of merging district offices of various agencies. Therefore, only anecdotal information exists. However, there are at least three important issues to keep in mind when assessing these options:

- As discussed elsewhere in this document, from a watershed stewardship perspective, the most important task is to identify and align management goals between territorial boundaries within a watershed. Many believe that the diverse legislative mandates of public agencies prohibit them from aligning management goals. If merging agencies or agency offices can assist in this process, all the better. However, administrative mergers without legislative changes may not solve the basic problem. There are also a number of ways to identify and align goals that do not require agency mergers.
- One of the most important ingredients of good decision making is to obtain a wide range of views and an assortment of information. Competing - even adversarial - viewpoints are therefore vital to sound decision making. Great care must be taken to ensure that agency or office mergers do not eliminate or stifle advocacy and information sharing from different agencies or departments which may hold different views and important data.
- In addition, each agency or department tends to represent a different public constituency. These groups want assurances that some entity is representing and advocating for their best interests at all times. Great care must be taken to ensure that this occurs whenever agency mergers are considered.

B. The Importance of Developing Governance Systems Which Align Goals Between Territorial Boundaries Within Watersheds

To develop more effective watershed stewardship systems, it is important to understand the ecological effects of territorial (land ownership) boundaries within a watershed. Property lines and boundaries are not just lines on maps. They mark division of control and responsibility for resources among individuals, organizations and governments. The administrative lines are therefore the demarcation of areas of change, and of interaction. They are governed by rules and conventions that define the terms of engagement between the actors and organizations. Legal/social boundaries can reshape and sometimes even create ecological boundaries:

Some problems associated with territorial boundaries:

- Territorial boundaries within watersheds make it difficult to coordinate goals and actions among individuals, organizations and communities. Lack of coordinated goals and actions leads to inefficiencies, inconsistencies, and even destructive management.
- Boundaries can impede and disrupt the flow of information among land owners and organizations. This makes it difficult to understand the conditions of the overall system or its likely future, and hence makes it difficult to act intelligently.
- Territorial boundaries can encourage organizations and communities to externalize their activities to other land units (hence, environmental impacts are often placed next to boundaries so that outsiders bear some of the costs, and, contrarily, people cluster near borders of wilderness areas or parks to reap some of the "goods" of other boundaries).
- Territorial boundaries have intended and unintended, short and long-term ecological effects on surrounding lands. A distinct ecological zone is created when different land use practices are applied on both sides of a boundary line. The new ecological zones can block, filter or concentrate the movement and functions of ecological processes and elements such as water, soil nutrients, animals, fire, wind, seeds etc. This can separate and isolate land areas from each other which can have synergistic, long term, unintended effects.

These problems often lead people to conclude that territorial boundary lines must be removed. Yet, boundaries provide some useful functions as well. Many of the positive functions are the converse of the problems that boundaries can create:

- Territorial boundaries can slow the movement of ecological disturbances or misguided policies from one ownership to another.
- They can provide time for adaptive and corrective responses.
- They can facilitate the efficient flow of resource information within organizations and within communities by delineating who is required and who is permitted to know specific information.
- Boundaries can facilitate clear allocation of management control and responsibility - connecting all actors to the consequences of their acts.

Hence, effective watershed governance and stewardship will not be as simple as eliminating or redrawing boundary lines, or merging agencies, to correspond better to ecological boundaries. Rather, it requires new governance systems that reflects these realities.

1. Understanding the Ecological Effects of Boundaries

A territorial boundary is an invisible wall that creates sometimes profound changes in ecological processes and elements within a watershed. When seen on a map, the lines may seem to simply reflect political or ownership demarcations. However, from the perspective of ecological processes and species, a very different picture emerges. Almost all aquatic and terrestrial ecosystems require a continual flow and interchange of energy and matter. From the perspective of the plants, animals and nutrients within the system, differences in management goals and actions on either side of a boundary inevitably disrupt the flows and change the ecological conditions.

a. Boundaries Create Structural Changes to Habitat:

Over time a territorial boundary may change the structure of habitat on either side of the boundary line. The area of habitat on either side of a line can be altered by changes in temperatures (when cover is removed or added), humidity, moisture, vegetation density and diversity, species abundance and diversity, porosity, seeds and other factors. These can lead to sometimes profound ecological changes.

The amount of structural change to habitat associated with boundary lines varies based on many factors. Areas with high contrasts and high rates and degrees of change likely create the greatest changes in habitat structure. Areas with lower rates of change are likely to create less structural changes.

b. Boundaries Create Functional Changes to Ecological Processes:

Boundaries and their different land use patterns can block or disrupt the vital ecological flows of materials and energy across the landscape. Movement across landscapes occurs in two primary ways: locomotion (e.g. animals) or through the mass flow of water or air (e.g. nutrients, seeds, spores). Different management goals on either side of a boundary may impeded, accelerated, or concentrated these flows as they encounter the different areas. This can be detrimental to one or another side of the border. For example, when a road serves as a boundary it can lead to the discharge of pollutants into one territorial unit, allow entry of exotic species etc. Forest edges caused by boundary changes (e.g. between timbered and non-timbered areas) effect the movement of deer and other animals, shifting the population from one area to another. Roads may also change the hydrologic system of a watershed by acting as conduits and intensify water runoff at high flows in one area while blocking natural run-off elsewhere. Hence, boundaries act as a selective filter, altering flows across it.

Summary: These effects suggest that:

- Incongruent management goals and actions between boundaries are the primary cause of the disruption of ecological functions and structure within most watersheds. These factors are more important than the incongruity between administrative and ecological borders in determining watershed health.
- Buffer zones may alleviate some, but not all, of the ecological effects of territorial boundaries. They may reduce the contrast or the rate of change between adjacent areas, but buffers also may exacerbate the width of the altered habitat zones, potentially creating even more ecological problems. Their benefits may also simply be overwhelmed by the degree of change in the balance of the landscape.
- Watershed governance systems that reinforce management approaches focused solely on parcels of land in isolation others are likely to exacerbate ecological problems and fail to foster sound watershed stewardship. This is because the health and productivity of all ecosystems depend on the larger ecological landscape of which they are but a part.

2. Understanding Territorial Goals

Given the important of territorial boundaries, one of the most important steps towards achieving effective watershed stewardship and governance is to determine:

- Who holds territorial claims to the landscape (who owns or controls the land)?
- What are their management goals and actions?
- What is the effect of these patterns on an overlay of ecosystem structure and function?

- What formal, informal and interpersonal mechanisms exist to support or prevent sound watershed stewardship?

Answering these question is often difficult for many public agencies. Most natural resource managers are trained primarily to recognize the importance of non-human ecological functions and elements and are less able to identify the full range of human territorial claims. Clarity over the goals of various land owners may help the process.

a. Boundaries Between Private Owners

Private land ownership goals vary. Each private land owner operates under a different set of legal and organizational capacities.

- Corporate landowners: Generally have the capacity to pool large sums of investment capital. They often have the greatest capacity to define goals and implement stewardship activities. However, they also operate under a perceived duty or desire to maximize profits and returns for investors, which can constrain their stewardship efforts.
- Non-corporate landowners: Also have the pressure to generate revenue but generally have no legal duty to maximize profits for investors. They can enjoy more flexibility to pursue stewardship goals.
- Non-profit landowners (trusts etc.): Generally can manage for stewardship goals, but sometimes they need to generate revenue to manage the land.

b. Boundaries Between Public-Private Entities

When watershed governance involves landscapes owned by both public and private entities, the issue of property rights becomes particularly important. Partnerships and cooperation are vital to good stewardship. Clarity over who has the responsibility for stewardship - government, or all parties - is vital to good partnerships. Cooperation by private landowners depends on their willingness to cede some control over their defended territories to the larger partnership. This depends on their attitude towards stewardship objectives, towards public agencies in the partnership, as well as the importance they place on the values of cooperation and environmental stewardship.

c. Boundaries Between Public Agencies

Cooperation and the alignment of management goals and actions *between* public agencies is also vital for effective watershed stewardship and governance. Yet, this is often difficult. Government ownerships can include local, state, regional, federal and tribal lands. Each has different policies that vary by law and tradition.

In general, public agencies will often publicly committed to cooperate across their boundaries, but the relationships between the agencies may be strained. Their "territorial defenses" may not be directed towards the maintenance of agency jurisdictional boundaries per se, but towards adopting an approach to management that is most consistent with each agencies culture.

d. Territorial Boundaries Within Public Agencies

Aligning management goals and actions *within* government agencies is also very important, yet difficult. All public agencies use some form of "internal zoning" to allocate lands under their management to special functions. Sometimes internal agency zones are marked on maps, other times they are not. Some public agencies have the authority to do landscape level planning and management, and others do not. Some implement relatively broad scale, long-term management, others do not.

Effective watershed governance and stewardship within agency boundaries can be difficult because people, including top managers, may not understand that there are internal zoning differences within their own agency.

3. Summary

Only some public landowners and few private landowners have the mandates to practice effective watershed stewardship. However, most *do have* the capacity to do it. Whether they do will depend on the type of governance systems and institutions that are created and the relationships they have with others in their watershed.

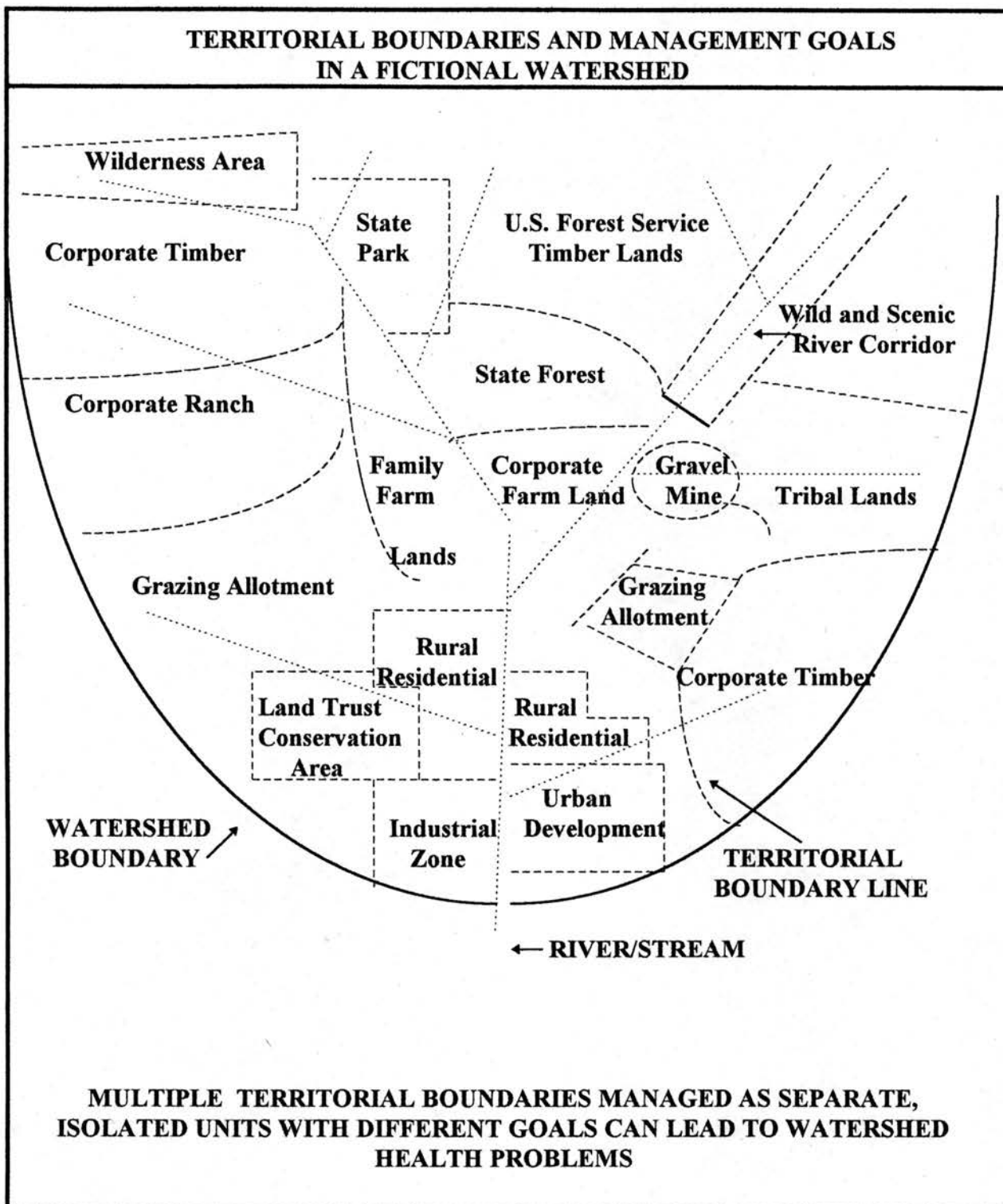
We live in a territorial society. Effective watershed governance and stewardship must acknowledge this, recognize the various mechanisms of defense that each territorial owner may employs, and craft ways to allow the owners to maintain an acceptable level of control while providing for the goals of stewardship of the commons.

Our traditional command-and-control prescriptions that *impose* control on boundary issues can have unintended consequences. Instead, effective watershed stewardship and governance requires a system that *yields* control to the territorial owners by reversing the burden of responsibility for good stewardship from government to the landowners.

We are in the midst of the first wave of new approaches to watershed governance and stewardship nationwide. We need to learn from these initial programs, cross pollinate, and develop more effective approaches.

Table O shows how multiple territorial boundaries managed as separate, isolated units with differing management goals, can lead to watershed health problems.

TABLE O



C. Governance Systems to Facilitate Integrated Sector-Based and Place-Based Watershed Stewardship Programs

To address watershed problems early in the cause-and-effect chain, new approaches are needed to facilitate the development of intra and inter-sector based watershed conservation initiatives.

It is often difficult for businesses (firms or landowners) to improve the environmental performance without commensurate changes throughout the entire economic sector in which they operate, or without trades between sectors or key actors. Hence, the best watershed stewardship and governance systems seek to use some form of an integrated sector-based and place-based strategy. This means that government links the identification and prioritization of environmental risks (the traditional focus of watershed programs) with the prioritization and resolution of the key drivers that influence business decisions regarding the environment within each economic sector that effect watershed resources.

Many activities that effect watershed conditions are the result of business decisions that are driven by real or anticipated economic and political forces. The pressures are almost always the result of trends within the economic sector in which a business operates. The pressures may come from many points in the economic value-chain. For example, upstream suppliers may stimulate changes downstream throughout entire economic sectors by changing the type, cost or availability of key feedstocks. Downstream distributors may drive changes upwards through entire sectors by demanding new products, improved product quality, or reduced per unit costs to remain competitive.

These forces drive many of the business decisions that influence their environmental performance. It should be no surprise that businesses resist facility or land unit specific changes, or respond to problems with end-of-the-cause-and-effect-chain solutions, rather than implementing changes which can prevent problems at their source. Significant changes in business operations that fail to account for the trends and forces within the economic sector in which they compete may put a business at significant competitive disadvantage. The means that intervention points of the regulatory system are too far down the cause and effect chain to stimulate process oriented abatement solutions.

In addition to the limits of the current regulatory system, other economic factors prevent businesses from making appropriate change. For example, many small and mid-sized firms, or older facilities, do not have the expertise or resources needed to implement sophisticated process oriented changes. They need help from larger pools of expertise. Individual firms alone also cannot obtain the new technologies needed to reduce environmental problems at their source. Their equipment suppliers will not retool to produce new technologies until there is sufficient demand from customers. This often requires demand from large segments of an economic sector. The decisions that lead to these types of large investments require some predictability in the marketplace. Further,

businesses hesitate to make investments in structural changes unless their competitors are making similar investments (i.e. they fear the effects of free-riders).

It is for these and others reasons that it is often helpful to develop a governance system which supports and facilitates strategy development within and between sectors and then applies those strategies through tailored "place-based" programs within in a watershed. As economic sectors cross numerous watersheds, the sector-based process works best when organized at a state or regional (or even national) levels. But it can be used, or at least stimulated by, watershed specific programs.

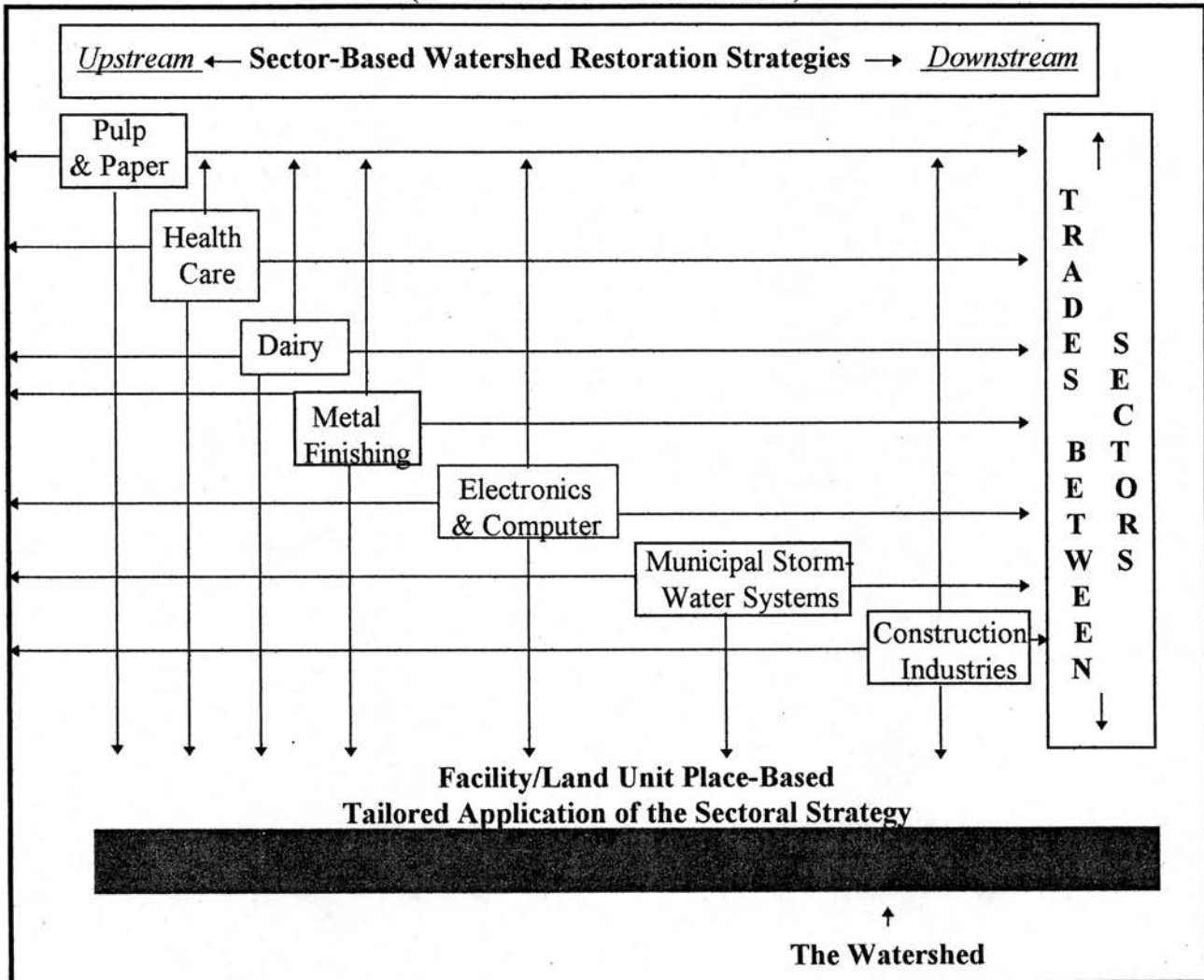
Government can stimulate sector-based change through policy reform. For example, a state forestry policy may mandate changes within the entire forest products industry. However, this approach often fails to address the upstream and downstream pressures within the economic sector, and fails to spur trades and exchange between sectors or key actors. It therefore often meets with intense opposition and still results in end-of-the-cause-and-effect-chain responses, rather than to solutions which can resolve problems at their source. It is best to engage industry through other governance approaches.

Table P provides a schematic view of how integrated horizontal-vertical initiatives operate.

Table Q provides a schematic view of how the Metal Finishing industry, for example, may apply the approach.

TABLE P

**INTEGRATED HORIZONTAL AND VERTICAL WATERSHED INITIATIVES
(USED AS EXAMPLE ONLY)**



Sample Process:

The following provides a way to think about developing integrated sector-based, place-based initiatives. It is adapted from the *Backward Mapping* method developed by U.S. EPA and Richard Elmore, and the Sector-Based work of the Dutch Government. It is important to involve stakeholders from the economic sectors in the entire effort. All other stakeholders must be informed and involved in appropriate ways, including relevant government agencies, NGOs, elected officials etc. At the same time, great care must be taken to ensure business confidentiality and that proprietary information is protected.

1. *Thoroughly Understand the Watershed Issues.* The factors within the watershed that may effect ecological health need to be understood. Some type of systematic, basin level watershed analysis must be completed.
2. *Thoroughly Understand the Characteristics of the Sectors and Key Actors Relevant to the Issues.* Once the factors are known, the potential sources of the problems must be mapped. Once identified, the characteristics of the sector in which they operate must be understood. This includes the industrial process, specific economic, institutional, technical, regulatory and environmental factors that influence their environmental performance. For example, the industry history, current and projected market trends, technology changes, consumer issues, environmental profiles, policy constraints, financial history, R & D methods, key contacts, and other potential strategic issues must be understood.
3. *Map the Economic Value-Chain.* Once the industry is understood, it should be possible to develop a rough map of the economic value-chain. This means mapping the process from the upstream resource extraction phase through the mid-stream manufacturing and delivery of goods and services, to the downstream discharge and disposal of pollution and waste. For example, identify and map the primary types, concentrations and sources of raw materials, the transportation processes, and all other relevant steps in the process of producing, delivering and disposing of goods and services.
4. *Identify Key Drivers, Constraints and Barriers.* Once the industry value-chain is understood, the key forces and drivers effecting the industry can be diagnosed. All key drivers and constraints must be understood: upstream and downstream economic forces, regulatory factors, business culture, financial conditions (insurance, banking, investor needs), technology, changing competition etc.
5. *Prioritize Business Decision Factors.* The major incentives and constraints within the economic sector must then be determined. These factors represent the key leverage points for an industry in terms of their willingness and ability to improve environmental performance. For example, what key factors may encourage or discourage decisions to invest in new pollution prevention or more efficient manufacturing equipment, in non-toxic feedstocks such as biofuels or bio-solvents etc.? What may influence whether a firm can obtain necessary financing, or insurance?

6. *Develop Sector-Based Solutions Which Help Address Key Drivers.* An understanding of the key decision making drivers that influence environmental performance within an industry can serve as a platform to design solutions to these factors. This can be achieved through industry led initiatives, public-private partnerships, or through government driven regulatory strategies.

For example, by following the principle of *reversing the burden of responsibility* from government to those that are the key contributors to environmental concerns, an industry may be given the responsibility to develop their own strategy to meet specific environmental objectives set by government. Government provides specific parameters and time frames for the make-up and delivery of the plan, reviews the resulting industry strategy for its ability to achieve the performance goals, then monitors and enforces the implementation of the strategy at the facility and land unit level to ensure it is followed. The industry can work through existing trade associations or can organize ad hoc work groups to achieve this.

A variation of this approach is to develop public-private partnership to achieve the same results. Government serves as partners with the private sector to provide technical assistance and support for industry developed environmental strategies. Yet, those who know their industry the best - the industry itself - are involved with developing the change strategy.

Government can also take the lead, complete the diagnosis and mandate industry specific changes through the regulatory process. If the industry is not a willing participant, this is obviously a less desirable approach.

No matter what approach is used, an industry-wide strategy will often involve organizing coordinated programs upstream and downstream within the entire economic sector, and exchanges between sectors or key actors within different sectors. Hence, suppliers and distributors may be asked to become involved to develop complete value-chain solutions.

The recommendations that may result from sector-based strategies include new policies, financial incentives, emissions trading programs, funding help for capitalization programs, land trades, buy outs, and other strategies to foster and support environmental improvements within the entire sector.

7. *Implement the Sector-Based Strategy Thorough Locally Tailored Facility and Land Unit Programs.* The sector-based programs are then implemented by each individual firm and landowner within the sector through tailored strategies to fit the needs and conditions of in local watersheds. Public agencies provide technical assistance and public recognition, when appropriate, to support these efforts. They would also seek to link each firm or landowners improvement strategies with those of other economic interests within the watershed to develop a comprehensive and integrated watershed stewardship program.

