Environmental Governance in Watersheds:

The Role of Collaboration

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Abstract: Every watershed is "managed" by a wide range of governmental and nongovernmental actors, whose decisions influence the health and integrity of ecological systems. The challenge for practitioners involved in a watershed management program is to find ways to get this portfolio of actors and programs to work together more effectively. Frequently, this involves collaboration. This paper examines the role of collaboration in six watershed management programs in the Delaware Inland Bays (DE), Lake Tahoe (CA, NV), Narragansett Bay (RI, MA), Salt Ponds (RI), Tampa Bay (FL), and, Tillamook Bay (OR) watersheds. Specifically, the paper examines two research questions: (1) what type of collaborative activities were used to implement watershed management plans? and (2) what public value (or costs) were added as a result of these actions? The results indicate that a wide variety of collaborative activities occurred at the operational, policy-making, and institutional level. These activities added public value in a variety of ways including improved environmental conditions (Policy outcomes), enhanced watershed governance (institutional performance), and other societal benefits such as increased social capital and an increase in civil society. The final section identifies some lessons for practitioners involved in watershed management efforts. Our hope is that an improved understanding of the collaborative process will allow practitioners to better exploit the opportunities for collaboration that currently exist.

Introduction

The integrated, ecosystem-based approach to natural resource management has received growing support from practitioners (ESA 1995), government officials (CRS 1994; GAO 1994; and, EOP 1993), and researchers (e.g., Cortner and Moote 1994; Grumbine 1994; and Slocombe 1998, 1993a, 1993b) in recent years. The approach goes by a number of different names including ecosystem management, watershed management, community-based management, special area management, integrated coastal zone management, and place-based management. Regardless of the terminology used, the shift away from managing individual resources or pollution sources to a broader "systems" perspective that focuses on managing all of the resources in a geographic area or a collection of pollution sources has firmly taken root (Cortner and Moote 1994; GAO 1994; and, EOP 1993).

The integrated nature of watersheds provides a strong rationale for using them as the basis for managing, restoring, and rehabilitating ecological systems. Watershed management is based on the premise that many environmental problems (e.g., nonpoint source pollution (NPS), habitat loss and degradation, etc.) are best addressed at the watershed level because the context specific nature of the problems often requires complex policy solutions that require the expertise and authority of multiple agencies located at different levels of government. Common themes in many watershed and ecosystem management programs include:

- Approaching problems from an integrated or systems perspective;
- Improving institutional performance;
- Improving the integration of government policies;
- Enhancing the coordination of various governmental and nongovernmental programs;
- Broad public participation;
- The involvement of key stakeholders in government decision making; and,
- Having a stronger scientific basis behind government policies (Imperial 1999a).

It is easy to see why watershed management has received growing support in professional and academic communities. We have an improved understanding about how ecological systems function and the cause and effect relationships underlying many environmental problems. There is also greater acceptance that a system of interrelated problems should be managed holistically instead of being addressed as a series of isolated problems.

There is also a tendency for policies and programs to accumulate around problems over time (Elmore 1985). This is certainly true in the environmental arena where the last 30 years have witnessed the development of a sophisticated framework of federal, state, regional, and local programs that rely on a variety of policy instruments (e.g., regulation, expenditures, education, etc.) to address environmental problems. This pattern of programs varies across watersheds, reflecting differences in state and local capacity and policy innovation that are an inherent part of the changing nature of federalism. The portfolio of programs will sometimes address problems effectively. Other times, it will experience governance problems such as: (1) the fragmentation and duplication of responsibility and authority; (2) poor use of existing information and resources; and, (3) the inconsistency of policies across and between levels of government (Imperial 1999a). In many respects, the modern implementation challenge has moved from creating new programs to finding ways to get the existing portfolio of problems to work more effectively. Consequently, a growing number of researchers are beginning to examine the role that "networks" and collaboration play in the administration of government programs (e.g., Bardach 1998; Kickert, et al. 1997; O'Toole 1997; Alexander 1995)

We argue that watershed management is as much a problem of "governance" involving multiple networks of organizations, as it is a question of science and designing effective policies. The capacity (e.g., knowledge, power, and resources) to solve complex environmental problems is often widely dispersed across a set of actors located at different levels of government.