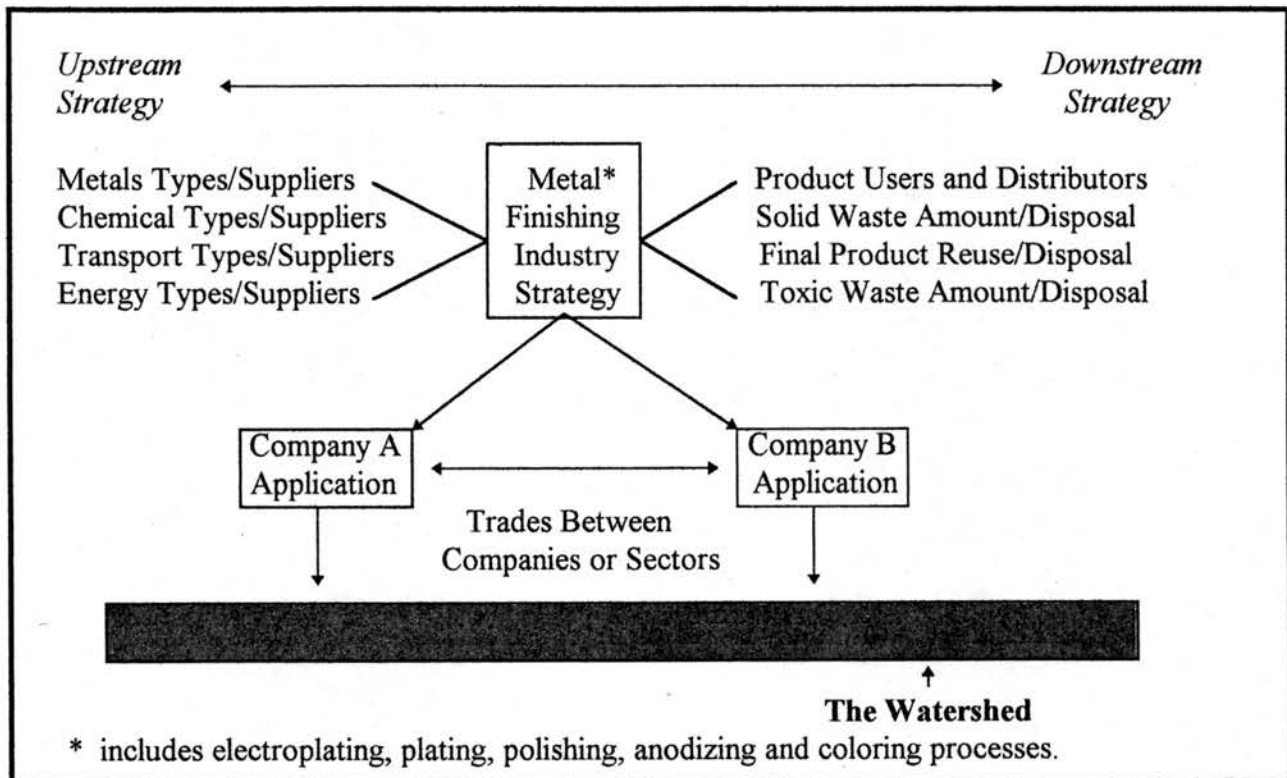
This type of approach is a relatively new. It is a performance-based system that is time and energy intensive. It requires personnel that can develop partnerships with and understand economic processes - not just natural resource or biological issues. As such, it takes watershed governance agencies far from their normal focus on the stream itself. Yet, when used effectively, this approach provides one of the best means to develop truly effective watershed stewardship and governance systems and institutions.

There are a number of examples of sector-based programs in this country and globally. Perhaps the most advanced approach is the comprehensive sectoral program initiated by the Dutch government as part of their National Environmental Policy Plan. The Clinton Administration recently unveiled an initiative with the U.S. construction industry to reduce energy needs in response to global climate change issues. U.S. EPA has initiated a number of sector-based programs, such as the Sustainable Industries Project of the Office of Policy, Planning and Evaluation, and the Sector Notebooks project of the Office of Compliance. These programs are developed within a regulatory context. Many states and regions have used versions of sector-based programs to address numerous issues over the years.

The difference between these efforts and the approach described here is the need to apply sector-based programs on a comprehensive and integrated scale, and to then integrate them with place-based watershed stewardship and governance programs.

TABLE Q

**EXAMPLE OF INTEGRATED SECTOR-BASED, PLACE-BASED APPROACH
WITHIN THE METAL FINISHING INDUSTRY**



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Over 30 different local, state and regional watershed programs were also examined.

DAVID W. FISK "DAVE"
ASSISTANT EXECUTIVE DIRECTOR

Dave has been with the District since June 1975. Starting as a geologist, his responsibilities have been the management and administration of technical and regulatory staff conducting groundwater and surfacewater research and monitoring projects as well as regulatory programs.

Dave has worked on the development and implementation of the comprehensive Environmental Resources Permit program, agricultural, and forestry surfacewater management, water use permitting and underground injection control permitting regulation, and water well construction permitting regulations. He has also been involved in establishing the District's land acquisition and management programs, ambient groundwater monitoring program, Surface Water Improvement and Management (SWIM) program, establishment of minimum flows and levels, and ecosystem management activities.

Dave's present position includes broad managerial, personnel, budget, legislative, and local government coordination responsibilities.

He earned his B.S. in Geology from the University of Florida in 1975 and is a professional geologist registered with the state of Florida. Dave enjoys fishing, sailing, and skiing, and working on his family's cattle farming operations. He and his wife, Diann, have two sons.

Regional Water Management



Creation of Water Management Districts

- Model Water Code (Maloney, et al.)
- Water Resources Act of 1972 (Chapter 373, Florida Statutes)
 - Based on watersheds, not political boundaries
 - Organic state statutory authority, not limited federal program delegation
 - Broad authority, funding and implementation tools

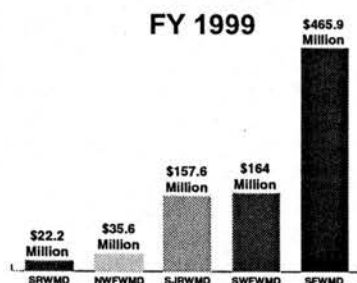
WMD Governance & Oversight

- Governing Board and Basin Boards
 - Appointed by Governor, confirmed by Senate
 - 4-year terms
- Executive Directors
 - Appointed by Governing Boards
 - Confirmed by Senate
- Authority Delegated by Legislature
- Budget Approval/Veto by Governor
- General Supervision/Oversight by Department of Environmental Protection

WMD Funding - Revenue Sources

- Ad Valorem Taxes
- State General Revenue Grants
- Save Our Rivers & Florida P2000
- Surface Water Improvement and Management (SWIM) Act
- State & Federal Grants
- Other Sources

WMD Funding - Budgets by WMD



WMD Duties and Responsibilities

- 5-Year Water Management Plans
- Water supply
 - Flood protection
 - Water quality management
 - Natural systems management

Implementation Tools

- Planning
- Monitoring & Applied Research
- Regulation
- Acquisition & Management
- Public Works Projects
 - Water supply
 - Water quality
 - Flood control
 - Restoration

Disadvantages of a Regional Approach

- Inequities in Fiscal Resources
 - Property (ad valorem) tax revenue
 - Percentages of other funds
- Inequities in Staff Resources
- Interdistrict Issues
- Varying sets of rules, permitting procedures, etc.

Advantages of a Regional System

- Address Specific Needs of Each Region
 - Regional water supply plans
 - Urban v. rural
- Interdistrict Cooperation
- Greater Citizen Involvement at Local Level
 - Taking care of problems in own back yard
 - Drink out of your own well (local sources first)

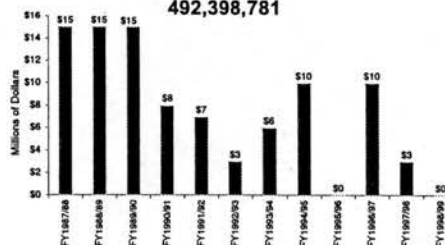
Save Our Rivers & Florida Preservation 2000 Act(s)

- Save Our Rivers (SOR)
 - 1981 - Legislature created trust fund to acquire land for water management purposes
 - Revenue from documentary stamp taxes on statewide real estate sales
- Preservation 2000 (P2000)
 - 1990 - created to augment SOR
 - Revenue from bond sales
 - Will expire in 2000 unless extended by Legislature

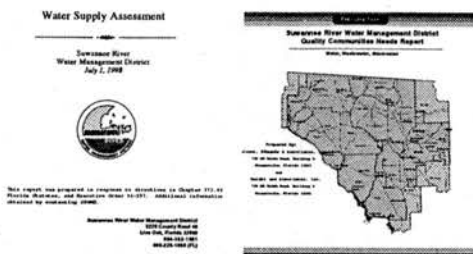
Surface Water Improvement and Management (SWIM) Act

- 1987 - Enacted by Legislature
- Purpose
 - Preserve water bodies in good condition
 - Restore priority water bodies in poor condition
- Year-to-year Legislative Funding
- Future Funding Uncertain

Total SWIM Fund Appropriations from
FY 1997 to 1999
492,398,781



Water Resource & Water Supply Development



Suwannee Basin Interagency Alliance

- Suwannee River Water Management District
- FL Dept. of Environmental Protection
- GA Dept. of Natural Resources
- U.S. Fish and Wildlife Service (Okefenokee Ntl. Wildlife Refuge - GA)

Suwannee River Basin Nutrient Management Initiative

- Address Water Quality Issues Basin-wide
- Partners/Stakeholders
 - State, federal agencies
 - Local governments
 - Farmers, educators, environmentalists, citizens
- Solutions
 - Non-regulatory
 - Incentive-based
 - Education/outreach

Cooperative Relationships

- Quality Communities Program
- Suwannee River Basin Nutrient Management Initiative
- Suwannee Basin Interagency Alliance
- Levy County Water Plan
- SRWMD/SJRWMD/GRU
 - Acquire land for conservation easement for wellfield



History of Florida Water Management

1845-1971

1850 - Swamp and Overflowed Land Grant Act
1881 - 5 million wetland acres sold, drained for agriculture
1893 - FL passes 1st swamp drainage law
1903 - U.S. gives Everglades to FL
1907 - Everglades Drainage District Created
1913 - General Drainage Act (Ch. 298 F.S.)
(created drainage districts)
1942 - Cross Florida Barge Canal authorized
1948 - Congress passes Flood Control Act
1949 - Central & Southern Flood Control District created
1956 - Watershed Protection and Flood Prevention Act (PL-566)
1967 - Florida Air and Water Pollution Control Commission established
1971 - Governor's Conference on Water Management in South Florida

History of Florida Water Management

1972-Present

1972 - Water Resources Act
1975 - Constitutional Referendum
1981 - Save Our Rivers Program
1986 - Surface Water Improvement and Management Program
1990 - Preservation 2000 Program
1994 - Environmental Resource Permitting (ERP)
1997-98 - Water Resource Development (HB 715)

DAYLE E. WILLIAMSON

BIOGRAPHICAL SKETCH

SEPTEMBER, 1997

Dayle Williamson, Director of Natural Resources, has been associated with the Nebraska Natural Resources Commission since 1958. He has headed the agency since 1970, and was reappointed by Governor Nelson on January 11, 1991.

As the Commission agency head, Williamson directs a staff of 45 employees and manages an annual budget of 12 million dollars. Included in the budget, is a 3.5 million dollar annual appropriation to place soil and water conservation practices on Nebraska farms and ranches.

He serves on a number of statewide groups, including the Nebraska Water Conference Council, and the Nebraska Grasslands Institute. He was appointed by Interior Secretary Manuel Lujan to serve as a member of the Niobrara Scenic River Advisory Commission. He is also a member of the Nebraska Environmental Trust Board.

Mr. Williamson also maintains an active role in national water resources issues. He is presently serving as a member of the Natural Resources Conservation Service National Employee Development Committee and served as President of the National Association of State Conservation Agencies. He served with the National Association of Conservation Districts to streamline the association for the 21st Century and is currently working with an NACD Operations Team to develop a business operation plan. Williamson is also the Vice Chairman of the Groundwater Foundation.

He received the 1992 William C. Ackermann Medal for excellence in Water Management, and the Interstate Conference on Water Policy Leadership Citation. He also was a 1992 Honoree in the Nebraska Hall of Agricultural Achievement.

Williamson is a graduate of the University of Nebraska-Lincoln and was a county agricultural agent before joining the Commission staff. He served with the U.S. Army for two years and was a member of the Nebraska National Guard for 30 years. During his final military assignment, he served as the Commanding General of the 67th Separate Infantry Brigade, Mechanized. He retired from military service in 1985 with the rank of Brigadier General.

Challenges for Consolidation and Modernization and Charting a Course for the Future

Dayle Williamson
Director of Natural Resources
State of Nebraska

Watershed Management – Governance at the Local Level Forum

**St. Paul, Minnesota
Room 5, State Office Building
September 23, 1998**

*The attached information is a summary of a Power Point presentation
prepared for the forum.*

The Nebraska Approach to Watershed Management

The State Water Planning efforts of the 1960s

Five Hundred different special purpose districts involved in land and water issues, all lacking sufficient authority, jurisdiction, and finances to carry out a significant role in river basin activity

Minnesota Crosscurrents: Agencies and local governments have made significant strides toward improving service delivery by working within existing systems.

Nebraska thoughts of three decades ago: It would be very difficult to improve service by working through the existing system we had at that time.

The Initial Action

The Nebraska Association of Soil and Water Conservation Districts passed a resolution calling for legislation reorganizing districts along hydrologic boundaries.

The same resolution urged that districts would be of sufficient size to fund their programs, grant them sufficient POWERS, and they would be governed by locally elected officials.

Minnesota Crosscurrents: Cooperation, coordination and integration of efforts among agencies are complicated by inflexible funding, overlapping authorities and different data management and communication systems.

Our thoughts of three decades ago: We need to do away with overlapping authorities, funding was inadequate, data management systems were almost non-existent, and the postal service delivered the mail, and maybe people read it better at that time.

Minnesota Crosscurrents: Lack of resources can hamper local efforts and special purpose districts are hard to modify, inhibiting local governments' ability to react to changing needs.

Our thoughts of Three decades ago: The very same thought!

Our thoughts today: We still agree, but think it may be even more difficult to change special purpose districts.

The Next Step

Drafting the legislation - selling the idea, and securing introduction in the Nebraska Legislature.

Many contentious debates at the local levels as well as in the Legislature

The law passed in 1969, and became effective on July 1, 1972

Minnesota Crosscurrents: The legislature could simplify procedures for modifying special purpose districts and county comprehensive local water plans could be used by local governments and state agencies for broader environmental purposes.

Our thoughts of thirty years ago: We asked the Nebraska Legislature to help us out, we did not have county comprehensive water plans but felt we needed them on a watershed basis, and we were more development oriented and lacked some degree of environmental awareness.

Minnesota Crosscurrents: Investments in technology could yield major improvements throughout the management system, as could a more full integration of sustainable development principles into the state's effort.

Our thoughts 30 years ago: On technology - we wanted every conservation district to have their own telephone: most depended on the Soil Conservation Service for the phone, and many did not realize that conservation districts existed.

Our Thoughts today: On technology - we desire every district to be on the Internet connected to our wide area network, (which we have almost accomplished), we want to handle all forms electronically, we make arrangements for the districts to use the state Arc Info licenses for cost-effectiveness, we have an extensive natural resources data bank with searchable and GIS based databases, and it is our full intention to have digital photos for all of the state in 1999, and digital soils information for the entire state by 2003.

The Thoughts on sustainable development 30 years ago: Even though we were very development oriented, sustainable development was a goal. The concept comes across much stronger today.

The Minnesota Legislature's Five Goals

Sustainable development
Improved service delivery
Prevention
Citizen participation
Reduced pollution

Goals from the Nebraska Legislature 30 years ago: Not clearly articulated, but would track the excellent set of goals established by the Minnesota Legislature in recent years. (A formalized planning procedure set out to the needs for the Natural Resources Districts, but the process became both hectic and involved as the Legislature took over)

What is a Natural Resources District?

An NRD is the multi-purpose, local unit of Nebraska Government for management, development, and protection of the soil and water resources found in that basin.

Are the NRDs laid out on River Basin or Watershed Boundaries?

To a great extent. Nebraska has 13 river basin boundaries within the state. The Platte River Basin extends the entire length of the state, so the NRDs are cut in segments in the basin as it would be impractical to have districts of that length and size. Initially, 24 districts were formed, several years later they were downsized to 23.

The Basic Duties the Nebraska Legislature assigned to the NRDs

1. Erosion Prevention and Control
2. Prevention of Damages from Flood Water and Sediment
3. Flood Prevention and Control
4. Soil Conservation
5. Water Supply for any Beneficial Uses
6. Development, Management, Utilization, and Conservation of Ground and Surface water
7. Pollution Control
8. Solid Waste Disposal and Sanitary Drainage
9. Drainage Improvement and Channel Rectification
10. Development and Management of Fish and Wildlife Habitat
11. Development of Recreation and Park Facilities
12. Forest and Range Management

A Partial List of Assigned Program Duties

- Prepare Groundwater Reservoir Management Plans
- Provide Local Administration of the Chemigation Act
 - a. Inspect equipment
 - b. Conduct Random Inspections for Compliance
 - c. Enforce Act when violations are determined.
- Adopt and Enforce a Local Erosion and Sediment Control Program
 - a. Adopt Soil Loss Limits
 - b. Investigate Complaints and Enforce Rules against Violators
- Develop an Action Plan for non-Point Pollution Control in Ground Water Quality Management Areas established by the Department of Environmental Quality

- Develop an Action Plan for Ground Water Management Areas Established by the Department of Water Resources to allow for the Integrated Management of ground water and surface water.
- Study the practicality of constructing a road structure to replace a bridge when asked to by a county or the Nebraska Department of Roads.
- Prepare a Master Plan at least once each 10 years.
- Prepare a plan outlining annual activities and expectations with a 5 year future.

A Partial List of Program Authorities

- Absorb functions of merging special purpose districts
- Furnish financial aid to cooperators (Cost-sharing)
- Furnish specialized equipment, materials and services for conservation work
- Provide local administration of the Nebraska Soil and Water Conservation Program
- Form Project Improvement Areas for special benefit programs
- Participate in the Nebraska Game and Parks Habitat Program
- Designate flood improvement corridors
- Participate in the Water Well Decommissioning Program
- Own and operate solid waste disposal facilities
- Obtain funds from the Natural Resources Enhancement Fund for water quality programs
- Construct, operate, and maintain physical works needed to accomplish purposes, including:
 - a. Dams, dikes, levees
 - b. Water supply facilities: examples - canals, pipelines, pumping plants
 - c. Drainage ditches
 - d. River-bank protection, modification

- e. Recreation facilities
- f. Soil and water conservation practices
- g. Fishery and wildlife habitat measures

- Administrative Authorities
- Levy property tax - up to 4.5 cents/\$100 valuation
- Hire employees
- Pay directors Per-Diem of up to \$50.00 per day in addition to out of pocket expenses
- Invest surplus funds
- Issue revenue bonds
- Borrow Money
- Acquire and sell real and personal property
- Issue bonds for financing improvement project areas
- Collect permit fees for specific programs
- Do studies, investigations and research

The Board of Directors

The board members are elected as provided by the election laws of the state, through the primary and general elections. Board members must be registered voters.

There are three ways to provide representative membership throughout the district.

1. Nominate candidates from sub-districts and the district at large and all registered voters can vote on all candidates
2. Nominate and elect each candidate from the district at large
3. Nominate and elect from sub-districts of substantially equal population, except that any at large candidate would be elected by voters of the entire district

When sub-districts are set up for representation, no sub-district can have a population greater than three times the size of the population of any other sub-district

Board sizes - 5, 7, 9, 11, 13, 15, 17, 19, or 21 members. Each board can determine their own size

Board members serve four year terms, and the terms are staggered to assure continuity

Board members must take an oath of office the same as prescribed for county officials

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**NATURAL RESOURCES DISTRICTS
SUMMARY OF 1997-98 BUDGETS**

NATURAL RESOURCES DISTRICTS	VALUATION	TOTAL REQUIREMENTS	TAX REQUIREMENTS	FY 98 CENTS/\$100 OF ACTUAL VALUATION	FY 97 LEVY
UPPER BIG BLUE NRD	3,577,815,862	2,941,466	906,523	2.53	2.64
LOWER BIG BLUE NRD	1,619,577,105	1,493,064	500,000	3.09	3.46
UPPER ELKHORN NRD	895,167,051	942,356	301,505	3.37	3.18
LOWER ELKHORN NRD	4,150,752,569	3,472,400	1,376,215	3.32	3.49
LITTLE BLUE NRD	2,063,494,399	3,638,560	547,792	2.65	2.55
UPPER LOUP NRD	571,748,414	493,655	125,080	2.19	2.28
LOWER LOUP NRD	3,558,014,290	2,043,282	501,552	2.01	1.95
LEWIS & CLARK NRD	687,642,053	1,505,162	300,000	4.36	4.19
PAPIO-MISSOURI RIVER NRD	21,340,117,888	16,406,322	6,945,851	3.25	3.25
NEMAHA NRD	1,819,952,473	3,862,243	748,583	4.11	4.13
UPPER NIOBRARA-WHITE NRD	1,152,066,330	744,116	273,662	2.38	2.38
MIDDLE NIOBRARA NRD	532,084,768	514,354	189,240	3.56	3.42
LOWER NIOBRARA NRD	527,113,821	744,450	126,760	2.40	2.58
NORTH PLATTE NRD	1,723,267,668	2,407,459	600,803	3.49	3.63
SOUTH PLATTE NRD	894,095,696	764,270	329,240	3.68	3.68
TWIN PLATTE NRD	1,852,009,356	595,758	225,803	1.38	1.38
CENTRAL PLATTE NRD	* 5,205,932,212	* 1,103,685	* 513,143	* .99	* 0.93
	5,205,932,212	9,285,735	1,272,094	2.44	2.70
LOWER PLATTE NORTH NRD	2,608,869,407	2,123,551	1,031,099	3.95	4.17
LOWER PLATTE SOUTH NRD	10,142,872,145	7,506,111	3,703,368	3.65	3.46
UPPER REPUBLICAN NRD	* 724,301,244	* 311,323	* 127,501	* 1.76	* 1.80
	749,243,565	566,414	199,150	2.66	2.80
MIDDLE REPUBLICAN NRD	1,050,421,700	1,097,602	350,202	3.33	3.36
LOWER REPUBLICAN NRD	965,036,446	830,379	350,250	3.63	4.03
TRI-BASIN NRD	1,365,094,767	795,650	320,877	2.22	2.59
TOTAL:	* 5,930,233,456	* 1,415,008	* 640,644	* 1.08	* 1.04
	69,052,389,985	64,774,359	21,225,649	3.07	3.09

*GROUNDWATER MANAGEMENT AREA

David Jelinski Bio September, 1998

Dave Jelinski grew up in rural Fond du Lac county, and graduated from the University of Wisconsin in 1979 with a Bachelor of Science degree in Agricultural Engineering.

Dave's professional interests include soil and water conservation, and land use. He is a graduate of the Wisconsin Rural Leadership Program and is also the Secretary of the National Association of State Conservation Agencies.

In the early 1980's, he worked on environmental issues for the Department of Natural Resources, specializing in animal waste management.

Since 1984, he has held several positions with the Department of Agriculture, Trade and Consumer Protection, and currently serves as director of land and water resources for the department. He is responsible for the farmland preservation program, and several other programs related to soil and water conservation.



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Representing Wisconsin's 72 County Land Conservation Committees and Departments

LOCALLY LED CONSERVATION IN WISCONSIN

County Land and Water Resource Management Plans

A locally developed idea:

- proposed in the fall of 1996 by county conservation professionals in response to draft state agency recommendations for redesigning Wisconsin's nonpoint programs,
- promoted by the Wisconsin Land and Water Conservation Association (WLWCA) during state legislative deliberations in spring and summer of 1997, and
- became the central theme to landmark state legislation signed into law in October 1997 as part of the state budget bill (Wisconsin Act 27).

The basic concepts include:

- state agencies establish minimum statewide performance standards and prohibitions for nonpoint pollution and soil erosion control,
- state standards are used as a basis for distributing local grants, and
- each county develops a Land and Water Resource Management Plan, which explains how they will meet the state standards and address other local resource management concerns, and with state (and federal) grant assistance, counties lead local program implementation efforts, including regulatory measures, as needed.