> "Often, no organization of government possesses sufficient authority, resources, and knowledge to effect the enactment and achievement of policy intentions. Instead, policies require the concerted efforts of multiple actors, all possessing significant capabilities but each dependent on multiple others to solidify policy intention and convert it into action. Indeed, it is often difficult for any one actor, or group of actors, to manage, or manipulate, the flow of problems and solutions onto the political agenda in the first place. Thus, there are complex multi-actor processes for both the identification, definition and resolution of policy problems, and for the implementation of policy (Bressers et al. 1995b, 4)."

However, the usual tendency for many researchers, practitioners, and government officials is to assume that no watershed is "managed" without having some form of centralized watershed management program that gives heavy emphasis to science and the preparation of detailed plans using some sort of participatory planning process. Our view is that every watershed is currently "managed" in some way by the wide range of governmental and nongovernmental actors whose decisions influence the health and integrity of ecological systems. Watershed management should therefore be viewed as a multi-actor process that focuses on finding ways to get this portfolio of actors and programs to work together in a manner that adds public value. Therefore, the focus should be on building, managing, and maintaining the

collaborative relationships necessary to facilitate the direct (e.g., restoration projects, or infrastructure investment) and indirect (e.g., public education, changes in decision making, or new research) actions needed to improve environmental conditions and enhance watershed governance. When viewed from this perspective, watershed management is a form of intergovernmental management (IGM) and collaboration is likely to an important strategy used to add public value to the existing set of institutions.[1]

Research Design

Little research examines the role that collaboration plays in watershed management programs or whether it is a useful strategy for adding public value.[2] Accordingly, we explore two research questions: (1) what type of collaborative activities were used to implement watershed management plans? and (2) what public value (or costs) were added as a result of these actions?

The research was conducted as part of a larger report to the National Academy of Public Administration *Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance* (Imperial and Hennessey 2000) that was prepared as part of its *Learning from Innovations in Environmental Protection* project.[3] The study examines six watershed management programs:

- Delaware Inland Bays Estuary Program (DE)
- Narragansett Bay Estuary Program (MA, RI)
- Salt Ponds Special Area Management Plan (RI)
- Tahoe Regional Planning Agency (CA, NV)
- Tampa Bay Estuary Program (FL)
- Tillamook Bay National Estuary Program (OR) [Table 1]

A qualitative, comparative case study research design was used with data collected from two main sources: (1) field interviews with more than 200 individuals; and, (2) program documents and other archival records. Other data sources were also used such as telephone interviews, direct observation, and participant observation.[4] Systematic qualitative techniques (e.g., coding) were then used to analyze the data (e.g., Miles and Huberman 1994). Codes were derived both inductively and deductively from the data and generated based on a start list derived from previous research (e.g., Miles and Huberman 1994; Strauss and Corbin 1990). As coding continued, patterns emerged and codes were used to dimensionalize concepts. When coding the data, quotes and short vignettes were identified to add context to the case studies. As the analysis continued, tables, figures, matrices, and network displays were used to identify trends and make observations (Miles and Huberman 1994).

Cross-case analysis then helped deepen our understanding of these activities and determined the extent to which the findings extended beyond individual cases. The basic approach was one of synthesizing interpretations and looking for themes that cut across the cases (Miles and Huberman 1994). Potential rival explanations were contrasted against one another to identify logical inconsistencies and to determine their consistency with the data (Yin 1994). The chain of events was examined to help determine causality. Potential threats to the validity of the