Guiding principles include:

- rely on locally led process for plan development and implementation,
- allow for maximum flexibility in state program grants,
- encourage comprehensive watershed based efforts without excessive planning,
- reward innovation and cost effectiveness,
- require the seamless integration of programs and funding sources, making use of a wide variety of implementation tools, and
- ensure meaningful program evaluation and accountability.

Land and Water Resource Management Plans at a glance:

- assess the conditions of local soil and water resources, referencing available monitoring data and applicable state and federal standards,
- identify local soil erosion and nonpoint pollution problems and priorities,
- develop a multi-year work plan for addressing those problems, preferably by watershed,
- partner with other local agencies, organizations, landowners, and other interested parties,
- coordinate with local land use planning and zoning efforts, and
- develop a comprehensive information and education strategy to help implement the plan, and track progress toward meeting the plan's goals, including compliance with state standards.

Board of Directors

John Kohl, President • Marvin Fox, Vice-President • Joseph Wisniewski, Secretary/Treasurer

Byron Berg • James Hartung • George Nettum • Clifford Sellen • Robert Washkuhn

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LAND AND WATER RESOURCE MANAGEMENT PLAN GUIDELINES

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INTRODUCTION

Overview

Through Wisconsin Act 27 (1997-1999 Biennial Budget Bill), Chapter 92.10 of the Wisconsin Statutes was amended, creating a county land and water resource management planning program. The goal of the program is to foster and support a locally led process that improves decision-making, streamlines administrative and delivery mechanisms, and better utilizes local, state, and federal funds to protect Wisconsin's land and water resources. More specifically, the program is intended to:

- rely on a locally led process for plan development and implementation;
- allow for maximum flexibility with various program grants and funding sources;
- encourage comprehensive watershed based efforts without excessive planning;
- reward innovation and cost effectiveness;
- require the seamless integration of programs and funding sources;
- make use of a wide variety of implementation tools; and
- ensure meaningful program evaluation and accountability.

The guidelines described in this document are provided to assist counties in developing a county land and water resource management plan that will meet the minimum requirements of the county land and water resource management planning program and many of the requirements for other program grant processes.

County Land and Water Resource Management Plan Concept

The county land and water resource management plan concept was proposed in the fall of 1996 by conservation professionals in response to draft state agency recommendations for redesigning Wisconsin's nonpoint programs. The concept was promoted by the Wisconsin Land and Water Conservation Association during state legislative deliberations in the spring and summer of 1997. With the added support of the Department of Agriculture, Trade and Consumer Protection, the Department of Natural Resources, and the USDA Natural Resources Conservation Services, the county land and water resource management plan concept became a central theme to landmark state legislation signed into law in October 1997 as part of Wisconsin Act 27.

The county land and water resource management plans are not intended to be another "program" among the many others from the state and federal level. Rather, it is a "process" by which counties can assess their resource conditions and needs and decide how to best meet their goals. In other words, the county land and water resource management plans are an "umbrella" to integrate all available programs. County land and water resource management plans are intended to:

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- develop a seamless approach for program intergration;
- address the conditions of local land and water resources, referencing available monitoring data and applicable state and federal standards;
- review and incorporate existing plans, such as the areawide water quality plans;
- identify local soil erosion and nonpoint pollution problems and priorities;
- develop a multi-year work plan for addressing those problems;
- partner with other agencies, municipalities, organizations, landowners, and other interested parties;
- coordinate with local land use planning and zoning efforts;
- develop a comprehensive information and education strategy to help implement the plan;
- track progress toward meeting the plan's goals, including compliance with state standards; and
- leverage local, state, federal, and private resources.

MINIMUM STATUTORY REQUIREMENTS

The following is a summary of the minimum statutory requirements of the Land and Water Resource Management Program listed in Chapter 92.10, Wis. Statutes. Although these are the minimum requirements for the county land and water resource management plans to address, it is strongly encouraged that the Practical Considerations information discussed later in the guidelines are also included in plan development and implementation. Inclusion of the Practical Considerations will help meet many of the requirements for other program grant processes and garner more local, state, and federal support for plan implementation. For complete text of Chapter 92.10, please see Appendix A. A checklist is provided in Appendix C that summarizes the minimum statutory requirements and practical considerations information.

Authority

Through Wisconsin Act 27, Chapter 92.10 of the Wisconsin Statutes was amended, creating a County Land and Water Resource Management Program.

Plan Preparation

Meeting the requirements of ATCP 50.12(2), Wis. Adm. Code, will satisfy the requirements of s. 92.10(6)(a) 1.-5., Wis. Stats. One of the notes in this section of the administration code states that the County Land Conservation Committee may estimate the soil erosion rates on individual fields based on representative sampling of fields in an area or region. County Land Conservation Committees shall prepare county land and water resource management plans which:

- specify maximum acceptable rates of soil erosion;
- identify the parcels and locations of the parcels where soil erosion standards are not being met;

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- identify the land use changes or management practices which would bring each area of land into compliance with standards adopted by the County Land Conservation Committee;
- specify procedures to be used to assist landowners and land users in controlling soil erosion;
- establish priorities for controlling soil erosion;
- identify causes other than soil erosion of nonpoint source water pollution; and
- describe all proposed county activities related to nonpoint source water pollution.

Notification

A County Land Conservation Committee must notify landowners and land users of the results of any determinations concerning soil erosion rates and nonpoint source water pollution, and provide an opportunity for landowners and land users to present information relating to the accuracy of the determinations during preparation of the county land and water resource management plan. The statutes [s. 92.10(6)(b), Wis. Stats.] requires that landowners be notified of results of any determinations concerning soil erosion rates and nonpoint source water pollution. This requirement can be satisfied by the provisions of ATCP 50.12(5), Wis. Adm. Code. The requirement can be satisfied during implementation by including these determinations in conservation plans prepared for landowners. Also, landowners are notified of the County Land and Water Resource Management Plan contents as a result of the notice for the public hearing required under s. 92.10(6)(c), Wis. Stats.

Hearings

A County Land Conservation Committee must hold one or more public hearings on the county land and water resource management plan.

Plan Submission

A County Land Conservation Committee must submit the county land and water resource management plan to the Wisconsin Land and Water Conservation Board and the Department of Agriculture, Trade and Consumer Protection.

Plan Review and Approval

The Department of Agriculture, Trade and Consumer Protection must review and approve or disapprove county land and water resource management plans submitted by the County Land Conservation Committees. The Department may require County Land Conservation Committees to indicate specific projects to be funded under each plan and the related cost-sharing rates. A generic timeline for plan approval is as follows:

- Submit draft plan to the Department of Agriculture, Trade and Consumer protection for preliminary review and comment.
- Department of Agriculture, Trade and Consumer Protections returns comments, if any.
- County Land Conservation Committee holds public hearing.

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- Submit final draft plan to Department of Agriculture, Trade and Consumer protection for approval.
- DATCP provides plan summaries to the State Land and Water Conservation Board.
- State Land and Water Conservation Board makes recommendations.
- Department of Agriculture, Trade and Consumer Protection approves plan.

PRACTICAL CONSIDERATIONS

Although not required in the Land and Water Resource Management Program by Chapter 92.10 of the Wisconsin Statutes, the following information is strongly recommended to be considered during the development and implementation of the county land and water resource management plan. A Checklist for the Practical Considerations information is provided in Appendix C to assist in plan development and implementation.

Plan Development Process

1. Form a Local Advisory Committee

The county land and water resource management plan concept is based on the idea of forming a local advisory committee to assist in the development of the county land and water resource management plan. Driving this idea is the thought that a diverse group of stakeholders such as landowners, local government officials and staff, educators, state, federal and American Indian government personnel, Basin Partner Teams, interest groups, and citizens will have the best idea of the needs and concerns of the counties in which they live.

In order to gain local support, the stakeholders should be informed of the planning process, how they can help in the process, and what the county hopes to accomplish. Informing interested parties can be done by:

- convening public meetings to identify issues that reflect the public interest and gather public support for the subsequent actions needed to address issues and opportunities;
- securing media coverage to follow and report on the planning process;
- sending opinion surveys;
- forming citizen committees and focus groups to identify pertinent issues; and
- contacting conservation professionals to provide assistance in identifying current and future resource issues.

The county land and water resource management plan should detail the processes used to obtain the local input. This will help ensure that the plan has received the proper input and will lend credibility to the process by involving all the stakeholders.

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Interested parties should then be invited to participate on the county land and water resource management plan Advisory Committee. The purpose of the advisory committee is to:

- provide information and technical data for the plan;
- assist with preparing the plan;
- review and comment on the plan as it develops;
- advise the County Land Conservation Committee on program options for the plan; and
- ensure that related agency programs are coordinated with the implementation of the County land and water resource management plan.

For additional information on forming a local advisory committee and gaining local support see the *USDA Natural Resources Conservation Service Conservation Program Manual*, the *Department of Natural Resources Planning Handbook for Priority Watershed Projects*, the *National Association of Conservation Districts Locally Led Handbook*, or contact the University of Wisconsin - Extension River Basin Educator or Basin Partner Team Educator in your area.

2. Assemble Data

Data included in the plan should represent a summary of relevant data which will help identify issues and opportunities. Enough data should be included to provide the reader with a clear picture of the situation. The bulk data or assessment information should be placed in the appendix of the plan or through reference of the appropriate document or plan from which the data was derived.

Some issues have little or no data to support their importance or viability. A lack of data should not prevent further assessment of land and water resource issues, and may not require a major data gathering effort. Conservation professionals from local, state, and federal agencies, as well as other partners, have considerable background on land and water resource problems and could assist in obtaining information relevant to a particular problem.

Information and technical data is often available from the past efforts of committees and work groups, such as land use planning done at the county level, and areawide water quality management planning done by the Department of Natural Resources at the basin level. Basin Partner Teams should be able to provide land and water resource data and technical assistance in the plan development process. This type of information should be used as a source to assist in assembling the data.

There are other sources that should be considered when gathering data and conducting the resource assessment for the County land and water resource management plan. Keep in mind that this is not an exhaustive list and many other sources of information may be available. Local sources can generally provide more detailed information than some statewide data sources. Some examples include:

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- Areawide Water Quality Management Plans (NR121)
- Biological Use Objectives (NR 102)
- Impaired Waters (Clean Water Act 303d List)
- Outstanding and Exceptional Resource Water (NR 102)
- Mapped Isolated Natural Areas and Environmental Corridors (County Land Use Plan and Department of Natural Resources Bureau of Endangered Resources data)
- Water Resource Uses and Designated Standards (NR104)
- Soil Survey
- Wetland Mapping (Natural Resources Conservation Service and Wisconsin Wetland Inventory Maps)
- Comprehensive Lake Management Plans (NR 190 - Lake Management Planning Program and NR 191 - Lake Protection and Classification)
- County Comprehensive Land Use Plans
- Priority Watershed Plans

3. Assess Resources

Resource assessments provide the critical link between the data and issues identified. The data, and especially the summaries of the data, provide the raw facts about a particular problem or issue. An assessment, however, analyzes the data regarding the natural resources to provide an understanding of the problem and can lead to possible solutions.

The present condition of the land, water, and related natural resources, as evidenced by the data as well as the adequacy of existing management and regulatory programs, will form the basis of many of the implementation activities to be addressed in the plan. Resource assessments will also help determine the severity of the problems identified, thus helping in setting priorities in the planning and implementation phases. Assessments need not be lengthy, but should be detailed enough to facilitate the development of issues, goals and objectives, and actions.

4. Identify Issues

Both resource data assessment and public and professional input must be used to accurately identify issues of importance. A good plan rests on a foundation of clear issue identification. Distinctions should be made between issues (resource problems and opportunities) and actions (activities that are designed to address issues). For example, the following statement is not an issue:

- "The county lacks the staff expertise to deal with land and water quality problems." Staffing and funding are solutions which can address specific water resources issues. The issue here is poor water quality, poor land use, and water quality degradation. Obtaining the funding and staff expertise necessary to deal with the problem are actions which should be part of the implementation plan.

The issue identification process should be open to all land and water-related resource issues, including not only direct water issues, such as water quality and supply, but

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related issues which affect water such as land use practices and soil erosion, and dependent uses such as aquatic and terrestrial wildlife. The process of issue identification can be addressed by:

- convening public meetings to identify issues that reflect the public interest and to gather public support for subsequent actions needed to address issues and opportunities;
- developing opinion surveys and form citizen committees to identify pertinent issues;
- contacting conservation professionals to provide valuable assistance in identifying current issues as well as those looming on the horizon, and
- integrating basin wide priorities with local planning efforts.

Issues can be sorted or ranked by the public through public meetings or by the local advisory committee with the assistance of county officials and resource professionals.

5. Set Goals and Objectives

The goals and objectives form the linkage between issues and the actions. Since issues change over time, the focus of the primary goals and objectives should be on high priority issues – those that the county intends to address in the near future. Keep in mind that there may already be local or regional goals and objectives in place. These existing goals and objectives should be reviewed and evaluated when developing new goals and objectives.

Goals and objectives are hierarchical in nature with the goal being the more general and longer term target. A goal states clearly what the county wishes to accomplish over the long term; the objective sets the near term targets to accomplish the goal.

For example, a goal might be to reduce phosphorus levels in county lakes to a given standard. One objective that would help achieve this goal might be to have all on-site septic sewer systems upgraded by a certain date or, create buffers strips along all adjacent agriculture land. Other, related objectives necessary to achieve this goal would also be identified. Then, actions could be planned to accomplish each of these objectives.

Goals must be clear and achievable. For example, the following goal is neither clear nor specific enough for a county land and water resource management plan: "All lake water quality should be improved." Goals should address these questions: 1) What is the ultimate result desired? 2) Is the result achievable in a reasonable period of time?

Objectives break the goal down into smaller, manageable bites and should be more specific and should be measurable. They should address the following questions: 1) What are the parts of the goal that can be identified as short-term activities which will help achieve the goal? 2) What standards must be attained?

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Using the above example the goal might read: "Phosphorous levels are to be reduced to meet water resource objectives by the year 2000." Objectives to achieve this goal might include the following : 1) Upgrade all on-site sewer systems by 2000. 2) Adopt and enforce buffer strip requirements along streams, ditches, and lakeshores. 3) Ensure that municipal treatment systems meet discharge standards.

6. Define Action Steps

Actions are the specific steps a county will take to address its priority issues and are used as a means of accomplishing objectives to achieve goals which deal with those issues. Using the previous example, if the objective is to insure that all on-site sewer systems are upgraded, the action step might indicate locations that are to be targeted in a given time period.

Actions should be specific projects, programs, or implementation activities which have a good likelihood of being achievable in the short term. That is, they are likely to be funded or realized within the existing programs implemented by the county, agency, or organization. Identifying realistic actions increases the chances that a plan will bring results. Actions should require accomplishment as a measure of success. The actions should use proactive language, require effective activities, or propose specific programs to deal with the issues. Language such as encourage, promote, and facilitate are vague and do little to address complex water resource problems and allow no measure of accomplishment. Such language may have less chance of receiving local, state, or federal funding support.

The actions should be prioritized to reflect the urgency of the problems they are intended to address, as well as the resources which can be expected to be available for addressing them. Priorities should reflect the rankings established in the Issue Identification section discussed previously. By incorporating estimates of costs and time and money available, priorities can be established using the same methods used for the issue rankings.

Actions may be accomplished either by the county or by other agencies and organizations. The amount of staff and financial resources necessary and available must be considered. The plan should indicate whether commitments for assistance from other agencies, local units of government, or other organizations has been obtained. An example is the assistance of Department of Natural Resources GMUs in providing water resource data and technical assistance.

While detailed cost estimates may not be possible or practical at this stage, "ballpark" estimates should be made so that a realistic implementation schedule can be developed. Grandiose plans may look impressive, but if they cannot be funded, goals will not be achieved.

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Based on project costs, funds, and staff available, the county should develop a plan implementation schedule that accomplishes the most important objectives first.

Plan Implementation Process

The purpose of the implementation process is to state how the plan will be carried out to meet the objectives and achieve the actions identified. It will apply the performances standards, clarify roles and responsibilities, develop information and education strategies, and track progress of the plan and plan objectives. It may also provide a cost estimate for the activities based on programmatic experience and projected costs associated with the annual activities identified in the Land and Water Resources Management Plan. Refinements to the estimated costs in the plan will be refined through the annual county budget and grant application processes. Finally, it should provide a schedule to achieve goals and objectives.

county land and water resource management plans should have implementation activities that are organized by watershed and coordinated with adjoining county land and water resource management plans, Geographical Management Units, Basin Partner Teams, local, state, federal, and tribal governments, private entities, and the general public.

1. Apply Performance Standards to Resource Assessment

Significant research continues to be conducted to analyze and quantify the impact land uses have on land and water resources. Often the research is used to guide land management decisions and the development of public policy to reduce land use impact on water resources. Key to efficient and effective land management and public policy development is the identification of the threshold whereby land management activities begin to adversely impact land and water resource conditions. Once the thresholds are defined and understood, performance standards can be established to articulate the land management activities necessary to reduce or eliminate the effect on land and water resources.

It is very difficult to develop a set of land management performance standards which are responsive to all the various water resource classifications. Owing to the need to develop and express a set of land use management expectations, performance standards should be developed to address the most typical water resources characteristics, for example, warm-water sport fishery. When the water resource characteristics need a higher level of land use management, the performances standards should be adjusted accordingly.

Through Wisconsin Act 27, the Legislature amended the statutes to allow County Land Conservation Committees to develop and adopt standards and specifications for management practices to control erosion, sedimentation, and nonpoint source water pollution. The statutes also require the Department of Natural Resources and the

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Department Of Agriculture, Trade And Consumer Protection to develop performance standards for agricultural and non-agricultural nonpoint pollution sources.¹ The development and conveyance of performance standards will clearly articulate what is expected of landowners and businesses and provide guidance to conservation efforts. The standards will be expressed through a combination of soil erosion, pollutant delivery to surface and ground water, and behaviors not appropriate for water quality.

Until the Department of Natural Resources and the Department Of Agriculture, Trade And Consumer Protection complete their statutory requirement of developing performance standards, several pre-existing state or county performance standards can be used to guide the preparation of the implementation activities. They are:

- Animal Waste Advisory Committee Prohibitions (Chapter 281 Water and Sewage, 281.16 (3) (a) 1. - 4.)
 - (1) No overflow of manure storage structures.
 - (2) No unconfined manure stacking (piling) within Water Quality Management Areas.
 - (3) No direct runoff from feedlots or stored manure to waters of the state.
 - (4) No unlimited livestock access to waters of the state where high concentrations of animals prevent adequate sod cover maintenance.
- Water Quality Management Areas are defined as land within 300 feet of a stream and within 1,000 feet of a lake, also specific sites based on susceptibility for groundwater contamination.
- Soil and Water Conservation Standards
 - Construction Site Erosion Control
 - Stormwater Management Standards
 - Manure Standards
 - Shoreland Management and Zoning
 - Agricultural Shoreland Management

¹ Under the provisions of s. 92.15, Wis. Stats., a local unit of government may enact livestock operation regulations that exceed the state performance standards, prohibitions, conservation practices and technical standards only if the local unit of government demonstrates to the satisfaction of the department of agriculture, trade and consumer protection or the department of natural resources that the regulations are necessary to achieve water quality standards.

As of the writing of these guidelines (September 1998), the Department of Natural Resources and the Department of Agriculture, Trade and Consumer Protection have not yet promulgated state performance standards, as required by 1997 Act 27. This chapter will need to be revised after the state performance standards are promulgated.

2. Clarify Roles and Responsibilities

At the root of the County land and water resource management plan concept is the cooperation and coordination of all stakeholders within and adjacent to the county and coordination between the counties.

Provisions for partnering can take place in many forms. For example, formal written memorandums of understandings or agreements could be set up between the local, state, and federal agencies as well as other organizations and interested parties. These

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agreements will define the specific roles and responsibilities of the individuals involved in the planning process. Keep in mind that there may be current agreements in place that should be reviewed prior to developing new agreements. Current agreements may only need modification to meet the needs of the County land and water resource management plan

Cooperation and coordination of stakeholders can take place in many forms. For example, there are opportunities to incorporate the priorities of the Basin Partner Teams with the county land and water resource management plans. A tremendous opportunity exists for the linkage of the basin appraisal schedules and other basin land and water program priorities with the activities of the county Land Conservation Committees and Land Conservation Departments and the development of their County land and water resource management plan. The Basin Partner Teams may want to work with the Land Conservation Department and County Land Conservation Committees to assist in a range of potential roles such as:

- overseeing the development of areawide water quality management plans;
- reviewing and commenting on County Land and Water Resource Management Plans;
- serving as a clearing house for land and water quality information within the basin;
- providing land and water resource data and technical assistance to counties to help in plan development;
- assisting in information and education strategies;
- focusing Department of Natural Resources Private Land Program activities; and
- integrating basin wide priorities into local planning efforts.

For counties developing county land and water resource management plans, Basin Partner Team involvement should be explored as early in the planning process as possible. Strong coordination is encouraged between the Basin Partner Teams and the County Land Conservation Committees and Land Conservation Departments.

Another example of stake holder involvement is the River Basin Educators. They play a lead role in developing ecosystem-based educational strategies that protect and improve local land and water resources - at the basin level. As a guide, the following are illustrative of Basin Educator responsibilities:

- assisting in the development of an ecosystem-focused river basin education strategy that addresses specific priorities identified by local work groups;
- assisting in identifying interested potential members for the County Land and Water Resource Management advisory committees;
- consulting, and where appropriate, assisting in the organization of planning and strategy meetings;
- coordinating educational outreach programming; and
- helping develop ongoing working relationships between the agencies and public interest groups involved in natural resource education programs.

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For counties developing county land and water resource management plans, local county University of Wisconsin Extension agent involvement should be explored as early in the planning process as possible. In addition, strong coordination should be encouraged between the University of Wisconsin Extension River Basin Educator and county University of Wisconsin Extension faculty. It should be recognized that in areas where basin educators and county faculty/agent work together, the county agent will have a greater opportunity to be part of local educational programs that relate to the implementation of the county land and water resource management plan.

3. Develop Information and Education Strategy

A vital component to the county land and water resource management plan is the Information and Education section. Information and Education activities will be an integral part of both the planning and the implementation phases. The information and Education information can be developed in a similar manner to how the overall plan is composed - that is it is important to integrate different agencies and private sector entities during the development of the ideas all the way through carrying out the activities.

The strength of the information and education programs is often related to how you build a strategy which integrates both water quality goals and behavioral change goals. Such strategies are not just a list of activities which project staff complete by following a recipe or schedule. The information and education strategy should address the priorities set by the county land and water resource management plan and include measurable objectives for any educational programming that will occur.

Major elements of an information and educational strategy can include:

- Your land and water resource priorities (usually several)
- Specific goals that address resource priorities
- Measurable objectives for each goal (usually several for each goal)
- Target audiences (emphasis is on audiences, not masses)
- What will happen with each target audience (some examples include):
 - identification of local problems
 - participation in planning processes
 - implementing solutions to the problems
- Educational/supporting activities
- Time line for implementing educational activities
- Who will help implement the educational activities
- Budget/costs
- Evaluation of objectives.

As a general rule, when developing an Information and Education strategy that is part of a local county land and water resource management plan you will want to focus on

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Target Audience Objectives. Examples of such "measurable" Target Audience Objectives could include:

GOAL: Improve Nutrient Management

Example Objective:

Seventy-percent of the watershed farmers will accurately credit nitrogen from manure.

Educational/Supporting Activities:

- six manure spreader calibration clinics, annually.
- nitrogen crediting demonstration and county farm or county fair exhibit.
- two informational mailing, annually (planning and harvest time).

GOAL: Reduce Urban Sedimentation

Example Objective:

Sixty-percent of the local contractors in the county will be able to design and install appropriate erosion control measures.

Educational/Supporting Activities:

- workshop for local builders and contractors, every other year.
- informational packet distributed to all contractors for each permit issued.

Many groups (private and public sector entities) can and should be part of natural resource education. The county land and water resource management plan should reflect this multi-agency and private sector expertise.

The University of Wisconsin Extension, with offices in every county in the state, a network of area and basin educators, and specialized assistance from diverse faculty on various campuses throughout Wisconsin, is uniquely positioned to provide educational support for maintaining and protecting Wisconsin's land and water resources. Cooperative Extension brings the resources of the University of Wisconsin System to Wisconsin citizens and communities. The roles need to be clarified as new interagency linkages develop between Land Conservation Departments, Department of Natural Resources, and University of Wisconsin Extension's county faculty/agents and basin educators. For more information on roles and responsibilities see the Roles and Responsibilities Section.

4. Track Plan Progress

Current efforts of measuring program success have been time consuming, costly, and largely ineffective. The reasons for this are numerous, including the complexity of the programs, the lack of funds, creative use of water quality monitoring, and failed attempts of developing and applying state-wide computerized tracking systems to be used at the local level.

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Locally led conservation does not end after plan implementation. The effectiveness of the plan should be evaluated to ensure that the community stakeholders' goals and objectives are achieved. An evaluation should be made to determine where the actual results differ from those anticipated.

Counties should identify in their land and water resources management plan the methods of tracking program efforts and evaluating the success of those efforts ensuring that they meet the minimum data requirements of the specific program or programs. For tracking to be successful, it will require that the plans include clear goals and objectives that can be quantified and measured.

5. Monitor and Evaluate Resources

The goal of the monitoring and evaluation activities is to determine the progress the county land and water resource management plan is making towards improving the quality of the land and water resources. Monitoring and evaluation activities should be developed to provide a measure of the specific goals and objectives listed in the plan.

When conducting monitoring it is important that the same methods and equipment be used to collect the data. This includes maintaining the same season in which the data is collected. As discussed throughout this document, it is important to involve all the stakeholders in the monitoring and evaluation activities. Information can be obtained from a variety of local, state, and federal resources as well as schools, basin partner teams, and citizens.

Many local, state, and federal agencies are already involved in monitoring and accomplishment reporting activities. This information is done through a variety of programs and may be a valuable resource for information. There are also designed monitoring programs, such as the Whole Stream Monitoring Sites and the Signs of Success Monitoring Program.

Plan Approval Process

1. Hearings

A County Land Conservation Committee must hold one or more public hearings on the County land and water resource management plan.

2. Plan Submission

A County Land Conservation Committee must submit the County land and water resource management plan to the State Land and Water Conservation Board and the Department of Agriculture Trade, and Consumer Protection, and should consider submission of the plan to the Department of Natural Resources Basin Stakeholder Team, local units of government, cooperating agencies, and other interested parties.

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3. Plan Review and Approval

The Department of Agriculture, Trade and Consumer Protection must review and approve or disapprove county land and water resource management plans submitted by the County Land Conservation Committees. The Department may require County Land Conservation Committees to indicate specific projects to be funded under each plan and the related cost-sharing rates. The State Land and Water Board should also certify that the plan meets the minimum requirements. A generic timeline for plan approval is as follows:

- Submit draft plan to the Department of Agriculture, Trade and Consumer protection for preliminary review and comment.
- Department of Agriculture, Trade and Consumer Protections returns comments, if any.
- County Land Conservation Committee holds public hearing.
- Submit final draft plan to Department of Agriculture, Trade and Consumer protection for approval.
- DATCP mails plan summaries to Land and Water Conservation Board.
- Land and Water Conservation Board makes recommendations.
- Department of Agriculture, Trade and Consumer Protection and the Land and Water Conservation Board approves the plan.

CONCLUSION

Locally Led Conservation

The need for local leadership in natural resources management is an important component included in the United States Department of Agriculture, *1996 Farm Bill*, USDA Natural Resources Conservation Service, *Conservation Programs Manual*, the Environmental Protection Agency, *Water Action Plan*, and Wisconsin Act 27. Elected officials and policy makers have reaffirmed that local leadership and grassroots decision-making that involves a diverse team of stakeholders are the keys to successfully managing and protecting our natural resources. As a result, Wisconsin's 72 County Land Conservation Committees have an opportunity to lead their communities in determining local conservation needs and priorities.

Locally led conservation is based on the principle that community stakeholders are best suited to identify and resolve local natural resource problems. It challenges local, state, and federal agency representatives and urban and rural neighbors to work together and take responsibility for addressing resource needs. Locally led conservation creates new opportunities, but also poses significant challenges to County Land Conservation Committees to take a more active role as conservation leaders in their communities.

Wisconsin Act 27 includes enabling legislation for County Land Conservation Committees to develop County Land and Water Resource Management Plans. County

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Land and Water Resource Management Plans are envisioned to be a local action or implementation plan with emphasis on program integration. This local planning process is not to be thought of as another "program" among the many others from the state and federal level. Rather, it is a process by which counties can assess their resource conditions and needs, decide how best to meet water quality goals, minimum state performance standards and other local conservation objectives, and measure progress towards meeting these goals. The planning process will provide a more efficient and effective means to address resource issues, meet state standards, and more effectively leverage local, state, and federal resources.

Every citizen benefits from the protection and sustainable use of our natural resources. As standing committees to County Boards, County Land Conservation Committees are the primary local delivery system of natural resource programs. County Land Conservation Committees and Departments are the public's vital link with local landowners to promote the implementation of conservation practices and achieve greater environmental stewardship of the land.

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Appendix C - Checklist for County Land and Water Resource Management Plans

This checklist is provided to summarize the minimum statutory requirements of the Land and Water Resource Management Program listed in Chapter 92.10, Wis. Stats. It is intended to be used as a tool to evaluate if the county land and water resource management plan is meeting the basic statutory requirements.

Minimum Statutory Requirements

Does the County Land and Water Resource Management Plan:

1. Specify maximum acceptable rates of soil erosion? ☐
2. Identify the parcels and locations of the parcels where soil erosion standards are not being met? ☐
3. Identify the land use changes or management practices which would bring each area of land into compliance with standards adopted by the County Land Conservation Committee? ☐
4. Specify procedures to be used to assist landowners and land users in controlling soil erosion? ☐
5. Establish priorities for controlling soil erosion? ☐
6. Identify causes, other than soil erosion, of nonpoint source water pollution? ☐
7. Describe all proposed county activities related to nonpoint source water pollution? ☐
8. Has the county held a public hearing? ☐
9. Does the plan or other correspondence verify that the county notified landowners and land users of the results of any determinations concerning soil erosion rates and nonpoint sources of water pollution, and provide an opportunity for the landowners or land users to present information relating to the accuracy of the determinations using the preparation of the Land and Water Resource Management Plan? ☐

Practical Considerations

This checklist is provided to summarize additional information that is recommended to be included in the county land and water resource management plan. It is intended to be used as a tool to evaluate the plans content and garner more local, state, and federal support for plan implementation.

Local Advisory Committee

1. Has a preliminary meeting been convened with stakeholders to discuss the Land and Water Resource Management Process?
2. Has the public been engaged in the locally led conservation process?
3. What methods have you used to gather public input?
 - ☐ meetings
 - ☐ focus groups
 - ☐ surveys
4. Has a local advisory committee been convened?

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5. Does the local advisory committee meet regularly?
6. Are special committees or task groups working as part of the local advisory committee?
7. Does the input from the public reflect needs, interests, and ideas of the diversity of the county? Possible participants include:
 - ☐ federal agencies
 - ☐ GMU basin teams
 - ☐ UWEX county agents and river basin educators
 - ☐ state conservation agency representatives
 - ☐ local, state, and tribal environmental, agricultural and recreational agencies
 - ☐ agricultural organizations
 - ☐ environmental and conservation organizations
 - ☐ civic groups
 - ☐ local and state elected officials
 - ☐ local boards of education and local schools
 - ☐ local businesses that have an impact on natural resources
 - ☐ garden clubs
 - ☐ political organizations
 - ☐ hunting, fishing, and recreational organizations
 - ☐ builders association
8. Does the County Land and Water Resource Management Plan detail the process used to obtain local input?

Data Assembly

1. Is the data relevant to the plan?
2. Have other land and water resource experts been contacted for data information, such as the areawide water quality information from the DNR basin teams?
3. Have other sources for data been explored?

Resource Assessment

1. Has the local advisory committee completed a resource assessment?
2. Is the resource assessment based upon natural resource inventory data obtained from a broad range of government and non-government sources?
3. Does the resource assessment address the entire resource base in the county including land uses, plants, animals, soil, water, and air?

Issue Identification

1. Does the resource assessment include prioritizing resource concerns?
2. Does the resource assessment include identifying priority geographic areas of need?
3. Does resource assessment include agreed upon community objectives?

Goals and Objectives

1. Has the local advisory committee set measurable goals and objectives?

Action Steps

1. Has the local advisory committee identified government and non-government programs and services that are available to address the resource needs?

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2. Do the action steps prioritize the resource problems?
3. Has a implementation scheduled been developed?
4. Does the implementation schedule include information on costs, funding, and staff?

Performance Standards

1. Does the Plan use performance standards?

Roles and Responsibilities

1. Does the plan contain provisions for partnering?
2. Does the plan identify roles and responsibilities of stakeholders?

Information and Education

1. Has a strategy to integrate water quality and behavioral change goals been developed?
2. Have the major elements been included in the information and education strategy?
 - ☐ land and water priorities
 - ☐ goals
 - ☐ objectives
 - ☐ target audience
 - ☐ supporting activities
 - ☐ timeline
 - ☐ who does what
 - ☐ budget and costs
 - ☐ evaluation

Progress Tracking

1. Does the plan include a progress tracking component?

Monitoring

1. Does the plan include resource monitoring?

Plan Approval

1. Has the plan been submitted to stakeholders for review and comment?
Stakeholders may include:
 - ☐ federal agencies
 - ☐ GMU basin teams
 - ☐ UWEX county agents and river basin educators
 - ☐ state conservation agency representatives
 - ☐ local, state, and tribal environmental, agricultural and recreational agencies
 - ☐ agricultural organizations
 - ☐ environmental and conservation organizations
 - ☐ civic groups
 - ☐ local and state elected officials
 - ☐ local boards of education and local schools
 - ☐ local businesses that have an impact on natural resources
 - ☐ garden clubs

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- ☐ political organizations
 - ☐ hunting, fishing, and recreational organizations
 - ☐ builders association
2. Has the plan been submitted to the LWCB to certify that the plan meets the minimum requirements?

Note: This document is an unofficial text of Ch. 92, Wis. Stats., as amended by 1997 Wisconsin Act 27. Before taking action, users should consult with legal counsel or the Revisor of Statutes to verify the accuracy of this text. The Department of Agriculture and Consumer Protection assumes no responsibility for the accuracy of this text.

CHAPTER 92

SOIL AND WATER CONSERVATION AND ANIMAL WASTE MANAGEMENT

92.02 Legislative intent.
92.025 State soil erosion control goals.
92.03 Definitions.
92.04 Land and water conservation board.
92.05 Department.
92.06 Land conservation committees.
92.07 Land conservation committee; powers.
92.08 Basic workload allocation plan.
92.09 Land conservation committee staff.
92.10 Land and water resource management planning program.
92.104 Soil and water conservation plan.

92.105 Soil and water conservation standards.
92.106 Department review.
92.11 Regulation of local soil and water resource management practices.
92.12 Intergovernmental cooperation.
92.13 State and local agencies to cooperate.
92.14 Soil and water resource management program.
92.15 Local regulation of livestock operations.
92.16 Manure storage facilities.
92.17 Shoreland management.
92.18 Training and certification.

92.02 Legislative intent. (1) The legislature finds that the soil resources of this state are being depleted by wind and water erosion and that the waters of this state are being polluted by non-point sources of pollution. The legislature further finds that these are statewide problems endangering the health and welfare of the state's citizens, its recreational resources, agricultural productivity and industrial base.

(2) The legislature declares it to be the policy of this state to halt and reverse the depletion of the state's soil resources and pollution of its waters.

(3) It is the intent of the legislature to implement this policy by enacting this soil and water conservation law to:

(a) Establish goals and standards for conservation of soil and water resources;

(b) Provide for cost sharing, technical assistance, educational programs and other programs to conserve soil and water resources;

(c) Encourage coordinated soil and water conservation planning and program implementation; and

(d) Enable the regulation of harmful land use and land management practices by county ordinance where necessary to achieve the purposes of this chapter.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8).

92.025 State soil erosion control goals. It is the intent of the legislature that:

(1) **STATUTORY GOAL.** The soil erosion rate on each individual cropland field in the state does not exceed the tolerable erosion level on or after January 1, 2000.

(2) **INTERIM GOALS: COUNTIES.** The soil erosion rate in each county in the state does not exceed 1.5 times the tolerable erosion level on or after July 1, 1990 and does not exceed the tolerable erosion level on or after July 1, 1993.

(3) **INTERIM GOALS: INDIVIDUAL CROPLAND FIELDS.** The soil erosion rate in each individual cropland field in the state does not exceed 3 times the tolerable erosion level on or after July 1, 1990, and does not exceed 2 times the tolerable erosion level on or after July 1, 1995.

(4) **INTERIM GOAL: STATE-RUN FARMS.** The soil erosion rate on individual cropland fields of farms owned by the university of Wisconsin system or any other department or agency of state government does not exceed the tolerable soil erosion level on or after July 1, 1990.

History: 1985 a. 29.

92.03 Definitions. In this chapter:

(1) "Agency" means any department, agency, board, commission, committee, council, officer, subdivision or instrumentality, corporate or otherwise, of this state.

(2) "Board" means the land and water conservation board created under s. 15.135 (4).

(3) "Department" means the department of agriculture, trade and consumer protection.

(4) "Landowner" means any person over 18 years of age and any partnership, limited liability company, firm or corporation that holds title to land lying within a county whether or not this land is subject to easement, mortgage, lien, lease or restrictive covenant, except that this term does not include any person who is under guardianship, a person who is incompetent or a person who is mentally ill. A person, partnership, limited liability company, firm or corporation is deemed to hold title to land if the person, partnership, limited liability company, firm or corporation has any of the following:

(a) Title as sole owner.

(b) Title as a joint owner.

(c) Title as owner of an undivided interest.

(d) Title as sole or joint trustee or as sole or joint assignee.

(e) A land contract vendee's interest therein.

(5) "Land user" means any person who uses land as an operator, lessor or renter.

(6) "Secretary" means the secretary of the department.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8); 1993 a. 16, 112.

92.04 Land and water conservation board. (1) **POWERS.**

(a) **Hearings.** The board may hold public hearings in the performance of its functions.

(b) **Delegation.** The board may delegate to its chairperson or to one or more of its members any of its powers or duties.

(c) **Soil and water conservation studies and recommendations.** The board may make studies and recommendations on matters relating to soil and water conservation.

(2) **DUTIES.** (a) **Advise secretary and department.** The board shall advise the secretary and department on matters relating to exercise of the department's authority under this chapter.

(b) **Review land and water resource management plans.** The board shall review land and water resource management plans prepared under s. 92.10 and make recommendations to the department on approval or disapproval of those plans.

(c) **Review and approve soil and water conservation standards.** The board shall review soil and water conservation standards prepared under s. 92.105. The board shall establish guidelines for the approval of these standards.

(d) **Review plans.** The board shall review annual grant allocation plans developed under s. 92.14 (6) (b) and make recommendations to the department on approval, modification or disapproval of the plans.

(e) *Review joint evaluation plan.* The board shall review the evaluation plan prepared under s. 92.14 (13). After its review, the board shall make recommendations on the plan to the department and to the department of natural resources.

(f) *Review annual reports.* The board shall review the annual reports under ss. 92.14 (12) and 281.65 (4) (o).

(g) *Advise the university of Wisconsin system.* The board shall advise the university of Wisconsin system annually on needed research and educational programs relating to soil and water conservation.

(h) *State erosion control goals; compliance and evaluation.* The board shall review compliance with state soil erosion control goals established under s. 92.025. The board shall notify the department and the legislature if these goals are not achieved or if it is unlikely that these goals will be achieved.

(i) *Tolerable erosion levels.* The board shall establish a tolerable erosion level based on an erosion rate which is acceptable and maintains long-term soil productivity.

(j) *Records.* The board shall keep a full and accurate record of all proceedings before it and all actions taken by it.

(k) *Review of pollution abatement determinations.* The board shall review and affirm or reverse decisions of county land conservation committees under s. 281.20 (3) (b) when review is requested under s. 281.20 (5). The board may conduct an informal hearing that is not a contested case under ch. 227.

(L) *Review of critical site determinations.* The board shall review and affirm or reverse decisions of county land conservation committees under s. 281.65 (7) (a) 2. when review is requested under s. 281.65 (7) (b). The board may conduct an informal hearing which is not a contested case under ch. 227.

(3) **RULES REVIEW.** (a) *Board review.* The board shall review all rules of the department relating to implementation of this chapter prior to promulgation.

(b) *Submission for review.* Before submitting proposed rules to the legislative council staff under s. 227.15, the department shall submit the proposed rules to the board for comment. The board has 30 days to submit comments on the proposed rules to the department.

(c) *Emergency rules.* If the department promulgates an emergency rule under s. 227.24, it shall provide a copy of the rule to the board prior to publication of the rule in the official state paper.

(d) *Hearing.* The chairperson of the board, or his or her designee from the board, may cochair with the department any public hearing held by the department on proposed rules.

(e) *Dissenting report.* The department shall submit to the board a copy of the report required under s. 227.19 (2) on proposed rules. The board may prepare a dissenting report stating its recommendations on the proposed rules. The board shall prepare any dissenting report within 10 days from the date of receipt of the department's report. The department shall attach the dissenting report to the department's report, send them to the presiding officer of each house of the legislature and distribute copies under s. 227.19 (2). The department shall cause a statement to appear in the Wisconsin administrative register to the effect that a dissenting report of the board was submitted to the presiding officer of each house of the legislature.

(f) *No rule-making power.* The board has no rule-making authority on matters relating to soil and water conservation.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1983 a. 416; 1985 a. 29; 1985 a. 182 s. 57; 1985 a. 332 s. 251 (8); 1987 a. 27; 1993 a. 16, 166; 1995 a. 227; 1997 a. 27.

92.05 Department. (1) **CENTRAL AGENCY.** The department is the central agency of this state responsible for setting and implementing statewide soil and water conservation policies and administering the state's soil and water conservation programs. The department shall coordinate its soil and water conservation program with the nonpoint source water pollution abatement pro-

gram established under s. 281.65, the inland lake protection and rehabilitation program established under ch. 33 and other programs with objectives related to soil and water conservation administered by the department of natural resources or by other state or federal agencies.

(2) **POWERS.** (a) *Accept gifts.* The department may accept contributions of money or gifts for soil and water conservation purposes.

(b) *Require reports.* The department may require reports from the counties as needed.

(3) **DUTIES.** (a) *Information.* The department shall keep county land conservation committee members generally informed of activities and experience useful to them.

(b) *Development; coordination.* The department shall assist in developing and coordinating the plans and programs of each county.

(c) *Rules.* The department shall promulgate rules governing implementation of this chapter and distribution of state or federal funds by the department to the counties. The department shall comply with the procedures under s. 92.04 (3) in promulgating these rules.

(d) *Advise university of Wisconsin system.* The department shall advise the university of Wisconsin system annually on developing research and educational programs relating to soil and water conservation.

(e) *Studies.* The department may undertake studies and investigations and make and issue reports and recommendations with respect to state soil and water conservation program needs. Biennially, the department shall prepare a state soil and water conservation report. This report shall include a description of present soil and water resource uses and a projection of future trends, an assessment of soil and water conservation problems in relation to soil and water resource use practices and any actions necessary to correct or solve these problems including specific goals, action schedules, program evaluation criteria and provisions for the coordination of these actions with programs developed by other agencies for the development, management and conservation of soil, water and related natural resources. This report shall include the identification of counties and specific parcels within these counties where soil and water conservation problems are most acute and recommendations for actions necessary to correct or solve these problems.

(f) *Nonpoint source water pollution abatement.* The department shall perform the duties specified for the department in the nonpoint source water pollution abatement program under s. 281.65 (5).

(g) *Watershed protection and flood prevention act.* The department has responsibility over programs provided by 16 USC 1001 to 1008 relating to the planning and carrying out of works of improvement for soil and water conservation and other purposes.

(h) *Model ordinances.* The department shall make available model ordinances for counties and municipalities concerning regulation and control of land use and land management practices as authorized under s. 92.11.

(i) *Provide staff.* The department shall provide staff to assist the board in performing its statutory duties.

(j) *Milkhouse wastewater.* The department, in consultation with appropriate state and federal agencies, shall promulgate guidelines for determining eligibility for financial assistance under ss. 92.14 and 281.65 for milkhouse wastewater.

(k) *Nutrient management rules.* The department shall promulgate rules to improve agricultural nutrient management in this state. The rules shall be consistent with rules promulgated under s. 281.16 (3) and shall include incentives, educational and outreach provisions and compliance requirements.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8); 1987 a. 27; 1991 a. 309; 1995 a. 227; 1997 a. 27.

92.06 Land conservation committees. (1) **CREATION; MEMBERSHIP.** (a) *Creation.* Each county board shall create a land conservation committee.

(b) *Membership.* 1. The county board shall appoint to the land conservation committee at least 2 persons who are members of the committee on agriculture and extension education created under s. 59.56 (3) (b).

2. The county board shall appoint to the land conservation committee a person who is the chairperson of the county agricultural stabilization and conservation committee created under 16 USC 590h (b) or other county agricultural stabilization and conservation committee member designated by the chairperson of the county agricultural stabilization and conservation committee.

3. The county board may appoint to the land conservation committee any number of members who are also members of the county board.

4. The county board may appoint to the land conservation committee up to 2 members who are not members of the county board.

(c) *Terms.* Each member of the land conservation committee shall serve for a term of 2 years or until a successor is appointed, whichever is longer.

(d) *Reimbursement.* Each member of the land conservation committee shall be reimbursed for necessary expenses and shall be paid the same per diem as members of other county board committees.

(e) *Programs and responsibilities.* The county board may assign other programs and responsibilities to the land conservation committee.

(2) **DESIGNATED REPRESENTATIVES.** The county board shall designate a representative of each county committee with responsibilities related to natural resource management to serve as an adviser to the land conservation committee. The county board shall designate, at a minimum, representatives from any county zoning or land use, forestry, parks and solid waste committees. In addition, the land conservation committee may invite any state, federal or local agency with which the county or committee has a memorandum of understanding to designate a representative to advise the land conservation committee.

(4) **PUBLIC PARTICIPATION.** The committee shall actively solicit public participation in the planning and evaluation of soil and water conservation programs.

History: 1981 c. 346; 1985 a. 29; 1995 a. 201.

Appointments to committee are made by county board, not county executive. 76 Atty. Gen. 173.

Committee responsibilities and prohibition of private interest in public contracts discussed. 76 Atty. Gen. 184.

92.07 Land conservation committee; powers.

(1) **POWERS GENERALLY.** Each land conservation committee may carry out the powers delegated to the committee subject to the approval of the county board.

(2) **STANDARDS.** Each land conservation committee may develop and adopt standards and specifications for management practices to control erosion, sedimentation and nonpoint source water pollution. The standards and specifications for agricultural facilities and practices that are constructed or begun on or after October 14, 1997, and, if cost-sharing is available to the owner or operator under s. 92.14, 281.16 (5) or 281.65 or from any other source, for agricultural facilities and practices that are constructed or begun before that date shall be consistent with the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 (3). The land conservation committee shall use the rules promulgated under s. 281.16 (3) (e) to determine whether cost-sharing is available.

(3) **DISTRIBUTE FUNDS.** Each land conservation committee may distribute and allocate federal, state and county funds made available to the committee for cost-sharing programs or other incentive programs for improvements and practices relating to soil and water conservation on private or public lands, and within

the limits permitted under these programs, to determine the methods of allocating these funds.

(5) **EDUCATIONAL AND OTHER PROGRAMS.** Each land conservation committee may encourage research and educational, informational and public service programs, advise the university of Wisconsin system on educational needs and assist the university of Wisconsin system and the department in implementing educational programs under ss. 36.25 (7), 59.56 (3) and 92.05.

(6) **PREVENTIVE AND CONTROL MEASURES AND WORKS OF IMPROVEMENT.** Each land conservation committee may carry out preventive and control measures and works of improvement for flood prevention and for conservation, development, utilization and control of water within the county. These preventive and control measures and works of improvement may include, but are not limited to, changes in the use of land and use of engineering operations such as terraces, terrace outlets, desilting basins, floodwater retarding structures, floodways, dikes and ponds, methods of cultivation and the growing of vegetation. These preventive and control measures and works of improvement may be carried out on lands owned or controlled by this state or any of its agencies, with the cooperation of the agency administering and having jurisdiction of the land, and on any other lands within the county upon obtaining the consent of the landowner or the necessary rights or interests in the land.