Table 1: Characteristics of the Six Case Studies

Watershed Characteristics	Delaware Inland Bays	Narragansett Bay
Physical Environment		
Water body	Delaware Inland Bays (DE)	Narragansett Bay (RI, MA)
Size of watershed	300 sq. miles	1,600 sq. miles
Population	131,000[a]	2,000,000 in watershed
Focal problem(s)	Nutrient loading	None; Comprehensive in scope with a diverse range of problems
Sources/causes of problem(s)	poultry farms, septic systems, stormwater runoff, and sewage treatment plants	Diverse range of sources and causes of problems
Institutional Environment		
Jurisdictional complexity	Low	High
Previous planning activity	Several collaborative studies beginning with report to the Governor in 1969	27 water quality studies dating back to 1900. No collaborative watershed-based programs
Planning Process		
Duration	1989 - 1995	1985 – 1993
Driving force	State officials	Congress
Program	EPA's National Estuary Program	EPA's National Estuary Program
Hiring entity for staff	DNREC	New England Interstate Water Pollution Control Authority
Nature of conflict	High. Agricultural interests had problem with draft plan	High. Lot of actors had problems with the plan
Nature of collaboration	Medium. Mostly at the committee level, DNREC's Inland Bays initiative, and NRCS HUA	Low. At the end of the process actors protected their turf
Implementation Activities		
Implementing organization(s)	Center for the Inland Bays (CIB)	RIDEM
Organizational arrangement	Nonprofit Organization	Line-item program in RIDEM
Hiring entity for staff	CIB	RIDEM
Nature of conflict	Low	Low
Nature of collaboration	Mostly focuses on restoration, public education, and research	Limited collaboration with other actors on selected projects
Clear goals/policies	No/No	No/No
Key regulatory agencies	DNREC; Conservation District; local governments	RIDEM; CRMC; local governments
Key funder of BMPs, restoration, & infrastructure	NRCS, Conservation District, Sussex County	None
Outcomes		
Environmental improvements	Medium	Low

Note: All assessments of high, medium and low are based on comparisons among the six programs

[a] Measured at the county level

Table 1: Characteristics of the Six Case Studies (Continued)

Watershed Characteristics	Salt Ponds	Lake Tahoe
Physical Environment		
Water body	Salt Ponds (RI)	Lake Tahoe (CA, NV)
Size of watershed	32 sq. miles	501 sq. miles
Population	32,000	53,000
Focal problem(s)	Nutrient loading	Nutrients and sedimentation
Sources/causes of problem(s)	septic systems, sewage treatment plants, and stormwater runoff	Erosion from development, stormwater runoff, and habitat destruction in the 1960s and 1970s
Institutional Environment		
Jurisdictional complexity	Low	High
Previous planning activity	First watershed plan	Planning efforts date back to 1960s and resulted in federal-state compact in 1969. Planning has continued
Planning Process		
Duration	1979 1984 (original); 1994 - 1999	1980 – 1987 (for main regulations)
Driving force	Citizens, local officials	Citizens, NGOs, state officials
Program	NOAA – CZMA	Federal-State compact
Hiring entity for staff	CRC; CRMC	TRPA
Nature of conflict	Low	High. Environmental, property rights, and development interests
Nature of collaboration	Medium. Mostly CRMC and local governments. Little collaboration with RIDEM	Low. A consensus building process used to identify tradeoffs that formed the basis of new regulations
Implementation Activities		
Implementing organization(s)	CRMC and local government	TRPA
Organizational arrangement	Partnership based on shared regulations (i.e., zoning)	Regional Planning Council with politically appointed representatives
Hiring entity for staff	CRMC	TRPA
Nature of conflict	Low	Medium. Same as during planning but conflict has declined
Nature of collaboration	Low. Mostly through informal permit review process	MOUs devolve permitting to locals; $900 million EIP
Clear goals/policies	No/Yes. Zoning standards and regulations	Yes/Yes. Environmental thresholds and regulations
Key regulatory agencies	CRMC, RIDEM, Local government	TRPA, Lahontan Regional Water Quality Board
Key funder of BMPs, restoration, & infrastructure	None	federal, state, local governments; USFS, California Tahoe Conservancy
Outcomes		
Environmental improvements	M	M

Note: All assessments of high, medium and low are based on comparisons among the six programs

Table 1: Characteristics of the Six Case Studies (Continued)