(7) **ASSISTANCE.** Each land conservation committee, in the name of the county, may cooperate with, enter into agreements with, or furnish financial, technical, planning or other assistance to any agency, governmental or otherwise, or any landowner or land user within the incorporated or unincorporated parts of the county, in carrying out resource conservation operations and works of improvement for flood prevention or for the conservation, development, utilization and protection of soil and water resources within the county.

(7m) **ASSISTANCE TO THE DEPARTMENT OF TRANSPORTATION.** Each land conservation committee shall cooperate with the department of transportation as requested under s. 85.195.

(8) **OBTAIN PROPERTY.** Each land conservation committee, in the name of the county, may obtain options upon and acquire, by purchase, exchange, lease, gift, grant, bequest, devise or otherwise, any property or rights or interests in property or in water. A land conservation committee may maintain, administer and improve any properties acquired. A land conservation committee may receive income from these properties on behalf of the county and may expend this income in carrying out the purposes and provisions of this chapter. A land conservation committee may sell, lease or otherwise dispose of the property or interests in property in furtherance of the purposes and the provisions of this chapter.

(9) **MACHINERY AVAILABILITY.** Each land conservation committee may make available, on terms it may prescribe, to landowners and land users within the incorporated and unincorporated parts of the county, agricultural and engineering machinery and equipment, fertilizer, seeds and seedlings, and other material or equipment which will assist the landowners and land users in carrying on operations upon their lands for the conservation of soil resources, for the prevention and control of soil erosion, for flood prevention, for the conservation, development and utilization of water or for the prevention of nonpoint source water pollution.

(10) **STRUCTURES.** Each land conservation committee may construct, improve, operate and maintain structures necessary or convenient for the performance of any of the operations or activities authorized in this chapter.

(11) **ADMINISTRATION OF PROJECTS OR PROGRAMS.** Each land conservation committee, in the name of the county, may acquire, by purchase, lease or otherwise, and administer, any soil conservation, flood prevention, water management or nonpoint source water pollution abatement project or combinations of these projects, and participate in programs concerned with the conservation of natural resources located within the county undertaken by the United States or any of its agencies, or by this state

or any of its agencies. A land conservation committee may administer, as agent of the United States or any of its agencies, or of this state or any of its agencies, any soil conservation, flood prevention, water management, water quality improvement, nonpoint source water pollution abatement, erosion control, erosion prevention project or resource conservation program within the county. A land conservation committee may act as agent for the United States, or any of its agencies, or for this state or any of its agencies, in connection with the acquisition, construction, operation or administration of any resource conservation program within the county. A land conservation committee, on behalf of the county, may accept donations, gifts and contributions in money, services, materials or otherwise from any source and use or expend these moneys, services, materials or other contributions in carrying on its operations.

(12) **CONTRACTS; RULES.** Each land conservation committee, in the name of the county, may make and execute contracts and other instruments necessary or convenient to the exercise of its powers.

(13) **CONTRIBUTIONS; AGREEMENTS.** As a condition to extending any benefits under this chapter to, or the performance of work upon, any lands not owned or controlled by this state or any of its agencies, a land conservation committee may require contributions in money, services, materials or otherwise to any operations conferring the benefits, and may require landowners and land users to enter into and perform agreements or covenants respecting the use of land as will lead to conservation of soil and water resources.

(14) **ENTER UPON LANDS.** Each land conservation committee may enter upon any lands within the county to examine the land and make surveys or plans for soil and water conservation without being liable for trespass in the reasonable performance of these duties. This authorization applies to the land conservation committee members and their agents.

(15) **ADMINISTRATION AND ENFORCEMENT OF ORDINANCES.** A land conservation committee may, if authorized by the county board, administer and enforce those provisions of an ordinance enacted under s. 101.65 (1) (a) related to construction site erosion, a zoning ordinance enacted under s. 59.693 or an ordinance enacted under authority granted under s. 101.1205.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8); 1991 a. 309; 1993 a. 16; 1995 a. 201; 1997 a. 27.

Cross-reference: See ss. 59.70 (20) (c) and 60.10 (2) (i) for authorization of county or town appropriations.

92.08 Basic workload allocation plan. (1) Every land conservation committee shall prepare annually for its county a plan which describes the soil and water resource activities to be undertaken by that county and the dollar amounts required for personnel to administer and implement activities in that county related to soil conservation activities required under ss. 92.104 and 92.105 to claim a farmland preservation credit under subch. IX of ch. 71, activities required under s. 92.17 related to shoreland management or activities required under s. 281.65 (8m) related to the development or implementation of animal waste [or construction site erosion] ordinances. The land conservation committee shall submit that plan to the county board of that county and to the department.

NOTE: Sub. (1) is shown as affected by two acts of the 1995 legislature and as merged by the revisor under s. 13.93 (2) (c). The bracketed language was inadvertently omitted. Corrective legislation is pending.

(2) The department shall review and approve, modify or disapprove any plan prepared under sub. (1).

History: 1987 a. 27; 1991 a. 309; 1995 a. 225, 227; s. 13.93 (2) (c).

92.09 Land conservation committee staff. The land conservation committee may employ county soil and water conservation staff, subject to the approval of the county board. The county soil and water conservation staff is responsible for the administration of the county soil and water conservation program and may exercise the powers granted to the land conservation committee.

History: 1981 c. 346.

92.10 Land and water resource management planning program. (1) **CREATION.** There is created a land and water resource management planning program. The department, board and land conservation committees jointly shall develop and administer this program.

(2) **PURPOSES.** The purposes of the land and water resource management planning program are to conserve long-term soil productivity, protect the quality of related natural resources, enhance water quality and focus on severe soil erosion problems.

(3) **IDENTIFICATION OF PRIORITY COUNTIES.** (a) *Identification.* The department shall identify priority soil erosion control counties.

(b) *Criteria.* In identifying priority soil erosion control counties, the department shall consider the following factors:

1. The amount of cropland in the county.
2. The magnitude and extent of cropland erosion in the county.
3. The availability of soil survey information in the county.

(4) **IMPLEMENTATION; DEPARTMENT DUTIES.** (a) *Data.* The department shall develop a systematic method of collecting and organizing data related to soil erosion. The department shall cooperate with the land information board under s. 16.967 in developing this methodology or any related activities related to land information collection.

NOTE: Par. (a) is amended eff. 9-1-03 by 1997 Wis. Act 27 to read:

(a) *Data.* The department shall develop a systematic method of collecting and organizing data related to soil erosion.

(c) *Plan assistance.* The department shall assist land conservation committees in preparing land and water resource management plans. The department may allocate funds appropriated under s. 20.115 (7) (c) to land conservation committees in identified priority counties to cover up to 50% of the cost of preparing land and water resource management plans.

(d) *Plan review.* The department shall review and approve or disapprove land and water resource management plans submitted by the land conservation committees. The department may require land conservation committees to indicate specific projects to be funded under each plan and the related cost-sharing rates.

(5) **IMPLEMENTATION; BOARD DUTIES.** (a) *Plan review.* The board shall review land and water resource management plans submitted by the land conservation committees and make recommendations to the department.

(b) *Solicit comments.* The board shall solicit comments on land conservation committee plans from the agencies identified as advisers to the board under s. 15.135 (4).

(6) **IMPLEMENTATION; COMMITTEE DUTIES.** (a) *Plan preparation.* A land conservation committee shall prepare a land and water resource management plan which does all of the following:

1. Specifies maximum acceptable rates of soil erosion.
2. Identifies the parcels and locations of the parcels where soil erosion standards are not being met.
3. Identifies the land use changes or management practices which would bring each area of land into compliance with standards adopted by the land conservation committee.
4. Specifies procedures to be used to assist landowners and land users in controlling soil erosion.
5. Establishes priorities for controlling soil erosion.
6. Identifies causes, other than soil erosion, of nonpoint source water pollution.
7. Describes all proposed county activities related to nonpoint source water pollution.

(b) *Notification.* A land conservation committee shall notify landowners and land users of the results of any determinations concerning soil erosion rates and nonpoint source water pollution, and provide an opportunity for landowners and land users to present information relating to the accuracy of the determinations during preparation of the land and water resource management plan.

(c) *Hearings.* A land conservation committee shall hold one or more public hearings on the land and water resource management plan.

(d) *Plan submission.* A land conservation committee shall submit the land and water resource management plan to the board and department.

History: 1981 c. 346; 1983 a. 524; 1985 a. 29; 1987 a. 27; 1989 a. 31; 1997 a. 27.

92.104 Soil and water conservation plan. (1) *PREPARATION.* A land conservation committee shall ensure that a soil and water conservation plan is prepared for land covered by a farmland preservation agreement.

(2) *APPROVAL.* A soil and water conservation plan approved by the land conservation committee is required to be included in the farmland preservation agreement.

(3) *MONITORING.* A county land conservation committee shall ensure that a soil and water conservation plan incorporated in a farmland preservation agreement is followed except that deviations may be allowed if, in the judgment of the land conservation committee, personnel are not available to lay out the suggested practices on the land or if practices are not economical for the owner to adopt.

(4) *NONCOMPLIANCE.* If the land conservation committee determines that farming operations are not being conducted in compliance with a soil and water conservation plan and that the deviation is not permitted under sub. (3), it shall issue a notice of noncompliance to the farmer and send a copy to the department of revenue. This notice remains in effect until canceled. If actions are taken to comply with the soil and water conservation plan in a manner satisfactory to the land conservation committee, it shall cancel the notice of noncompliance by notifying the farmer and the department of revenue.

(5) *ELIGIBILITY FOR FARMLAND PRESERVATION CREDIT.* A farmland preservation credit may not be allowed under subch. IX of ch. 71 if a notice of noncompliance is in effect with respect to a claimant to which this section applies at the time the claim is filed.

(6) *APPLICABILITY.* This section and a soil and water conservation plan prepared under this section apply to a person claiming a farmland preservation credit, land related to that claim and farming operations on that land if eligibility for the credit is based on a farmland preservation agreement applied for prior to July 1, 1986.

History: 1985 a. 29; 1987 a. 312 s. 17.

92.105 Soil and water conservation standards. (1) *ESTABLISHMENT.* A land conservation committee shall establish soil and water conservation standards. The standards and specifications for agricultural facilities and practices that are constructed or begun on or after October 14, 1997, and, if cost-sharing is available to the farmer under s. 92.14, 281.16 (5) or 281.65 or from any other source, for agricultural facilities and practices that are constructed or begun before that date shall be consistent with the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 (3). It shall submit these standards to the board for review.

(2) *GUIDELINES; REVIEW.* The board shall develop guidelines to be used for the establishment and administration of soil and water conservation standards. The board shall review and shall approve or disapprove submitted soil and water conservation standards based on the guidelines it develops. If the board approves soil and water conservation standards, it shall notify any appropriate zoning authority of its approval.

(3) *APPROVED STANDARDS REQUIRED FOR FARMLAND PRESERVATION CREDIT.* A farmland preservation credit may not be allowed under subch. IX of ch. 71 for claims relating to any land to which this section applies unless the land conservation committee for the county where the property is located establishes soil and water conservation standards which are approved by the board.

(4) *MONITORING.* The land conservation committee shall monitor compliance with soil and water conservation standards on land to which this section applies.

(5) *NONCOMPLIANCE.* If the land conservation committee determines that farming operations on land to which this section applies do not comply with soil and water conservation standards, it shall issue a notice of noncompliance to the farmer and send a copy of the notice to any appropriate zoning authority. If no appropriate zoning authority exists, it shall send a copy to the department of revenue. This notice of noncompliance remains in effect until canceled. If actions are taken to comply with the soil and water conservation standards in a manner satisfactory to the land conservation committee, it shall cancel the notice of noncompliance by notifying the farmer and by sending a copy of the cancellation to any appropriate zoning authority. If no appropriate zoning authority exists or if the original notice was sent to the department of revenue, it shall send a copy of the cancellation to the department of revenue.

(6) *ELIGIBILITY FOR FARMLAND PRESERVATION CREDIT.* A farmland preservation credit may not be allowed under subch. IX of ch. 71 if a notice of noncompliance is in effect with respect to a claimant to which this section applies at the time the claim is filed.

(7) *APPLICABILITY.* (a) *General applicability; farmland preservation.* This section and soil and water conservation standards established under this section apply only to a person claiming a farmland preservation credit under subch. IX of ch. 71, land related to that claim and farming operations on that land and apply only as provided under pars. (b) to (d).

(b) *Participants eligible under new farmland preservation agreements.* This section and soil and water conservation standards established under this section apply to a person claiming a farmland preservation credit, land related to that claim and farming operations on that land if eligibility for the credit is based upon a farmland preservation agreement applied for on or after July 1, 1986.

(c) *Existing participants under exclusive agricultural zoning.* This section and soil and water conservation standards established under this section apply beginning on January 1, 1988, to a person claiming a farmland preservation credit, land related to that claim and farming operations on that land if eligibility for the credit is based on exclusive agricultural zoning and if a farmland preservation credit was received by that person for property taxes on the same land accruing in 1984 or any prior year.

(d) *New participants under exclusive agricultural zoning.* This section and soil and water conservation standards established under this section apply beginning on July 1, 1986, to a person claiming a farmland preservation credit, land related to that claim and farming operations on that land if eligibility for the credit is based on exclusive agricultural zoning and if a farmland preservation credit was not received by that person for property taxes on the same land in 1984 or any prior year.

History: 1985 a. 29, 332; 1987 a. 312 s. 17; 1997 a. 27.

92.106 Department review. The department shall review all soil and water conservation standards under s. 92.105 at least once every 5 years to determine whether the standards are consistent with the purposes of the soil and water resource management program under s. 92.14 (2).

History: 1991 a. 309.

92.11 Regulation of local soil and water resource management practices. (1) *PROPOSED ORDINANCES.* To promote soil and water conservation or nonpoint source water pollution abatement, a county, city, village or town may enact ordinances for the regulation of land use, land management and pollutant management practices.

(2) *APPLICABILITY; CONTENTS.* (a) An ordinance enacted under this section may be applicable throughout the county or to

any part of the county, including both incorporated and unincorporated areas.

(b) An ordinance enacted under this section may prohibit land uses and land management practices which cause excessive soil erosion, sedimentation, nonpoint source water pollution or storm water runoff.

(3) **PRESENTATION; NOTICE; HEARING; COUNTY BOARD ADOPTION.** Any ordinance proposed by the land conservation committee under this section shall be presented to the county board together with a report on the need for the ordinance and its expected economic and environmental impact. Within 2 weeks after its receipt, the county board shall publish the proposed ordinance as a class 2 notice, under ch. 985, in a newspaper having general circulation throughout the county and make the report available for public inspection. The county board shall hold one or more public hearings on the proposed ordinance before taking final action. The county board shall adopt, adopt with revisions or disapprove the ordinance.

(4) **REFERENDUM; LOCAL APPROVAL REQUIRED.** (a) *Definition.* As used in this subsection, "affected area" means the entire town, all of a village within the county or all of a city within a county if an ordinance adopted under this section or a revision to an ordinance adopted under this section is applicable to any part of the town, village or city.

(b) *Referendum required.* No ordinance adopted under this section and no revision to an ordinance adopted under this section may take effect in any affected area in that county unless the ordinance or revision is approved by referendum.

(c) *Wording of ballot question; procedure.* The county board shall include the wording of the question to be placed before the electors in the referendum as a part of the ordinance adopted under this section or the revision to an ordinance adopted under this section. Upon the adoption of the ordinance or revision the county board shall forward a copy of the ordinance or revision to the county clerk who shall cause the question to be placed before the voters of the affected area in the next spring or general election occurring not less than 45 days after the adoption of the ordinance or revision. The form of the ballot shall correspond substantially with form "D" annexed to s. 5.64 (2).

(d) *Approval; disapproval.* If the question placed before the electors in the referendum is approved by a majority of all votes cast on that subject in an affected area in that county, the ordinance adopted under this section or the revision to an ordinance adopted under this section takes effect in that affected area. Otherwise, the ordinance or revision does not take effect in that affected area.

(5) **ENFORCEMENT.** (a) The county board shall by ordinance prescribe administrative procedures and provide personnel necessary for the enforcement of any ordinance enacted under this section. Ordinances enacted under this section may be enforced through civil forfeiture or through issuance of an injunction by the circuit court in an action initiated by the county or land conservation committee. The court may award reasonable attorney fees to any plaintiff in a successful action for enforcement through injunction.

(b) At least one year before the county or land conservation committee may initiate an action for enforcement, the land conservation committee shall make a reasonable effort to contact the landowner or land user in person and to furnish the landowner or land user all of the following:

1. An explanation orally and in writing of the reasons for the excessive soil erosion.
2. A management plan which, if followed, would reduce soil erosion to a rate established as acceptable by the land conservation committee. The management plan shall, with reasonable limits, set forth all of the options which are available to the landowner or land user to achieve acceptable soil erosion rates.
3. An explanation of the financial aids and technical assistance which are available to the landowner or land user. These may

include, but are not necessarily limited to, cost-sharing, loans, tax incentives and technical assistance available from the land conservation committee and other agencies.

(6) **BOARD OF ADJUSTMENT.** The county board shall provide for the appointment of a board of adjustment in any county which adopts an ordinance under this section.

(7) **CONSTRUCTION.** Any ordinance enacted under this section shall be liberally construed in favor of the county. It shall be construed as setting minimum requirements for the purposes stated and not as a limitation on other powers granted the county board and land conservation committee.

History: 1981 c. 346; 1987 a. 27; 1993 a. 246.

Ordinance passed under this section may be applicable to incorporated as well as unincorporated areas of the county. 77 Atty. Gen. 87.

92.12 Intergovernmental cooperation. Counties, cities, villages, towns and public agencies with natural resource responsibilities in the same or different counties may cooperate in carrying out the purposes of this chapter. If a problem of soil or water conservation is defined in part by drainage basin boundaries beyond a single county's borders or otherwise transcends these borders, the respective counties, cities, villages, towns and public agencies with natural resource responsibilities may enter into mutually binding agreements and contracts containing, but not limited to, provisions for mutually enforced and administered regulatory ordinances and cost-sharing distribution arrangements.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8).

92.13 State and local agencies to cooperate. Agencies of the state having jurisdiction over, or charged with the administration of any state-owned lands, and any county or other governmental subdivision of the state having jurisdiction over, or charged with the administration of any county-owned or other publicly owned lands, shall cooperate to the fullest extent with the land conservation committee in carrying out programs under this chapter. The land conservation committee may enter and perform work upon these publicly owned lands. The provisions of land conservation practices ordinances enacted under s. 92.11 are applicable to these publicly owned lands, and shall be in all respects observed by the agencies administering the lands.

History: 1981 c. 346; 1983 a. 410 s. 2200 (2); 1985 a. 332 s. 251 (8).

92.14 Soil and water resource management program.

(1) **DEFINITIONS.** In this section:

(a) "Best management practices" has the meaning given under s. 281.65 (2) (a).

(b) "Nonpoint source" has the meaning given under s. 281.65 (2) (b).

(c) "Priority watershed" has the meaning given under s. 281.65 (2) (c).

(2) **ESTABLISHMENT.** There is created a soil and water resource management program, which has all of the following purposes:

(a) Enhancing protection of surface water and groundwater resources in this state.

(c) Providing financial and technical assistance for land and water conservation activities.

(d) Promoting cost-effective land and water conservation activities.

(e) Promoting compliance with the requirements under ss. 92.104 and 92.105 by persons claiming a farmland preservation credit under subch. IX of ch. 71.

(g) Promoting and attaining the soil erosion control goals specified under s. 92.025.

(h) Encouraging innovative local strategies, regulations and incentives to address soil and source water conservation activities.

(i) Increasing local technical assistance to address soil and water resource problems.

(j) Enhancing the administration and coordination of state nonpoint source water pollution abatement activities by the department and the department of natural resources.

(3) BASIC ALLOCATIONS TO COUNTIES. To help counties meet administrative and technical operating costs in their land and water conservation activities, the department shall award grants from the appropriation under s. 20.115 (7) (c) or (qd) to any county land conservation committee which has a workload allocation plan approved by the department under s. 92.08 (2), and which, by county board action, has resolved to match any moneys granted under this subsection with an equal amount of county moneys. The county shall use the grant for county land conservation personnel to administer and implement activities directly related to any of the following:

(a) Compliance with requirements under ss. 92.104 and 92.105 by persons claiming a farmland preservation credit under subch. IX of ch. 71.

(b) Animal waste management activities and ordinances under s. 92.16.

(c) Soil erosion control activities in accordance with plans approved under s. 92.10 and construction site ordinances.

(d) Nonpoint source water pollution abatement activities.

(e) Other conservation activities determined by the county to be necessary for conservation and resource management in that county.

(3m) SHORELAND MANAGEMENT GRANTS. From the appropriation under s. 20.115 (7) (c) or (qd) or 20.866 (2) (we), the department shall award grants to counties or farmers for implementing best management practices required under a shoreland management ordinance enacted under s. 92.17, including reimbursement for all of the following:

(a) The cost of fencing that the landowner installs in order to comply with the ordinance.

(b) The cost of providing a well for livestock if, as a result of complying with the ordinance, the livestock does not have adequate access to water for drinking purposes.

(4) OTHER LAND AND WATER RESOURCE GRANTS. From the moneys remaining in s. 20.115 (7) (c) and (qd) after the department has awarded all grants for a year under sub. (3) or from the appropriation under s. 20.866 (2) (we), the department may award grants to any eligible county, including any county which has received a grant under sub. (3) or (3m), for one or more of the following:

(a) Implementing land and water resource management projects approved in plans under s. 92.10.

(b) Implementing land and water resource management projects undertaken to comply with the requirements under ss. 92.104 and 92.105 by persons claiming a farmland preservation credit under subch. IX of ch. 71.

(c) Construction of a facility or system related to animal waste management by a farmer who has received a notice of discharge under ch. 283 or management practices required under a notice to a farmer under s. 281.20 (3). In awarding grants under this paragraph, the department shall give preference to farmers who have received a notice of discharge under s. 281.20 (3) or ch. 283. The amount of a grant for management practices required under a notice to a farmer under s. 281.20 (3) shall be based on the cost of the method of controlling nonpoint source pollution which the department determines to be the most cost-effective and may not exceed 70% of the total cost of that method. The department may issue grants directly to farmers under this paragraph.

(4m) GRANT PRIORITY. The department shall give grants under sub. (4) (c) priority over other grants under sub. (4) and grants under sub. (3m).

(4r) REQUESTING TRANSFER OF FUNDS. The department shall submit a request to the joint committee on finance for the transfer of funds from the appropriation under s. 20.370 (6) (aq) to the

appropriation under s. 20.115 (7) (qd) if necessary to provide grants under sub. (4) (c).

(5) ANIMAL WASTE MANAGEMENT GRANTS. (a) From the appropriation under s. 20.115 (7) (km), the department may make a grant for the purpose specified in sub. (4) (c) if the conditions specified in sub. (4) (c) are satisfied.

(b) The department, with the approval of the board, may request the department of natural resources to transfer funds from the appropriation account under s. 20.370 (6) (aa) or (aq) to the appropriation account under s. 20.115 (7) (km) if the funds are needed to pay grants under par. (a).

(6) ADMINISTRATION OF GRANTS. (a) The department shall propose spending levels for land and water resource management activities under this section. The department shall submit the proposed spending levels to the board. The board shall review the proposed spending levels and shall approve, approve with modifications or disapprove the spending levels. The board may modify the spending levels if demand for grants under sub. (4) (c) is greater than was anticipated when the spending levels were established.

(b) The department, in cooperation with the department of natural resources, shall prepare an annual grant allocation plan, that is consistent with the spending levels approved under par. (a), identifying the amounts to be spent annually for land and water resource management projects to be funded under this section and the general purposes of those projects, which it shall specify. The department shall submit that plan to the board.

(c) In developing the allocation plan for projects under par. (b), the department, in cooperation with the department of natural resources, may consider any of the following factors:

1. Cost-effectiveness of an activity, including but not limited to technical assistance, educational assistance, management practices, and satisfying the requirements under ss. 92.104 and 92.105 for claiming farmland preservation credits under subch. IX of ch. 71.

2. The amount of soil erosion reduction proposed to be effected by the activity.

3. Severity of the water quality problem addressed by an activity.

4. The comprehensiveness of an activity's planning methods and the area affected by an activity.

5. The degree of cooperation and commitment and the amount of supplemental funds from other sources contributed by counties related to an activity.

6. The need for staff and project continuity.

(d) The board shall review the annual allocation plan submitted to it under par. (b) and make recommendations to the department on approval, modification or disapproval of the plan. The department shall review and approve or disapprove the plan and shall notify the board of the department's final action on the plan.

(e) The department shall make grant awards under this section to eligible applicants which are consistent with the allocation plan approved by the department under par. (d).

(f) The department shall provide summaries of projects awarded grants under par. (e) to the board for its review.

(g) Every project awarded a grant under this section shall be consistent with the plans under s. 92.15, 1985 stats., and under this section and ss. 92.08, 92.10 and 281.65.

(h) 1. The department may not make a grant under this section for the construction of any facility or system related to animal waste management unless all of the following conditions are met:

a. The facility or system is necessary to meet surface water or groundwater quality objectives.

b. The facility or system is designed consistent with rules of the department and with the technical standards of the county and

is designed to be constructed and operated to avoid water pollution.

c. The facility or system will use the most cost-effective method to meet water quality standards.

d. The grant for the facility or system, combined with all other governmental funding, is no more than an amount specified by the department by rule, except that there is no limit on the amount of the grant if the principal purpose of the facility or system is to prevent or control barnyard runoff.

e. The amount of the grant does not exceed 70% of the cost of the facility or structure.

2. The department may make payments under this section for the construction of a facility or system related to animal waste management directly to farmers who receive a notice of discharge related to animal waste under ch. 283.

3. Nothing in this paragraph affects the authority of the department of natural resources to act under ch. 283.

4. The department may exceed the limits under subd. 1. d. and e. in cases of economic hardship, as defined by rule by the department.

(i) No cost-sharing funds from any grant awarded under this section may be distributed to a landowner or land user unless he or she, by contract with the grant recipient, agrees to do all of the following:

1. Maintain any funded practice for its normal expected life, replace it with an equally effective practice or improvement or repay the cost-sharing funds to the grant recipient.

2. Conduct all land management and pollutant management activities in substantial accordance with the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 and with plans approved under this section, under s. 92.15, 1985 stats., and under ss. 92.08, 92.10 and 281.65, or to repay the cost-sharing funds.

(j) A grant awarded under this section may be used for technical assistance, educational and training assistance, ordinance development and administration, cost-sharing for management practices and capital improvements, plan preparation under s. 92.10, easements or other activities determined by the department to satisfy the requirements of this chapter.

(k) The department shall identify by rule the types of cost-shared practices and the minimum grant amounts for cost-sharing grants that require any subsequent owner of the property to maintain the cost-shared practice for the life of the cost-shared practice, as determined by the department.

(L) The department may make a grant under this section to replace a structure or facility at a new location, rather than to repair or reconstruct the structure or facility, if the relocation reduces water pollution and replacement is cost-effective compared to repairing or reconstructing the structure or facility.

(7) MAINTENANCE OF EFFORT. The department may not make a grant to a county under this section in any fiscal year unless that county enters into an agreement with the department to maintain or increase its aggregate expenditures from other sources for land and water conservation activities at or above the average level of such expenditures in its 2 fiscal years preceding August 1, 1987.

(8) RULES. In consultation with the department of natural resources, the department shall promulgate rules to administer this section and the department's duties under s. 281.65.

(10) TRAINING. The county may use a grant under this section for training required under s. 92.18 or for any other training necessary to prepare personnel to perform job duties related to this section. The department may contract with any person for services to administer or implement this chapter, including information and education and training.

(11) AID TO STATE AGENCIES. The department may distribute grants and aids to any state agency, including itself, for implementation of the soil and water resource management program on land under state ownership or control, subject to this chapter.

(12) ANNUAL REPORT. Annually, the department, in cooperation with the department of natural resources, shall submit a report on the progress of the program under this section and s. 281.65 to the board.

(13) EVALUATION PLAN. The department, jointly with the department of natural resources, shall prepare a plan, which includes water quality monitoring and analysis, for evaluating the program administered under this section and s. 281.65 and submit the plan to the board. The board shall make recommendations to the department and the department of natural resources on the plan. The department shall review and approve or disapprove the plan and shall notify the board of its final action on the plan. The department shall implement any part of the plan for which the plan gives it responsibility.

(14) APPLICATION, REPORTING AND EVALUATION FORMS. The department, jointly with the department of natural resources, shall develop a single set of grant application, reporting and evaluation forms for use by counties receiving grants under this section and s. 281.65.

(15) FINANCIAL INFORMATION. The department shall consult with the department of natural resources when it prepares the information which it submits to the department of administration under s. 16.42.

History: 1987 a. 27, 297; 1989 a. 56; 1991 a. 39, 309; 1993 a. 16, 166, 213; 1995 a. 27, 225, 227; 1997 a. 27.

92.15 Local regulation of livestock operations. (1) In this section:

(a) "Livestock operation" means a feedlot or other facility or a pasture where animals are fed, confined, maintained or stabled.

(b) "Local governmental unit" means a political subdivision of this state, a special purpose district in this state, an instrumentality or corporation of such a political subdivision or special purpose district, a combination or subunit of any of the foregoing or an instrumentality of the state and any of the foregoing.

(2) Notwithstanding ss. 92.11 and 92.17, a local governmental unit may enact regulations of livestock operations that are consistent with and do not exceed the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 (3).

(3) (a) Notwithstanding ss. 92.11 and 92.17, a local governmental unit may enact regulations of livestock operations that exceed the performance standards, prohibitions, conservation practices and technical standards under s. 281.16 (3) only if the local governmental unit demonstrates to the satisfaction of the department of agriculture, trade and consumer protection or the department of natural resources that the regulations are necessary to achieve water quality standards under s. 281.15.

(b) The department of agriculture, trade and consumer protection and the department of natural resources shall, by rule, specify procedures for review and approval of proposed local governmental unit regulations under par. (a).

(4) A local governmental unit may not apply a regulation under sub. (2) or (3) to a livestock operation that exists on October 14, 1997, unless the local governmental unit determines, using the rules promulgated under s. 281.16 (3) (e), that cost-sharing is available to the owner or operator of the livestock operation under s. 92.14, 281.16 (5) or 281.65 or from any other source.

(5) Any livestock operation that exists on October 14, 1997, and that is required to obtain a permit under s. 283.31 or that receives a notice of discharge under ch. 283 may continue to operate as a livestock operation at the same location notwithstanding s. 59.69 (10) (a) or 62.23 (7) (h) or any zoning ordinance enacted under s. 59.69, 60.61, 60.62, 61.35 or 62.23 (7), if the livestock operation is a lawful use or a legal nonconforming use under any zoning ordinance enacted under s. 59.69, 60.61, 60.62, 61.35 or 62.23 (7) on October 14, 1997.

History: 1997 a. 27.

92.16 Manure storage facilities. A county, city, village or town may enact an ordinance requiring manure storage facilities constructed after July 2, 1983, to meet the technical standards of the county, city, village or town and rules of the department. The department shall adopt rules for ordinances setting standards and criteria for construction of manure storage facilities.

History: 1983 a. 27; Stats. 1983 s. 92.16; 1983 a. 410 s. 24n; Stats. 1983 s. 92.34; 1985 a. 8 s. 10; Stats. 1985 s. 92.16; 1987 a. 27; 1993 a. 246.

Ordinance passed under this section is applicable only in unincorporated areas of the county. 77 Atty. Gen. 87.

92.17 Shoreland management. (1) **GUIDELINES ORDINANCE.** The guidelines for a shoreland management ordinance shall establish standards for activities related to the purpose of maintaining and improving surface water quality.

(2) **AUTHORITY TO ENACT ORDINANCE.** (a) A city or village may enact a shoreland management ordinance.

(ag) A county may enact a shoreland management ordinance. A county shoreland management ordinance does not apply in any town that enacts an ordinance under par. (ar).

(ar) A town may enact a shoreland management ordinance that is prepared under sub. (1).

(b) If a county, city or village proposes to enact an ordinance based on the guidelines prepared under sub. (1), or if a town proposes to enact a shoreland management ordinance, the county, city, village or town shall submit a draft of the ordinance to the department.

(c) The board shall review a draft of an ordinance submitted under par. (b) and make recommendations to the department.

(d) The department shall review and approve or disapprove a draft of an ordinance submitted under par. (b).

(e) A county, city or village may enact an ordinance based on the guidelines prepared under sub. (1) only if the draft of the ordinance is approved by the department under par. (d). A town may enact a shoreland management ordinance only if the draft of the ordinance is approved by the department under par. (d).

(2m) **AUTHORITY TO ENFORCE ORDINANCE.** A county, city, village or town may not enforce a shoreland management ordinance unless funds have been appropriated for grants under s. 92.14 (3m).

(2r) **DEPARTMENT NOT TO REQUIRE ENACTMENT.** The department may not require a county, city, village or town to enact an

ordinance under this section as a condition of any other program administered by the department.

(4) **COOPERATION.** The department shall consult with the governing bodies of counties, cities, villages and towns to secure voluntary uniformity of regulations, so far as practicable, shall identify low-cost practices and shall extend assistance to counties, cities, villages and towns under this section.

History: 1991 a. 309; 1993 a. 213.

92.18 Training and certification. (1) The department shall, by rule, establish a program of training and certification for persons who review plans for, conduct inspections of or engage in activities under any of the following:

(a) This chapter.

(b) Section 281.65, if those activities relate to agricultural practices.

(2) The department shall do all of the following:

(a) Identify those persons involved in plan review or inspections who are required to obtain certification.

(b) Establish the requirements for and the term of initial certification, and the requirements for recertification upon expiration of that term. To the extent possible, the department shall establish the requirements for certification in conformance with the engineering approval system used by the federal soil conservation service in providing technical assistance under 7 CFR 610.1 to 610.5. The department may require applicants to pass an examination in order to receive initial certification.

(c) Establish different levels of certification as the department determines is appropriate.

(d) Identify persons other than inspectors and plan reviewers who may benefit from the training program, and encourage those persons to enroll in the training program.

(3) The department may impose fees for the training and certification program.

(4) The department shall promulgate rules under this section in consultation with the department of natural resources.

(5) Any training required under this section may be conducted by the department or the department of natural resources or by another person with the approval of the department.

(6) The department may suspend or revoke a certification under this section for failure to comply with this section or rules promulgated under this section.

History: 1991 a. 309; 1995 a. 227.

Biographical sketch

Name: Jerry Griswold
Position: USDA Chesapeake Bay Liaison
Organization: USDA Natural Resources Conservation Service

Education Background

B.S. and M.S. from the University of Wisconsin at Platteville in Soils and Agronomy

Ph.D from the University of Wisconsin at Madison in Land Resources Program of the Institute of Environmental Science

Work Experience

USDA Liaison to the Chesapeake Bay Program - Annapolis, Maryland

USDA Natural Resources Conservation Service Positions:

Liaison to Region VI Environmental Protection Agency - Dallas, Texas

National Coordinator for Farm*A*Syst/Home*A*Syst Program

Water Resources Specialist - Madison, Wisconsin

Wisconsin Department of Natural Resources Non-Point Source Program

District Conservationist - Racine and Kenosha Counties, Wisconsin

Soil Conservationist Positions at several locations

Grant County, Wisconsin Soil and Water Conservationist District

United States Army

The Chesapeake Bay Program: An Overview

America's Leading Bay & River Restoration Program

The Chesapeake Bay Program is the unique regional partnership which has been directing and conducting the restoration of the Chesapeake Bay since the signing of the historic 1983 *Chesapeake Bay Agreement*. The Chesapeake Bay Program partners include the states of Maryland, Pennsylvania, and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the Environmental Protection Agency, representing the federal government; and participating advisory groups.

As the largest estuary in the United States and one of the most productive in the world, the Chesapeake was this nation's first estuary targeted for restoration and protection. In the late 1970's scientific and estuarine research on the Bay pinpointed three areas requiring immediate attention: nutrient over-enrichment; dwindling underwater Bay grasses; and toxic pollution. Once the initial research was completed, the Chesapeake Bay Program evolved as the means to restore this exceptionally valuable resource.

Since its inception in 1983, the Chesapeake Bay Program's highest priority has been the restoration of the Bay's living resources--its finfish, shellfish, Bay grasses, and other aquatic life and wildlife. Improvements include fisheries and habitat restoration, recovery of Bay grasses, nutrient and toxic reductions, and significant advances in estuarine science.

Examples of specific actions initiated by the Chesapeake Bay Program include a watershed-wide phosphate detergent ban, the introduction of agricultural best management practices, Biological Nutrient Removal at wastewater plants, and a public education campaign emphasizing the role each of the watershed's 15 million residents play in the restoration.

Considered a national and international model for estuarine research and restoration programs, the Chesapeake Bay Program is a partnership led by the Chesapeake Executive Council. The members of the Executive Council are the governors of Maryland, Virginia and Pennsylvania; the mayor of the District of Columbia; the administrator of the U.S. Environmental Protection Agency, representing the Federal government; and the chairman of the Chesapeake Bay Commission, a tri-state legislative body. The Executive Council meets annually to establish the policy direction for the Bay Program.

In the 1987 *Chesapeake Bay Agreement*, the Executive Council set a goal to reduce the nutrients nitrogen and phosphorous entering the Bay by 40% by the year 2000. Achieving a 40% nutrient reduction will ultimately improve the oxygen levels in Bay waters and enable aquatic life to flourish.

In the 1992 *Amendments*, the Chesapeake Bay Program partners agreed to maintain the 40% goal beyond the year 2000 and attack nutrients at their source -- upstream in the Bay's tributaries. As a result, Pennsylvania, Maryland, Virginia, and the District of Columbia began developing tributary strategies to achieve the nutrient reduction targets. The Chesapeake Bay Program also began reevaluating its *Basinwide Toxics Reduction Strategy* in order to better understand the impact toxics have on the Bay's resources.

In 1993, the Chesapeake Bay Program partners celebrated a "Decade of Progress" by highlighting the 10th anniversary of the signing of the 1983 *Chesapeake Bay Agreement* along with some of the restoration successes to date, including an increase in the acreage of underwater Bay grasses and significant reductions of point source pollution.

Highlighting the results-oriented emphasis of the Chesapeake Bay Program, the Executive Council guided the restoration effort in 1993 with five directives addressing key areas of the restoration, including the tributaries, toxics, underwater Bay grasses, fish passages, and agricultural nonpoint source pollution. Specifically, the Executive Council directed the partners to outline initiatives for nutrient reduction in the Bay's tributaries; revise the *Basinwide Toxics Reduction Strategy* by 1994; develop action plans to address problems related to toxics in specific geographic areas within the watershed; and work with the agricultural community to implement total resource management programs on farms in the watershed.

In addition, the Executive Council set an initial goal for recovery of Bay grasses at 114,000 acres by the year 2005; and set five- (582 miles) and 10-year (1,350 miles) goals for reopening upstream spawning habitat for migratory fish by removing blockages, such as small dams, on the Bay's rivers.

In July 1994, high-level Federal officials from 25 agencies and departments signed the *Agreement of Federal Agencies on Ecosystem Management in the Chesapeake Bay*. The historic agreement set out a number of specific goals and commitments by Federal agencies on Federal lands throughout the watershed, as well as new cooperative efforts by Federal agencies elsewhere.

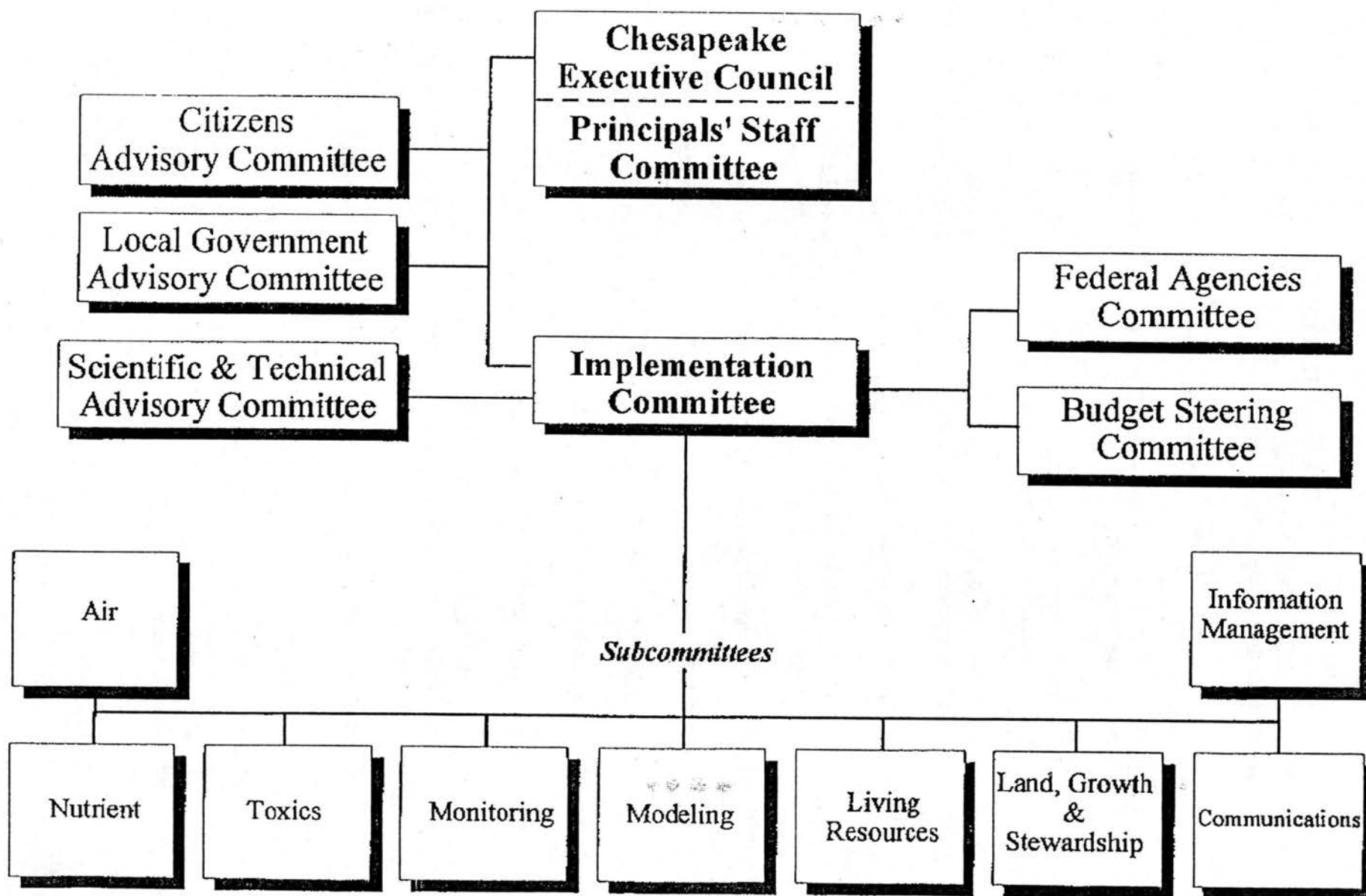
In October 1994, the Executive Council called the implementation of the tributary strategies the top priority for the Chesapeake Bay and its rivers. The Executive Council also adopted the *1994 Chesapeake Bay Basinwide Toxics Reduction and Prevention Strategy*. In addition, the Executive Council issued new initiatives for riparian forest buffers, habitat restoration, and reciprocal agricultural certification programs.

The *1995 Local Government Partnership Initiative* engaged the watershed's 1,650 local governments in the Bay restoration effort. The Chesapeake Executive Council followed this in 1996 by adopting the *Local Government Participation Action Plan* and the *Priorities for Action for Land, Growth and Stewardship in the Chesapeake Bay Region*, which address land use management, growth and development, stream corridor protection, and infrastructure improvements. The Executive Council also signed the *Riparian Forest Buffers Initiative* in 1996 which increased the Chesapeake Bay Program's commitment to improve water quality and enhance habitat. The new Initiative has a goal which calls for restoring 2,010 miles of riparian buffers on stream and shoreline in the watershed by the year 2010.

Recent Bay restoration highlights include an analysis of 10-years of monitoring data which show that the major rivers and the freshwater portions of the Bay are cleaner now than 10 years ago. This improvement in water quality is directly connected to reduced runoff from agricultural land, the phosphate detergent ban and phosphorous reductions from point sources, such as wastewater treatment plants and industrial facilities. However, the saltier parts of the Bay are not showing the same improvement because nitrogen reduction has not been as great.

Other recent restoration highlights include:

- * Protection for crabs increased -- in 1995 and 1996 much progress was made in the area of regulatory protection, regional coordination, and scientific understanding of the blue crab. Both Maryland and Virginia passed new regulations to protect crabs, and in June 1997 the Chesapeake Executive Council adopted the *1997 Chesapeake Bay Blue Crab Fishery Management Plan*.
- * Striped bass population sets records -- 1996 was a record-setting year for young striped bass in Chesapeake Bay. Maryland and Virginia's young-of-the-year survey was the highest-ever in the 43 years of sampling. Key factors came together to help produce the high numbers of juveniles including record high flows that created large freshwater nursery areas, more returning females, and recovering populations of zooplankton that provide food for young striped bass.
- * Chemical releases from industry decline -- The latest data available through the national Toxics Release Inventory (TRI) showed a 55% reduction in chemical releases in the Bay region between 1988 and 1994.
- * Nitrogen controls at wastewater treatment facilities increase -- The largest wastewater treatment facility in the Bay region - the Blue Plains Treatment Plant in the District of Columbia - went on-line in September 1996 with a pilot Biological Nutrient Removal (BNR) facility for half of its flow capacity. This will remove three million pounds of nitrogen annually that otherwise was discharged directly into the Potomac. BNR also has been installed in 33 major treatment plants in the region. Seventy six other facilities in the region, including six of the seven major federal facilities, are committed to installing BNR by the year 2000.



OPENING REMARKS

Thank you for inviting me to talk to you today about water and land management and how that is accomplished with the Chesapeake Bay Watershed

It is nice to get back to the Midwest, especially at this time of year.

I grew up just down the river from here on a four generation family farm that will probably become a five generation family farm in a few years from now.

On that farm, I was first exposed to conservation and a good land ethic. I was learning all those things and did not even realize it. It was just a way of life.

My father and my grandfather installed contour strips, grassed waterways, diversions, pasture management and other practices sometime around 1944. (Before I was born).

I grew up thinking that was the only way to farm.

Which may have led to some interesting discussions I had with farmers having them explain why they couldn't install conservation practices because of the difficulty in operation.

By the way, those practices I mentioned still exist today.

Enough about my background, I am here today to talk about the Chesapeake Bay Program.

My theme here today is (1) strong partnerships and (2) work based on watersheds

The first of which the Chesapeake Bay Program does well!

And the second which the Chesapeake Bay Program is working on!

(1) Partnering: partnering must go in all directions:

To me, it means working closely together as a team both up and down and from side to side.

Working together as a team including public, private, local, state, and federal.

The Chesapeake Bay Program does a pretty good job at accomplishing that.

(2) Watershed: approaching problems and solutions on a watershed basis.

To me the watershed is a system.

You can not address one part of the system without considering possible unexpected outcome elsewhere.

The Chesapeake Bay Watershed is a system that is 64,000 square miles large.

But, in reality, it is nothing more than many small watersheds of a more easily manageable size.

Eventually you get right down to a farm sized unit that can also be dealt with like a small watershed.

CHESAPEAKE BAY PROGRAM OVERVIEW

WHAT LED TO THE PROGRAM

Let me give a brief overview of what led to the Chesapeake Bay Program

I will start the brief discussion with this handout

HAND OUT "The Chesapeake Bay Program an Overview"

Before I start, I want to provide some general statements about the program.

(1) It is voluntary:

There are no regulatory powers associated with the program

In fact, the office was set up in Annapolis, MD so as not be associated with the EPA region III office in Philadelphia.

(2) It is a State Driven Program:

Agreement within the program is accomplished by consensus

In 3 years I have been there, I've yet to see an actual vote.

Chairs will basically pole the state representatives. If there is some problem, they continue to discuss it.

(3) Partnership:

The program is based on partnerships.

(4) Budget is about 20 million:

About 20 million per year comes to the program from the Federal Government.

The states put in additional, but I don't have those figures right now.

About 50 percent goes directly to the states. It is used for implementation and staff at the state and local level.

About 50 percent goes to the subcommittees for research grants and pilot studies and program staff.

Now a little about how the program got to where it is today.