Watershed Characteristics	Tampa Bay	Tillamook Bay
Physical Environment		
Water body	Tampa Bay (FL)	Tillamook Bay (OR)
Size of watershed	2,300 sq. miles	570 sq. miles
Population	2,000,000	17,000
Focal problem(s)	Nutrient loading leads to loss of seagrass	Closed shellfish beds from bacterial contamination, sedimentation, & salmon listed as endangered species
Sources/causes of problem(s)	Stormwater runoff, sewage treatment plants, phosphate mining, and fertilizer production	Dairy farms, septic systems, stormwater runoff, and forestry activities
Institutional Environment		
Jurisdictional complexity	Medium – High	Low – Medium
Previous planning activity	Activity dates back to the late 1960s. Two watershed plans developed during the 1980s.	Activity dates back to the late 1970s. Several efforts in 1980s. RCWP runs from 1981 – 1996
Planning Process		
Duration	1990 – 1996 for plan and until 1998 for implementing agreements	1993 – 1999
Driving force	TBRPC, ABM, SWFWMD, FDEP	DEQ, ODF, Tillamook County
Program	EPA's National Estuary Program	EPA's National Estuary Program
Hiring entity for staff	TBRPC	Oregon State University
Nature of conflict	Low	Low
Nature of collaboration	High. Lot of activity focused on research, environmental monitoring, and public education.	Low. Limited by staff turnover. Mostly limited to research and public education
Implementation Activities		
Implementing organization(s)	Tampa Bay Estuary Program (TBEP)	Tillamook County Performance Partnership (TCPP)
Organizational arrangement	Independent alliance of government entities pursuant to FL statute	Intergovernmental partnership
Hiring entity for staff	TBEP	Tillamook County
Nature of conflict	Low	Low
Nature of collaboration	Habitat restoration, stormwater, public education, environmental monitoring	Habitat restoration projects and installing BMPs
Clear goals/policies	Yes/Yes. Goals and binding commitments for nutrient reductions	Yes/Yes. CCMP and TCPP have general goals but specific targets
Key regulatory agencies	FDEP, EPC, SWFWMD, and local governments	DEQ, ODA, and local government
Key funder of BMPs, restoration, & infrastructure	SWFWMD and local governments	ODF, NRCS, GWEB, Tillamook County
Outcomes		
Environmental improvements	H	M

Note: All assessments of high, medium and low are based on comparisons among the six programs

findings were then analyzed (Cook and Campbell 1979). Finally, we followed the techniques recommended by Rose (1993) when drawing lessons from this analysis.[5]

Collaboration

Collaboration is defined as any joint activity by two or more organizations intended to increase public value by working together rather than separately (Bardach 1998, 8).[6] Typically, this interactive process involves an autonomous group of actors who use shared rules, norms, or organizational structures to act or make decisions related to an issue or problem (Gray and Wood 1991, 146). The polycentric structure of our federal system creates numerous opportunities for collaboration, some of which are exploited while others are not (Ostrom 1994, 1989; Wright 1988; Elazar 1987). Bardach (1998) refers to potential or these opportunities to become engaged in collaborative activity as collaborative capacity. The first part of our analysis examined the extent to which this collaborative capacity was utilized in the watershed.

Collaborative Activities

Organizations often interact in permanent functional networks as well as temporary, project-based, and ad hoc networks (Mandell 1990) while managers are often involved in over-lapping networks that influence one another (e.g., Agranoff and McGuire 1998; and, Bressers, et al. 1995a). It is also clear that some collaborative activities are preparatory to others (Bardach 1998). Our analysis supports these observations. The actors in each watershed management program were engaged in a wide range of collaborative activities that were often related to one another and occurred at different levels of action. The different patterns of collaborative activity appeared to reflect several interrelated factors including the different institutional arrangements, the previous history of watershed planning, and a wide range of factors that influenced the willingness of the actors and organizations to collaborate. In order to organize our findings, the activities were grouped according to their level of action [Table 2]. This categorization is loosely based upon the three levels of action proposed by Kiser and Ostrom (1982).

Operational Activities

Organizations functioning at the operational level take direct action or adopt strategies for future action depending on expected contingencies. Basically, actors are free to take action without prior agreement of other actors (Kiser and Ostrom 1982). Accordingly, most of the direct activities of organizations such as permitting, planning, construction of environmental infrastructure, installation of best management practices (BMPs), public education, water quality monitoring, and issuing grants are operational level activities. These activities create opportunities for collaboration.