1983 Agreement: Signed by the signatories to research causes for the downfall of the living resources of the bay.

Goals of the Bay: restore populations of fish, oysters, blue crabs and submerged aquatic vegetation.

They agreed to research to find the causes.

It was determined the most important cause for the demise of living resources in the Bay was nutrients, specifically nitrogen and phosphorus.

1987 Agreement: Signatories agreed to reduce the input of nutrients to the bay by 40% by year 2000.

1992 Amendments: Signatories agreed to maintain the 40% nutrient reduction after the year 2000. They also agreed on a toxics reduction strategy.

1994 Directive: The Executive Council agreed on a tributary strategy process. In other words they finally recognized that tributaries leading to the bay were major sources of nutrient and toxics to the bay..

They divided up the nutrient load being delivered to the bay to each of the major tributaries.

Susquehanna, Potomac, James, Elizabeth, Rappahannok, York, and others.

1995 Directive: The Local Government Partnership Initiative. The first real effort from the

programs perspective to involve the local units of government.

Established a very distinguished task force of agency heads and political types. To address the directive.

What happened is that a an influential individual was looking to set up a community organization got to be chair of the task force.

Now I worked hard to get soil conservation districts recognized as an important entity to be involved. In the end, they were recognized, but politics caused them to be sort of overlooked.

During that time, I started using the term "where the rubber meets the road" because districts, extension and nrcs provide the interface between federal and state programs and the local landowner.

From the public perspective there are three technical organizations that have a real world contact with the landowners. They are districts, extension service and NRCS.

These folks have the responsibility to have a working knowledge of every program you and others bring down the pipe. Because farmers ask them the questions.

However, the effort I and other put out did not really have a lot of real impacts on the outcome of the task force.

1997 Directive:

The community watershed strategy.

A second major attempt at connecting with the local landowners.

Some important players in the Chesapeake Bay Program have figured out that the only way for a watershed project to work is to have strong local support.

I think districts and some others have known that for a considerable time.

Some individuals in the Chesapeake Bay Program are apparently trying to set up a Chesapeake Bay Program oversight layer of government for the community watershed program.

It is my opinion, one already exists at the local level — Districts.

So — again, over the past several months, I have been working hard to try to get people within the task force to recognize the value of districts as being an important link in the delivery of a community watershed program.

It is too soon to tell if the efforts will pay off, but I am hopeful.

ORGANIZATIONAL STRUCTURE OF THE PROGRAM

OVERLAY OF ORGANIZATIONAL CHART

Chesapeake Executive Council: Executive Council is made of the Governors of VA, MD, PA, mayor of D.C., administrator of EPA and the Chair of the Chesapeake Bay Commission. The chair of the council is elected annually.

Principal's Staff Committee: Chaired by EPA Region III Administrator; members include State Secretaries of Agriculture, Environment and Lead Water Agencies, and the Executive director of the Chesapeake Bay Commission

Implementation Committee: Chaired by EPA Chesapeake Bay Program Office Director, membership includes numerous state agency reps, federal agency reps etc.

They even let me sit on this committee.

This is the committee that is expected to implement the wishes of the elected officials (the governors).

The implementation committee directs the various subcommittee and their respective workgroups.

Federal Agencies Committee:

Coordination of all agency federal activities in the Chesapeake Bay Watershed area.

Budget Steering Committee:

This is where the wringing of hands takes place

These meetings are sometimes a bit on the turbulent side.

Subcommittee's

Briefly discuss each of the subcommittee's

DESCRIBE WATER MANAGEMENT IN THE SIX STATES

The roles of local, county and state are similar to what we have heard already here today.

There are six states and the District of Columbia

Pennsylvania has township rule, similar to Wisconsin.

The other five states start at the county level along with the communities

Local Role: All successful project have a strong local support. If not, the project is almost always headed for a train wreck.

County/Regional Role: Nothing out of the ordinary.

State Agency Role: Water is a states rights in each of the states.
Water programs are handled through state agencies
Chesapeake Bay Program money goes to states.

The existing system has been in place for many years.

The Chesapeake Bay Program has been in existence since 1983.

No recent changes in the system.

WHAT WORKS WELL IN THE SYSTEM

The strengths of the program:

Partnerships between jurisdictions, especially at the federal and state level.

It promotes a coordinated effort that crosses municipal, county and state lines.

Provides a forum to work out any differences.

Weakness of the program

It really does not make a direct connection with the local level.

It is trying to make that connection, but it will be difficult

WHAT SHOULD BE CHANGED IN THE SYSTEM

Organization:

Subcommittee structure of the Chesapeake Bay Program should be reorganized to represent watersheds.

This would get the existing subcommittees to think broader then their own world of toxics, nutrients etc.

Each subcommittee would have to consider all aspects of their watershed.

This would get them closer to thinking in a systems methodology.

Research:

The existing problem in the Chesapeake Bay Watershed is too many nutrients (specifically, nitrogen and Phosphorus).

The program needs to research methods that explore ways to harvest or collect nutrients and hopefully be able to get them out of the system.

WATER MANAGEMENT ORGANIZATIONS ROLES IN MANAGING LAND USE

From the Chesapeake Bay Program perspective, land management and water management roles are certainly interrelated.

This is not always the situation in some of the states involved with the Chesapeake Bay Program.

The Bay program works diligently to solidify the relationship between land, land uses and water and water uses..

HOW IS WATER MANAGEMENT AND LAND MANAGEMENT LINKED

I look at each individual farm unit as a nutrient balance equation: outputs must equal inputs or you have potential problems.

Accomplish a nutrient balance, one farm at a time. This is what the local level is all about.

GROUNDWATER AND SURFACE WATER MANAGEMENT

My personal opinion about ground water is: It is the most serious issue facing the management of natural resources in this country today.

Surface water quality is serious, but if it get polluted, we have a chance to clean it up, simply because there is access to it. Does not mean it is easy, but at least we can see it and work at it.

Groundwater on the other hand, is buried deep beneath the surface. We are never sure if it is being contaminated or not or to what level.

When talking about clean-up, we are into an entirely new ball game. There may be no easy access. There may be no defined boundaries. No matter how you look at it, there is big trouble.

Chesapeake Bay Program: Some talk about ground water, but not to the same degree that natural resource agencies in the midwest do.

The Chesapeake Bay Program could do a lot more with respect to making the connection of surface and ground water.

With respect to water, it does not matter if it is on the surface, under the surface or in the air. It is just a matter of time before it changes location.

FINANCING OF WATER MANAGEMENT IN THE STATES, REGIONAL, LOCAL.

Financing of water management in the Chesapeake Bay is significant. I have already discussed the \$20 million annual budget.

Other financing sources include the same as in other states.

USDA Program including: EQIP, CRP and CREP (Maryland was first), Wetland Reserve etc.

EPA funding including: Section 319, Revolving Fund etc.

States also put in a considerable funding.

Local farmers and municipalities put in significant resources either on their own or cost-shared.

Is funding adequate?

Funding is never adequate as all of you would agree.

It is a constant struggle to find more or just to keep what you have.

Is it fair and equitable?

It is as fair as you can get within the program.

I am sure other states see the Chesapeake Bay as getting a larger than their share of the pie.

What needs to be improved?

The delivery process to the local level needs to be improved.

Too much is taken off the top at both the federal level and at the state level.

I understand that budgets have been cut all over the country.

Across this country, considerable amounts of 319 dollars are spent on staff.

WHAT ARE THE MAJOR ISSUES IN THE GOVERNANCE OF WATER MANAGEMENT IN STATE AT THIS TIME

Water Quality is the major issue.

I won't go into it further, because that is what the Chesapeake Bay Program is all about, and is what I have been talking about this whole time.

HOW ARE THESE ISSUES BEING ADDRESSED

The issue is being addresses as per my pervious statement.

Genuine effort is being made to address the water quality problem in the Chesapeake Bay Watershed.

Biography - Clifton J. Aichinger

Education:

Bachelor of Science Degree, Recreation Resource Management, University of Minnesota, College of Forestry, 1971.

Employment:

Natural Resource Planner and Assistant Planning Director, Dakota County, 1971-1973.
Environmental Planner, City of St. Paul, 1973-1976.
Critical Areas Program Coordinator, Minnesota Environmental Quality Board, 1976-1980.
Planning & Management Consultant, 1981-1989.
Administrator, Ramsey-Washington Metro Watershed District, 1981-present.

Experience:

Involved in natural resource and water management planning throughout my career. Actively involved in Mississippi River management issues and planning in the '70's. Active participant in the Metropolitan Surface Water Management Act (509) planning process since early discussions of the law in 1980. Active in urban wetland management issues and past chair of the Urban Wetland Management Coalition. Trained wetland delineator. Served as member of the Committee on Watershed Management (1996-1998), National Research Council, National Academy of Sciences. This committee produced the book, *New Strategies for America's Watersheds*, to be published in the fall of 1998. Administrator for Ramsey-Washington Metro Watershed District since 1981 with a current annual budget in excess of \$2.0 million with six staff. Projects and activities include updating the District Watershed Management Plan, preparation of a wetland management plan, LGU for the Wetland Conservation Act, integrated resource management programs, wetland restorations, habitat restoration projects, GIS system development, water quality monitoring program, and capital improvements to improve water and prevent flooding.

Presentation Summary NEW STRATEGIES FOR AMERICA'S WATERSHEDS

**Presented by: Clifton J. Aichinger, Administrator
Ramsey-Washington Metro Watershed District**

This presentation provides a summary of the results of a National Academy of Sciences, National Research Council, committee evaluation and report on watershed management in the United States. The committee activities were completed earlier this year. The report final editing and review process has been completed and the official public release date is set for October 5, 1998. The report is not available for public distribution until the release date. At that time, copies will be available for purchase from the National Academy Press (NAP) in a pre-release version by calling 800-624-6242 or through the NAP web site at <http://www.nap.edu/bookstore>. The final printed publication with all tables, photos and color plates, will be available in mid-December.

This report grew out of a recognition of the emerging trends toward integrative watershed management and the need to improve communication between scientists and decision-makers. In 1995, several agencies asked the National Academies of Sciences and Engineering and their investigative arm, the National Research Council (NRC), to provide advice on the utility and limitations of the watershed-based policy-making and management. The Environmental Protection Agency took a prominent role in this request, because the agency was beginning its Watershed Initiative to deal with nonpoint source pollution, a problem inadequately addressed through traditional approaches. The Tennessee Valley Authority, itself defined by the geographic boundaries of a river basin, supported the review effort in part to produce guidance for its Clean Water Initiative, an innovative approach to water-quality problems that is organized according to smaller watersheds within the Tennessee Valley. The Natural Resources Conservation Service (formerly the Soil Conservation Service), an agency with a long and venerable history of watershed management mostly for agricultural purposes, also sponsored the NRC review. The Forest Service provided support because the agency has as part of its charter the requirement to manage watersheds on a significant component of the nation's public lands. Other governmental supporters included the Bureau of Reclamation, an agency charged with development and management of western water resources, and the U.S. Geological Survey, the nation's primary source of data for water science, policy, and management. In addition to these is federal agencies, two nongovernmental organizations also provided support. The National Water Research Institute has broad interests in scientific research related to water. The McKnight Foundation is a major stimulant for local involvement in watershed projects in the upper Mississippi.

In response to the request for advice by these organizations, the National Research Council appointed a committee of fifteen scientists, planners, and public administrators. Committee members included practitioners from the fields of biology, chemistry, geography, economics, engineering, hydrology, sociology, planning, and administration. The Council and the sponsors agreed upon three specific charges for the committee:

- Review the range of scientific and institutional problems related to watersheds, especially water quality, water quantity, and ecosystem integrity.
- Evaluate selected examples of watershed management in a search for the common elements of successful management.
- Recommend ways for local, state, regional, and federal water managers to integrate ecological, social, and economic dimensions of watershed management.

The committee addressed these charges over a two-year period. Committee members donated their time in five multiple-day meetings, which included field hearings in Chattanooga,

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Tennessee, Irvine, California, and Minneapolis, Minnesota. In Minneapolis, the committee participated with local, state, and regional managers in a workshop focused on issues in the Upper Mississippi Basin.

During the field investigations the committee met researchers trying to unravel complex natural systems to produce better understanding for public decisions, private citizens who had organized local watershed efforts to meet a variety of goals, and administrators working to realize visions of a quality future. We also met state and local officials overrun with management problems, yet lacking sufficient financial resources to solve them, and federal officials uncertain about the future of their agencies and their own contributions. We met people who ignored the downstream consequences of their pollution and who did not accept responsibility for their actions. We also met true heroes who organized the chaos around them to create successful initiatives to improve both the human and the natural environment around them. From all these people we learned important lessons that dramatically expanded our own experiences. We have included these lessons in the report. The report is designed to be useful to readers ranging from interested lay persons to working scientists and policy makers at all levels.

This report contains the lessons we learned as a committee. Underlying the formal lessons recounted here were three more general truths. First, the way we perceive the nation as individual resource users, researchers, and decision makers has a direct and major impact on how we perceive problems and solutions. The problems and solutions of watershed management depend on your perspective. For example, the continental United States takes on a very different general appearance depending upon whether we use a political or a natural framework. Even different natural frameworks provide us with very different contexts.

Second, watersheds are logical divisions or regions of the natural landscape, and for some purposes they are ultimately the best framework to use for management. Yet it is also true that for every natural watershed there is a "shadow watershed" defined by human and natural components that extend the decision maker's interest beyond the boundaries of the physical watershed. Whether migratory birds, hydroelectric power grids, or other factors are involved, we must be prepared to perceive watershed space in dimensions other than physical.

Third, the devolution of political power from the federal to regional and local levels in American politics means that we must develop a new "flexible federalism" in which the federal government maintains a newly defined role with some responsibilities while regional and local governments exert greater influence in solving problems. For the federal agencies, this arrangement means efforts increasingly in partnerships with regional and local governments. However, it does not excuse the federal government from its responsibility for representing the interests of the nation as a whole, especially regarding the setting of standards and the management of public land and water.

The conclusions and recommendations of the report provide the committee's thoughts on fundamental principles of contemporary watershed science, crucial watershed management objectives, recommendations for consideration in reauthorization of the Clean Water Act, and 15 recommendations as ways to steer the nation toward improved strategies for watershed management.

WaterBulletin: BWSR Reviews Approaches to Watershed Management

"Crosscurrents" and the Watershed Management Debate,
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Watershed districts have operated in Minnesota since the Minnesota Watershed District Act, adopted in 1955, authorized the formation of districts and created the state Water Resources Board to oversee them. Yet questions concerning their role and relationship to state, county and municipal governments remain the subject of vital discussion. Several examples: in May 1996, a Hennepin County Water Management Advisory Committee published a report on its inquiry into streamlining the existing system of overlapping Federal, state and local jurisdiction; a Washington County task force is convened at this time to consider the role of watershed districts and joint powers water management organizations within the County. The Minnesota Association of Watershed Districts presently is engaged in a survey of its members on governance issues, with the results to be available next summer. As noted below, the National Academy of Sciences shortly will release a report on watershed-based water management developed from a convocation of water management experts nationwide.

On September 23, 1998, the Minnesota Board of Water and Soil Resources (BWSR), the descendant of the Water Resources Board, convened a special session to hear presentations from around the country on approaches to watershed management. The session proceeded from the December 1996 "Crosscurrents: Managing Water Resources," a Minnesota Planning report that assessed the existing framework of state water resources management in light of five legislative goals: sustainable development; improved service delivery; prevention of water resource problems at their source; citizen participation; and reduced pollution.

The report observed that at least six Minnesota agencies (Pollution Control Agency; Departments of Health, Natural Resources and Agriculture; BWSR and the Environmental Quality Board), counties, cities, towns, soil and water conservation districts, watershed districts, lake improvement districts, watershed management organizations and lake conservation districts all may play a substantial role in water resource management. This proliferation of regulatory and management bodies, the report found, posed a number of obstacles to meeting the five legislative goals:

- Planning among governmental bodies may be unconnected;
- These bodies' authorities may be unclear or may overlap;
- A shift from general funding to fee-based funds over time has restricted both internal and coordinative flexibility of governmental bodies;
- Differing geographical boundaries of these bodies, and differing ways of organizing them regionally, make coordination more difficult and confuse the public;
- Data and communication systems among governmental bodies are unconnected; and
- Local bodies may be given authority without resources and expertise to properly use it.

In conclusion, while noting that addressing these problems through legislative and administrative efforts is cumbersome and protracted, "Crosscurrents" proposed a variety of measures to address the identified concerns. These included co-locating regional offices of state agencies; simplifying procedures to modify special purpose districts, both to increase their ability to serve local needs and to allow for mergers or arrangements that share resources and expertise; carefully identify further state-level

permitting and other decisions that could be delegated to local governments; and standardize or coordinate data management systems.

Importantly, the report found no strong call for a wholesale change in the current system. One advantage of the existing, fragmented structure is what Ron Harnack, BWSR Executive Director and Board member, referred to at the session as a "political" rather than "administrative" system of resolving conflicts in water resource management issues: conflicts arise at the interagency level and not merely within the more insular environment of a single agency. This is seen as more accountable and more open to citizen input than the consolidation of functions into fewer larger and more insular agencies.

Likewise, "Crosscurrents" did not question the wisdom of watershed-based special districts for water resource management. Similarly, the May 1996 Hennepin County report found that "the state, Hennepin County and cities should support watershed planning because [it] offers the best approach for comprehensive surface water management."

At the session, Clifford Aichinger, Administrator of the Ramsey-Washington Metro Watershed District, briefed the Board and attendees on the forthcoming report of the National Research Council, a body within the National Academy of Sciences. Aichinger, one of 15 scientists, planners and public administrators serving on the committee preparing the report, noted the report's conclusion that watershed-based water resource management is logical and fundamental. Nonetheless, it finds, government at other levels should play a role-- each level has relevant capacities that it, as compared with the others, best may bring to the table. For example, the report suggests, while local governments should be primarily responsible to implement water resource management programs, state and federal governments should coordinate, perform research, provide technical and financial assistance, and manage cross-jurisdictional, regional or interstate issues.

Water Resource Management in Florida, Nebraska and Wisconsin

Three speakers, from Florida, Nebraska and Wisconsin, demonstrated the differing scales that states have chosen for water resource management.

David Fiske, Assistant Executive Director for Florida's Suwannee River Water Management District, explained that state's means of managing water resources through five water management districts, each encompassing seven to 11 major watersheds and operating on an annual budget of from \$22 to \$450 million. Board members are appointed by and budgets approved by the Governor; the Florida Department of Environmental Protection oversees district operations. Twenty to seventy percent of district funds, for smaller and larger districts, respectively, derive from *ad valorem* taxation on property in each district, with state general revenues, state and federal grants and district enterprise revenues providing the remainder. District jurisdiction encompasses water supply, water quality and flood protection as well as management of natural resources such as timber. In addition to planning, management and regulation, the districts tend to be the leading state agencies for water-related data collection, maintain an extensive water-resource-related capital infrastructure, and actively acquire and hold state land for conservation purposes. Despite the substantial size and compass of these entities, Fiske noted that their viability rests in large part on their ability to address specific regional needs—water supply needs, water storage capacity restoration, urban vs. rural issues—as well as create a local stake and provide for public involvement much better than can a state-level agency.

Dayle Williamson, Nebraska Director of Natural Resources, described a slightly less centralized approach than that used by Florida. Faced with 500 special purpose

districts involved in water and land management issues, each with insufficient authority, jurisdiction and resources to operate effectively, in 1969 the Nebraska legislature divided the state Natural Resources Districts as, in Williamson's words, the "multi-purpose, local unit of Nebraska Government for management, development, and protection of the soil and water resources found in that basin." The 23 districts are delineated along watershed lines with respect to Nebraska's 13 major river basins. Board members, elected by district voters, manage annual budgets ranging from \$125,000 to \$16,400,000 and exercise a range of fiscal authorities including taxation and bonding. Unlike in Minnesota or Florida, districts exercise authority not only over water and soil resources, but over a broader range of environmental areas including solid waste disposal; sanitary systems; drainage; pollution control; management of fish and wildlife habitat and recreation and park facilities; and forest and range management. These districts appear to represent a substantial decentralization of state authority combined with a consolidation of related program authorities into a single governmental body.

David Jelinski, Director of the Wisconsin Land and Water Resources Bureau, described 1997 state legislation transferring water resource management authority from a proliferation of stormwater, lake and sanitary districts and county drainage boards back to Wisconsin's counties. Under the legislation, the state establishes minimum performance standards for nonpoint pollution and erosion control that guide each county's development and implementation of a Land and Water Resource Management Plan. Plans are approved by the state Department of Agriculture and implemented through partnerships with municipalities, landowners, local organizations and other interested parties. The legislation establishes extensive requirements for local participation in plan development.

Elements of Effective Watershed Management

Bob Doppelt, a consultant in the design of governmental management and Director of the Center for Watershed and Community Health at Portland State University, Oregon, provided a theoretical framework for the day's other speakers. In a wide-ranging presentation, Mr. Doppelt outlined principles for effective water resources governance. Much of the talk centered on the "principle of subsidiarity," which encompasses the organization of government on the basis of "nested hydrologic units"; the devolution of governmental authority to the lowest appropriate level; and the use of performance goals, rather than the traditional "command and control" approach, to enlist the knowledge of regulated entities as to the most efficient means to achieve water management goals.

Mr. Doppelt's research suggests the three hallmarks of effective watershed governance systems to be: (a) the integration of sound science into decisionmaking; (b) the integration of economic and environmental objectives (recognizing that environmental and economic productivity are not adverse to each other); and (c) efficient service delivery to stakeholders. Particularly interesting was the idea of the "sector-based" approach. This approach rests on the recognition that obstacles to sound environmental management practices among members of the regulated community may rest on competitive industry pressures. In keeping with the "pollution prevention" concept of acting as far upstream as possible, the sector-based approach works with an entire industry on a supra-watershed basis to achieve a general change in practice that maintains the "level playing field" among the local enterprise and those against whom it competes. (A local example might be the Toxic Reduction Project of the Minnesota Center for Environmental Advocacy, which seeks voluntary agreement within the health care delivery industry to substitute nonchloride-containing IV bags, tubing and other medical products for polyvinyl chloride materials that produce dioxin when incinerated.)

Conclusion

BWSR's convocation of speakers is not a part of any broader, more formalized inquiry by the agency into Minnesota's present water management framework. But it indicates the Board's interest in examining and improving this framework and reflects the apprehension, nationwide, that beneficial refinements can be made to the present, somewhat *ad hoc*, water governance pot in which Federal, state, local and special district cooks all have their spoons. Even when not present on the surface, the question of the proper role of each level of government in water resource management will underlie many of the issues that water attorneys and citizens generally will face.

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WaterBulletin: The Fundamentals Of Minnesota Watershed Law

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I. Introduction to Watershed Districts

Water knows no political boundaries. As public concern grows over flood protection and the decline in the water quality in our lakes and rivers, one comprehensive approach to water resources management lies with an idea adopted by the Minnesota Legislature over four decades ago: watershed districts.

The State of Minnesota has been a pioneer in the concept of watershed-based water management, adopting the Minnesota Watershed District Act in 1955. The Minnesota Watershed District Act, now codified in Minnesota Statutes Chapter 103D, provides for the establishment of watershed districts "to conserve the natural resources of the state by land use planning, flood control, and other conservation projects . . . using sound scientific principles for the protection of the public health and welfare and provident use of the natural resources." The Minnesota Watershed District Act recognizes several fundamental concepts in the effective management of water resources:

A. Hydrologic Focus. The law recognizes that water does not adhere to political boundaries and, thus, allows for the establishment of watershed districts as local government units bounded by hydrologic divides as opposed to political borders. As a result, lakes and streams, and the land draining into them, are regulated by one local entity with a central comprehensive vision for managing the entire water resource.

B. Land Use. The law recognizes that regulation of land use within a watershed is an essential component in protecting and preserving the water resources within the watershed. Watershed districts supplement municipal land use regulation with an exclusive focus on water quality and flood control in a manner designed to avoid the problem of pushing the detrimental effects of development downstream.

C. Financing Water Resources Improvements. Watershed districts provide a more workable and rational means of financing improvements for water resources. Typically, local municipal jurisdictions lack the necessary resources to fund critical improvements designed to restore water quality or provide flood control for local lakes and streams. Assessing the costs across the entire watershed that contributes drainage to these lakes and streams provides a more equitable and effective approach.

D. Engaging Citizen Ownership. Watershed districts, as local entities with boards comprised of local citizens, provide an effective means of engaging citizen ownership and management of valued local water resources. As one writer observed recently in the National Geographic, the "watershed

approach" is now the national model and new hope for effective management of water resources:

The intimacy of the smallest watersheds may be a key to their restoration: At that level every individual can have an effect. "It's almost impossible to address water quality on the main stem of a river," says James Fisher of the National Watershed Coalition. *"If you do it one small watershed at a time, you still have public support. Small size is the advantage. This replaces Big Brother with Joe down the creek."*

Michael Parfit, "Restoration: New Ideas, New Understanding, New Hope," Water: The Power, Promise and Turmoil of North America's Fresh Water. National Geographic Special Edition at pp. 113-114 (November 1993).

For decades, Minnesota has utilized the watershed approach, mobilizing citizen boards of managers who are intimately familiar with local land use issues to protect and restore our water resources.

II. Purposes and Powers of Watershed Districts

A. Purposes

Pursuant to Minnesota Statute § 103D.201, a watershed district may be established for any of the following purposes:

1. To control or alleviate damage from flood waters;
2. To improve stream channels for drainage, navigation, and any other public purpose;
3. To reclaim or fill wet and overflowed land;
4. To provide a water supply for irrigation;
5. To regulate the flow of streams and conserve the streams' water;
6. To divert or change all or part of watercourses;
7. To provide or conserve water supply for domestic, industrial, recreational, agricultural, or other public use;
8. To provide for sanitation and public health, and regulate the use of streams, ditches, or watercourses to dispose of waste;
9. To repair, improve, relocate, modify, consolidate, and abandon all or part of drainage systems within a watershed district;
10. To control or alleviate soil erosion and siltation of watercourses or water basins;
11. To regulate improvements by riparian property owners of the beds, banks, and shores of lakes, streams, and wetlands for preservation and beneficial public use;

12. To provide for hydroelectric power generation;
13. To protect or enhance the water quality in watercourses in water basins; and
14. To provide for the protection of groundwater and regulate its use to preserve it for beneficial purposes.

B. Powers

As set forth in Minnesota Statutes B 103D.335, watershed districts have the following specific governmental powers:

- 1. General powers.** To the extent necessary for lawful conservation purposes:
 - a. to sue and be sued;
 - b. to incur debts, liabilities, and obligations;
 - c. to exercise the power of eminent domain;
 - d. to provide for assessments and to issue certificates, warrants, and bonds; and
 - e. to perform all acts expressly authorized, and all other acts necessary and proper for the watershed district to carry out and exercise the powers expressly vested in it.
- 2. Joint powers.** To enter joint powers agreements;
- 3. Acquire and dispose of property from state and federal agencies;**
- 4. Data acquisition.** Make necessary or use reliable surveys and hydrologic data;
- 5. Cooperate or contract** with governmental or non-governmental agencies;
- 6. Perform ditch and watercourse work;**
- 7. Water control works.** Acquire, operate, construct and maintain water control works;
- 8. Water use and conservation.** Conserve and control the use of water within the watershed district;
- 9. Acquire property** by gift, purchase, taking under the procedures of Minn. Stat. Chapter 103D, or by the right of eminent domain, necessary real and personal property;
- 10. Enter Into Contracts.** Construction or implementation authorized by law;

- 11. Enter Lands** inside or outside the watershed district to make surveys and investigations to accomplish the purposes of the watershed district;
- 12. Sanitation and pollution prevention.** Provide for sanitation and public health and regulate the use of streams, ditches, or watercourses to dispose of waste and prevent pollution;
- 13. Borrow Funds** from government agencies or financial institutions;
- 14. Prepare floodplain maps** of the lands of the watershed district located in the floodplain of lakes and watercourses;
- 15. Control land use and development in the floodplain, greenbelt, and open space areas of the watershed district** in the absence of county or municipal ordinances regulating these matters;
- 16. State association membership.** Appropriate necessary funds to provide for membership in a state association of watershed districts;
- 17. Enter into contracts** with other governmental bodies for cooperation and assistance;
- 18. Projects in other states.** Purchase lease or acquire land or other property in adjoining states for watershed purposes; and
- 19. Water resource management activities.** Conduct studies and monitoring of water resources within the watershed and implement resource management programs.

C. Rules

In addition to the specific watershed district powers listed above, the legislature also provided that the managers of a watershed district must adopt rules to accomplish the purposes of the watershed law and to implement the powers of the managers. Minn. Stat. § 103D.341.

III. Watershed Regulatory Activities

A. Promulgation of Rules.

Watershed districts are required to adopt rules to accomplish their purposes and to implement their powers. Minn. Stat. § 103D.341, subd. 1. Proposed rules must be adopted by a majority vote of the managers, after satisfying public notice and hearing requirements.

1. Notice and hearing requirements for adopting or amending rules:

a. BWSR

Prior to adoption, the proposed rule must be sent to BWSR for review. BWSR has 45 days to provide its comments in writing. Minn. Stat. § 103D.341, subd. 2(b). BWSR's comments are advisory only.

b. Public Hearing

Prior to adoption, the Managers must conduct a public hearing. The public hearing must be noticed in one or more legal newspapers published in the county and generally circulated in the watershed district.

2. Noticing and Filing Adopted Rules

The district must also file the new rules with the country recorder and mail a copy of the rules to the governing body of each municipality or city within its jurisdiction. Minn. Stat. § 103D.341, subd. 2(c) and (d); and Minn. Stat. § 103D.341, subd. 3. Once approved, the new rule must be signed by the secretary of the board of managers, and recorded in the manager's official minute book. Minn. Stat. § 103D.341, subd. 2(a). Finally, the watershed district must publish a notice stating that it has adopted rules. The notice must be published in one or more legal newspapers published and generally circulated in the watershed district.

B. Permits

Watershed districts have authority to require permits for the use and development of land in the floodplain, greenbelt, and open space areas. Minn.Stat. § 103D.345. Watershed districts also require permits for other activities affecting water resources pursuant to the authority to adopt rules to implement the purposes of the watershed law. Minn. Stat. § 103D.341, subd. 1.

1. Benefits of establishing process

In order to provide applicants with notice of specific procedural requirements for getting a permit, watershed districts should establish a process to which all applicants are subject. While not required by law, the existence of such procedural guidelines helps watershed districts defend themselves against allegations that their decisions are arbitrary or capricious. Helpful procedural guidelines include:

- a. Establishing deadlines for having a permit application heard;
- b. Establishing minimum documentation requirements.

2. Ability to charge fees

Watershed districts are specifically authorized to collect fees to defray the costs of processing permit applications.

a. Permit Fees

Watershed districts may charge up to \$10 when a permit application is filed for use and/or development of land under its authority. Minn. Stat. § 103D.345, subd. 1.

b. Field Inspection Fees

Watershed districts may charge \$35 or more to cover the actual costs for a field inspection, which may include investigation of the area of proposed activity, analysis of the proposed activity, consultant services, and any subsequent monitoring required by the proposed activity. Minn. Stat. § 103D.345, subd. 2.

c. Processing fees under the Wetland Conservation Act

Watershed districts that are local government units implementing the Wetland Conservation Act may charge an applicant fees to cover the reasonable costs of implementing the provisions of WCA. The statute refers to these fees as "processing fees." Minn. Stat. § 103G.2242, Subd. 5.

3. Performance Bonds

Watershed districts may require an applicant to file a bond in an amount set by the managers, conditioned on the applicant's performance in compliance with the terms and conditions of the permit. Minn. Stat. § 103D.345, subd. 4.

C. Constitutional Considerations in Making Permitting Decisions

1. Due Process

All applicants and concerned persons should be given an opportunity to state their opinions, arguments, and all the support they might have for their case. Providing concerned citizens with such opportunities serves two practical purposes as well:

- a. Managers make better decisions when they listen to many different perspectives; and
- b. If a decision by the board of managers is appealed, proof that the managers listened to and considered all points of view is strong evidence that their decision is neither arbitrary nor capricious.

2. Equal Protection

Watershed districts must treat all applicants equally. Enacting procedural requirements, described above, will help ensure against equal protection problems. It is important to note that equal protection does not compel managers to make the same mistake twice. That is, just because watershed district "Q" mistakenly gave Billy Bob a permit last year, doesn't mean he (or anyone else) is entitled to get one based on the same grounds this year.

3. Takings

The Fifth Amendment to the U.S. Constitution provides that the government may not take property without just compensation. This language has been interpreted by the Supreme Court as requiring government agencies to compensate landowners in two situations:

- (1) When the government takes actual possession through its power of eminent domain; and
- (2) When government regulation precludes all economic uses of the land, making it virtually worthless.

D. Wetland Conservation Act

The Wetlands Conservation Act (WCA) was passed in 1991 and provides that wetlands must not be drained or filled unless replaced by restoring or creating wetlands of at least equal public value. Minn. Stat. Chapter 103G and Minn. R. Chapter 8420.

1. Determining the local government unit responsible for implementing WCA

The government entity with responsibility for implementing WCA within a certain area is referred to as the "local government unit" or "LGU." A watershed district may only serve as an LGU in the seven-county metropolitan area. Minn. Stat. § 103G.005, Subd. 10d; Minn. R. 8420.0110, Subp. 30. In the metro area, a watershed district will only serve as the LGU if a city or town has chosen not to be the LGU. Id.

2. Determining if the wetland is regulated under WCA

Not all wetlands are regulated under WCA. WCA does not govern "public water wetlands" regulated by the DNR. "Public water wetlands" governed by the DNR are all Types 3, 4 and 5 wetlands as defined in the United States Fish and Wildlife Service Circular 39 (1971 edition), that are 10 or more acres in size in unincorporated areas or 2 ½ or more acres in incorporated areas. Minn. Stat. § 103G.005, Subd. 15a (1997).

WCA does govern all other wetlands. Lands are defined as wetlands if they meet the wetlands criteria set forth in the 1987 U.S. Army Corps of Engineers Wetland Manual. *See* Minn. Stat. § 103G.005, Subd. 19.

3. Determining if the proposed activity is regulated under WCA

WCA regulates the "draining" and "filling" of wetlands. "Drain" is defined as "any method for removing or diverting waters from wetlands." Minn. R. 8420.0110, Subp. 15. This includes excavation of an open ditch, installation of subsurface drainage tile, filling, diking or pumping. Id. "Fill" is defined as "any solid material added to or redeposited in a wetland that would alter its cross-section or hydrological characteristics, obstruct flow patterns, change the wetland boundary, or convert the wetland to a non-wetland." Minn. R. 8420.0110, Subp. 18.

There are also certain activities that are specifically exempt from regulation under WCA. Minn. Stat. § 103G.2241 (1997); Minn. R. 8420.0122. The exemptions include, among other things, a "de minimus" exemption and certain exemptions for agricultural activities. Id.

4. Determining if the activity may go forward and the replacement ratio

Under WCA, before an activity that will impact a wetland can go forward, the applicant must prove that the impact can not be avoided and that the impact will be minimized. Minn. Stat. § 103G.222. This is often referred to as "sequencing." If an applicant establishes these two elements, then the activity may proceed with proper replacement.

Impacted wetlands must be replaced. The amount of acres that have to be replaced for each acre of impacted wetland is referred to as the "replacement ratio." The replacement ratios are:

- a. for an impacted wetland located on nonagricultural land and for an impacted wetland located in an area where less than 80% of the presettlement wetlands exist, the replacement ratio is 2 acres of replaced wetland for each acre of drained or filled wetland (2:1 ratio);
- b. for an impacted wetland located on agricultural property or in an area where more than 80% of the presettlement wetlands remain, the replacement ratio is 1 acre of replaced wetland for each acre of drained or filled wetland (1:1).

5. Replacement Plan decisions

WCA provides extensive procedures, including notice and public comment procedures, for approval of a replacement plan. The statute and rules should be used to guide this process.

6. Regulation of Wetlands beyond the Wetlands Conservation Act

Watershed districts acting as local government units under WCA may require more procedures and wetland protection than provided under WCA but not less. Minn. R. 8420.0245.

Watershed districts that are not "local government units" under WCA may also regulate wetlands under their general rules authority under Minnesota Statutes §§ 103D.201 and 103D.341.

IV. Watershed Management Planning and Capital Improvements

A. Statewide - Minn. Stat. Chapter 103D

1. Watershed management planning

Watershed district plans outside the metro area must adopt a watershed management plan in conformity with the BWSR watershed management guidelines. The plan must include:

- (a) a narrative description of existing water and water-related problems within the district;
- (b) possible solutions to the problems;

(c) and the general objectives of the watershed district.

2. Capital improvements

When a watershed district outside the metro area is constructing a project, whether operating alone or in conjunction with other government entities, the district must:

- (a) forward a copy of the project plan to the BWSR and its director, who must review the project and transmit written reports on the project to the managers;
- (b) provide notice of the time and place for a hearing on the proposed project;
- (c) conduct a project hearing;
- (d) establish the project upon a finding that the project will be conducive to public health, promote the general welfare, and is in compliance with the watershed management plan. The order formally establishing the project must include the findings of the managers.

B. Metro Area - Minn. Stat. Chapter 103B

Under Minn. Stat. Chapter 103B, metro area watershed districts are given additional powers. They may still act under Minn.Stat. § 103D should they so choose.

1. Watershed management planning-the "509 Plan." Minn. Stat. § 103B.231, subd. 6.

(1) The plan shall:

- (a) describe the existing physical environment, land use, and development in the area and the environment, land use, and development proposed in existing local and metropolitan comprehensive plans;
- (b) present information on, and potential problems with, the existing hydrologic system and its components;
- (c) state management objectives and policies regarding water quality and protection of natural characteristics;
- (d) set forth a management plan, including the hydrologic and water quality conditions that will be sought and significant opportunities for improvement;
- (e) describe the effect of the plan on existing drainage systems;
- (f) identify high priority areas for wetland preservation, enhancement, restoration, and establishment and

describe any conflicts with wetlands and land use in these areas;

(g) describe conflicts between the watershed plan and existing plans of local government units;

(h) set forth an implementation program consistent with the management plan, which includes a capital improvement program and standards and schedules for amending the comprehensive plans and official controls of local government units in the watershed to bring about conformance with the watershed plan; and

(2) The plan must also set out procedures and timelines for future amendments.

2. Capital improvements in the metro area. Minn.Stat 103B.251

(1) Metro watershed districts undertaking capital improvements may certify the costs of the capital improvement to the county or counties contained within the territory of the watershed district. A copy of the plan must be forwarded to the county board, who then pay their appropriate share as provided by statute.

(2) After notifying the appropriate county boards, the district must provide improvement hearing notices. Minn.Stat. § 103B.251, subd.3.

(a) Two notices, published in appropriate local legal newspapers, shall appear in successive weeks. The last notice shall appear no more than 30 days prior and no less than 10 days prior.

(b) The notices must state the time, place, and subject of the hearing, along with the estimated cost (including the allocation thereof) and the method of financing.

(c) Notices must also be provided by mail to the counties and each municipality located wholly or partly in the watershed district.

(3) At the time and place specified in the notices, the hearing must be held to hear all parties interested in the project. If, after hearing all parties, the managers find that the improvement will be conducive to public health, promotes the general welfare, and is otherwise in accordance with the law, it may approve the improvement, determine the costs, and apportion the costs.

V. General Government Legal Concerns

A. Open Meetings Law

The Open Meeting Law was designed to make government bodies and their decision-making processes open to public involvement. Minn. Stat. § 471.705. The law impacts almost all aspects of local government whenever transacting

the public's business, and may create duties and liabilities for Managers.

1. What meetings are subject to the Open Meeting Law?

a. Definition

The Open Meeting Law applies to any gathering of a quorum or more members of a governing body, committee or subcommittee where members discuss, decide or receive information as a group about the official business of that body.

b. Application

In *Thuma v. Kroschel*, the mayor of Afton and two city council members examined a contract and discussed an issue then pending before the city in the anteroom of the chambers. Although the three only spoke for approximately eight minutes, the court found a violation of the Open Meeting Law, and imposed \$100 fines on each of them. 506 N.W.2d 14 (Minn. App. 1993).

2. Which meetings must be open to the public and when may meetings be closed?

a. Meetings which must be open

Watershed district meetings are required to be open to the public unless there is express statutory authority for closing the meeting. Minn. Stat. § 471.705, subd. 1. As most of the statutory exceptions to this rule have to do with issues rarely dealt with by watershed districts (such as meetings where active criminal investigations, information regarding an individual's health, a student's educational file, law enforcement officer's conduct, or meetings where labor negotiations are discussed), managers should generally assume their meetings are open to the public. Minn. Stat. § 471.705, subd. 1d.

b. Meetings which may be closed

Watershed districts may close a meeting under certain narrow circumstances. Minn. Stat. § 471.705, subd. 1d. A meeting may be closed only when the Managers inform the public of their reasons. Minn. Stat. § 471.705, subd. 1e. Even where a statute allows a meeting to be closed to discuss a specific topic, the meeting must be open in order to discuss any other items of business.

1. Attorney-client privilege

Watershed districts may invoke the attorney-client privilege to close a meeting (Minn. Stat. § 471.705, subd. 1d(e)), but only when they are meeting to discuss litigation. Districts may not close meetings for discussions with their attorney when they are discussing issues other than impending litigation. The point at which the court considers litigation "impending"

appears to depend upon the type of lawsuit:

(a) When a watershed district faces an impending lawsuit in its legislative capacity (such as a challenge to a watershed rule, permitting decision, or the adoption of a project), the district may not invoke its attorney-client privilege until the lawsuit is actually filed. Northwest Publications, Inc. v. City of St. Paul, 435 N.W.2d 64 (Minn. App. 1989). "Active and immediate" litigation is required to invoke the attorney client privilege when the subject of the lawsuit is the public body's decision-making process. Minneapolis Star and Tribune v. The Housing and Redevelopment Authority in and for the City of Minneapolis, 251 N.W.2d 620 (Minn. 1976).

(b) When a watershed district faces an impending lawsuit in its non-legislative capacity (i.e. as an employer, or some action in negligence), it may invoke the attorney-client privilege to close meetings when litigation is imminent or threatened, or when [it] needs advice above the level of general legal advice, i.e. regarding specific acts and their consequences[.]" Star Tribune v. Board of Education, Special School Dist. No. 1, 507 N.W.2d 869, 872 (Minn. App. 1993).

2. Employee inquiries Minn. Stat. § 471.705, subd. 1d
(c) and subd. __

(a) Performance evaluations

A watershed district may close a meeting to conduct a performance evaluation of an employee. The identity of the employee must be disclosed prior to conducting the evaluation, and the evaluation must be summarized at the district's next public meeting. The initial meeting must be open at the request of the employee.

(b) Investigations of charges or allegations

A watershed district may close a meeting for an initial investigation of a charge or allegation against an employee, if it identifies the employee prior to closing the meeting (note that the meeting must be held publicly if the employee so requests). Subsequent meetings must disclose the conclusions of such a closed meeting, and final conclusions must be made in an open meeting.

3. What procedures must watershed districts observe in conducting a meeting?

a. Notice requirements

All meetings must be noticed, even those closed to the public (which must also include the legal grounds for closing the meeting, see above). The specific requirements vary depending on the type of meeting:

1) Regular meetings. Minn. Stat. § 471.705, subd. 1c (a).

A schedule of regular meetings should be kept on file at the watershed district's main office. Regularly scheduled meetings whose time or place is different from, or changes from, the normal stated time or place must be noticed as a special meeting.

Although the law does not require any public posting of regularly scheduled meetings, the courts have traditionally interpreted the Open Meeting Law as requiring that government bodies provide the public with maximum access to the political process. Toward this end, many watershed districts include their schedule of regular meetings in their rules and publish their schedule at the beginning of the year. Watershed districts might also avoid any potential problems by posting notice of regular meetings on their principle bulletin board or on the doors of their meeting place.

2) Special meetings. Minn. Stat. § 471.705, subd 1c(b).

In the case of a special meeting, written notice of the time, date, place, and purpose of the meeting shall be posted on the district's principle bulletin board or, if none exists, on the door of the usual meeting room. Such a posting must be "reasonably accessible to the public." Specifically, it may not be in an interior hallway at the watershed district's offices. See Rupp v. Mayasich, 533 N.W.2d 893 (Minn.App. 1995).

The district must also provide notice to each person who has requested to be notified in the case of a special meeting. Such individual notice may be provided by:

(a) mailing or otherwise delivering the notice at least three days prior to the meeting; and

(b) publishing in the district's official newspaper or in a qualified newspaper of general circulation within the district's area of authority at least three days prior to the meeting.

3) Emergency meetings. Minn. Stat. § 471.705, subd. 1c(c).

An emergency meeting is a meeting called because of circumstances that require the immediate consideration

of the board of managers. When the district holds emergency meetings, it must make a good faith effort to provide all those news media requesting to be notified with the time, place, and purpose of the emergency meeting, by telephone or any other means used to contact managers themselves.

4) Recessed or continued meetings. Minn. Stat. § 471.705, subd. 1c(d).

If a meeting is recessed or continued to another session, the district need not provide the public with notice of the second meeting so long as the time and place for the second meeting is established prior to adjournment of the first meeting. As with regular meetings, though, the district may wish to post notice of such a continuation anyway in the interest of complying with the spirit of the Open Meeting Law.

b. Contents of Notice

In general, all notices of meetings must include the time, place, and the subject or purpose for the meeting. Where meetings are closed to the public, the reason for closure be included. Minn. Stat. § 471.705, subd. 1c(e).

4. Information available at an open meeting.

At least one copy of any materials distributed or made available before or during a public meeting to members of the watershed district's board must also be made available in the meeting room for inspection by members of the public. Minn. Stat. § 471.705, subd. 1b. (NOTE: See also related obligations under the Data Practices Act, below.)

B. Government Data Practices Act

1. Presume all information must be made available to the public.

All recorded information (paper, tapes, video, etc.) is covered by the Act. The Act establishes a presumption that all government data are public. Public data under the Act includes:

a. Any data not covered by the limited exceptions listed below is public data. Minn. Stat. § 13.01, *et seq.*

b. Information about employees of the watershed district must be made available to the public upon request, including name; actual gross salary; salary range; contract fees; actual gross pension; fringe benefits; added remuneration such as expense accounts; job title; job description; education and training background of the employee; their previous work experience; date of first and last days of employment; status of complaint or charge against the employee and whether or not it resulted in disciplinary action; the final disposition of any disciplinary action and supporting documentation; work location, a telephone number; honors and awards; payroll time sheets; and the city and county of residence. Minn. Stat. § 13.43, subd. 2.

In addition, any settlement in excess of \$10,000 which a watershed district negotiates with an employee is public data. Minn. Stat. § 13.43, subd.2.

2. Exceptions to the public data presumption.

- a. Data subject to an attorney-client privilege.
- b. Data collected in anticipation of pending civil litigation under Minn. Stat. § 13.39.
- c. Initial investigations of employees.

NOTE: These types of non-public information may become public if introduced at a public meeting or upon resolution of the lawsuit or investigation.

3. Procedures for providing public access to public data.

Watershed districts must establish procedures by which members of the public may gain access to public data within a reasonable time. [CITE] The procedures should include (1) naming a person to be the "responsible authority" for data practices; (2) prescribing times for public access to data (generally the regular business hours of the district); and (3) the costs for such access.

- a. The law allows no charges to be assessed to individuals for mere inspection of public data, regardless of how much time and expense the district incurs in attempting to satisfy their request.
- b. If however, a person wishes a copy of the data, the district may charge "reasonable fees" for any additional labor on the part of district employees in pulling, compiling or sorting data prior to making the copies.
- c. A member of the public may not be charged for the costs associated with separating public data from non-public data. See *Demers v. City of Minneapolis*, 458 N.W.2d 155 (Minn. App. 1990) and 468 N.W.2d 71 (Minn. 1991).
- d. Computation of such reasonable fees may include:
 - (1) the cost of materials, including paper, used to provide the copies;
 - (2) the cost of labor required to make copies;
 - (3) any schedule of standard copying charges;
 - (4) any special costs associated with making copies from computers or microfilm;
 - (5) mailing costs. Minn. Stat. § 13.03; Minn. R. § 1205.0300, subp. 4

In determining what amount to charge for copies, districts should itemize all costs, excluding tax and overhead, keeping these computations on file in case a citizen challenges the amount of the fees. Note that the Commissioner who oversees Data Practices Act appeals has struck down fees as low as fifty cents per page where a city failed to provide a proper itemization of fees.
Commissioner of the Department of Administration Opinion Letter #94059.

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