A wide range of collaborative activities occurred at the operational level [Table 2]. Many activities were project-based and of limited duration. Common collaborative activities were implementing best management practices (BMPs) and undertaking restoration projects. For example, a habitat restoration project might involve one organization providing the funding for land acquisition, another providing technical expertise, another doing the engineering or design work, another the construction or installation of the project, and another doing the maintenance

Table 2: Different Types of Collaborative Activities

Type of Collaboration	DIB	NBEP	SAMP	TBEP	TBNEP	TRPA
Operational Level						
▪ Restoration projects/BMPs	X	X		X	X	X[a]
▪ Actor hiring staff to work in another's office					X	X
▪ Develop/distribute educational materials	X			X		
▪ Training of local officials					X	
▪ Scientific/Technical research/guidance	X	X		X	X	
▪ Actor collecting information for another actor	X		X	X	X	
▪ Participating in other collaborative processes		X		X	X	X
▪ Collaborating on joint grant proposals	X	X		X	X	
▪ One actor issues another's permits			X			X
▪ One actor helps enforce another's regulations			X			X
▪ Regulator and actor collaborate to achieve environmental improvements			X	X[a]		X
Policy-Making Level						
▪ Identify priority sites for restoration/BMPs			X	X		X
▪ Identify priority sites for infrastructure						
▪ Adopt shared goals				X	X	X
▪ Adopt shared policies			X	X		X
▪ Memorandums of Understanding (MOUs)			X		X	X
▪ Data collection/distribution (e.g., monitoring)				X	X[a]	
▪ Report on joint implementation activities	X			X	X[a]	X
▪ Create a forum to discus technical issues	X			X		X
▪ Collaborative permit review process			X			
▪ Frequent meetings to share information and coordinate activities	X			X	X	
Institutional/Capacity Building Level						
▪ Create nonprofit organization	X					
▪ Create intergovernmental organization				X	X	
▪ Create federal-state compact						X
▪ Develop shared regulations (e.g., zoning)			X			X
▪ Incorporating collective choice policies into other constitutional level rules		X	X	X		X

X = undertaken; X[a] = Planned;

and site management. If volunteers were used, another organization may recruit, organize, and manage the volunteers. The Delaware Inland Bays, Tampa Bay, and Tillamook Bay programs all emphasized this form of collaboration to varying degrees. This type of activity will also be used to implement the $900 million Environmental Improvement Program (EIP) for Lake Tahoe.

Another type of collaborative activity was when one agency hired someone to work in another agency. In Tillamook Bay, the Oregon Department of Forestry (ODF) hired a fish biologist and a wildlife specialist from the Oregon Department of Fish and Wildlife (ODFW) to work entirely on habitat restoration in the Tillamook State Forest. This allowed the ODF to

increase its restoration efforts and improved communication between the agencies. In the ODFW, a private timber company pays for a staff member to work in private forests designing and implementing restoration projects. Project-level activities were not limited to the installation of BMPs or restoration projects. Collaboration was used to develop and distribute educational materials. In Tampa Bay, several actors collaborated to produce a boaters guide. The TBEP then distributed more than 100,000 copies of the guide though a partnership with county tax collectors, which distributed the materials to boat owners renewing their tags. The cases also have examples of collaboration in scientific research and developing grant proposals.

Another type of collaborative activity was when one actor collected information for another actor. In the Delaware Inland Bays, Salt Ponds, and Tillamook Bay, volunteer water quality monitoring programs collect information that is used to varying degrees by decisionmakers in other organizations. In Tampa Bay, local governments and regulatory agencies created a collaborative monitoring program. At the operational level, the programs share data and routinely swap samples to improve their quality assurance-quality control (QA/QC) procedures. In the Salt Ponds, the Coastal Resources Management Council (CRMC) and Rhode Island Department of Environmental Management (RIDEM) work together to ensure that the information submitted by permit applicants satisfies both agencies. This simplifies the permit process for applicants.

There are other examples of collaboration in regulatory programs. The CRMC worked with local building officials to get them to forward permit applicants to the agency and to report violators. The RIDEM historically relied on the CRMC to enforce its Section 401 Water Quality Certification under the CWA. Conversely, the CRMC relies on the RIDEM's OSDS permit to satisfy that part of the agency's technical review. Recently, the RIDEM began deferring its review of freshwater wetlands permits when the applicant was subject to the CRMC's review of tidal wetlands. In Lake Tahoe, the Lahontan Regional Water Quality Board and the Nevada Department of Environmental Protection (NDEP) defer their review of many activities to the Tahoe Regional Planning Agency (TRPA). The TRPA and the CRMC both meet with developers to discus ways that a project can be modified to address their concerns and minimize environmental impacts.

Policy-Making Activities

Frequently, these operational level activities were guided by collaborative activities at the policy-making level. The policy-making level is analogous to the collective-choice level proposed by Kiser and Ostrom (1982). This level involves the world of collective policy decisions that determine, enforce, continue, or alter the operational activities of some actors. It also includes the development of joint plans for future action. The activities may also serve to synthesize and add additional value to activities occurring at the operational level. Thus, these activities can serve to guide, constrain, or enhance operational level activities.

A wide range of collaborative activities occurred at the policy-making level [Table 2]. The activities often performed a "steering" function and focused on improved communication between the actors, coordinated action, and integrated policies such that each actor's individual actions (e.g., decision-making processes) advanced a common set of collective goals. Typically,

this occurred through the development of shared goals or policies that were contained in a formal document such as a watershed management plan. Tampa Bay developed measurable goals that committed the partners to meet specific nutrient reduction and habitat restoration goals. The Salt Ponds adopted density policies that limit development and nutrient loadings in the watershed. Environmental thresholds (goals) and development restrictions were also developed for Lake Tahoe. Tillamook Bay adopted a number of measurable targets for restoring salmon habitat and addressing pervasive NPS problems in the watershed.

In other cases, the partners agreed to new policies such as priority sites for habitat restoration or the installation of certain BMPs (e.g., Lake Tahoe, Salt Ponds, and Tampa Bay). In the Salt Ponds, the CRMC and local governments agreed on the areas that should be sewered to remove septic systems as well as areas that should not be sewered or have investments in infrastructure in order to limit development (e.g., undeveloped barrier beaches). Memorandums of Understanding (MOUs) were developed to formalize shared policies or norms and to guide collaborative efforts at the operational level. For example, Lake Tahoe used MOUs to delegate permitting authority to local governments while the CRMC and RIDEM used an MOU to coordinate their review of wetlands permits. Members of the Tillamook County Performance Partnership (TCPP) signed MOUs committing the partners to its goals while Oregon and ten federal agencies signed an MOU to provide the state with flexibility to address environmental problems at the watershed level.

A key determinant of whether these policy-making activities were effective appeared to be whether the actors developed the ability to monitor and enforce collective decisions, whether it was through a formal or legally binding process (e.g., regulation changes) or through peer pressure mechanisms, social norms, or social sanctions. In fact, we found that these informal rules were often an important mechanism for enforcing the voluntary and binding agreements that guided action at the policy-making and operational levels.

Informal social norms operated to varying degrees in all of the cases. In most cases, the social norms were positive and created a peer pressure system that encouraged implementation or provided informal sanctions for violating social agreements. Peer pressure also appeared to occur at different levels including the political, professional, and interpersonal level and many respondents reported that it provided an important stimulus for change and for adhering to the agreements made at the policy-making level. Activities that appeared to help develop and reinforce social norms that created peer pressure included regular meetings and interactions among the actors, development of joint work plans, and the frequent reporting (e.g., performance monitoring) on the efforts of the actors or the collaborative enterprise.

However, collaborative activities at the policy-making level were not limited to the development of shared goals, policies, and social norms. It also involved synthesizing information in a manner that added value for decisionmakers or enhanced the efforts occurring at the operational level. For example, Tampa Bay collects data produced by all of the environmental monitoring programs, synthesizes the information, puts it in a form understandable to decisionmakers, and reports on the progress towards the partner's collective goals. This type of activity is not limited to collecting environmental data. Delaware Inland Bays, Tampa Bay, and Tillamook Bay regularly report on the implementation activities of the

partners and the progress towards the goals. The TRPA conducts a threshold evaluation every five years to assess its progress towards its environmental thresholds. The collective reporting processes are important because they develop and reinforce the peer pressure mechanisms that create incentives for the partners to continue implementation activities. The reporting processes also stimulate policy-oriented learning that can serve as a catalyst for policy change (Sabatier and Jenkins-Smith 1999, 1993). For example, after two threshold evaluations producing less than satisfactory results, the TRPA developed the $900 million EIP to address the problem of declining lake clarity and improve progress towards other thresholds.

Other collaborative activities at the policy-making level included joint meetings and other routine interactions designed to improve coordination and communication between actors and to stimulate, legitimize, and enhance collaborative activity occurring at the operational level. This activity took many forms. Delaware Inland Bays and Tampa Bay have science and technical advisory committees (STACs) that developed during the planning process. Both have evolved into organizations in their own right that meet regularly.[7] Each STAC serves as a forum for improving communication among the scientific community and technical specialists working in government and NGOs. They also serve as a forum for agencies to go to for technical advice. Lake Tahoe has an Advisory Planning Commission (APC) that serves a similar function. In the Salt Ponds, the CRMC developed an informal permit review process where the agency meets with local officials, the developer, and on occasion the RIDEM while projects are still in the preliminary design stage to discuss the projects and applicable regulations. The collaborative organizations developed at the institutional level to oversee the implementation of the watershed management plans for Delaware Inland Bays (i.e., Center for the Inland Bays), Lake Tahoe (i.e., Tahoe Regional Planning Agency), Tampa Bay (i.e., Tampa Bay Estuary Program), and Tillamook Bay (i.e., Tillamook County Performance Partnership) also meet on a regular basis and serve as a forum for improving communication, coordinating actions, and finding opportunities for collaboration at the policy-making or operational level.

Institutional/Capacity Building Activity

The institutional/capacity building level is analogous to the constitutional level proposed by Kiser and Ostrom (1982). The institutional/capacity building level basically involves developing the rules that will govern policy-making and operational level activities. One of the main activities that occurred at this level was the development of new collaborative organizations, an organization whose membership consists of other organizations (i.e., a consortium). Organizing a collaborative organization is an institutional level activity because membership often carries consequences that constrain future policy-making and operational level actions on the part of its members. These constraints can be formal or legal requirements (e.g., Delaware Inland Bays, Lake Tahoe, Salt Ponds, and Tampa Bay) or may be based more on social norms and social sanctions (e.g., Salt Ponds, Tampa Bay, and Tillamook Bay) (the Salt Ponds and Tampa Bay are a mixture of both).

Every case involved at least one collaborative activity related to developing new institutions or building capacity to address environmental problems [Table 2]. In four cases (i.e., Delaware Inland Bays, Lake Tahoe, Tampa Bay Tillamook Bay) this involved creating a new collaborative organization where membership created certain duties, obligations, or expectations,

which were expressed formally (e.g., statute, MOU, Interlocal Agreement, etc.) or informally as social norms. The collaborative organizations often encouraged or guided individual or collective activities at the policy-making and operational level. Membership in the collaborative organization also served to constrain policy-making and operational activities by its members. For example, in Lake Tahoe and the Salt Ponds local governments gave up some control over zoning and land use decisions while in Tampa Bay, local governments committed to public expenditures for projects and activities designed to reduce nitrogen loadings and restore habitat. The development of collaborative organizations also improved the capacity for problem solving and provided institutional infrastructure that future planning efforts could build upon. In some cases, the collaborative organizations also become involved in other collaborative planning efforts to address problems in the watershed (e.g., Delaware Inland Bays and Tampa Bay).

The Delaware Inland Bays resulted in the creation of the Center for the Inland Bays (CIB), which is charged with overseeing the watershed management plan's implementation. It is a nonprofit organization chartered by the state legislature with a board of directors consisting of various organizations and public representatives. The CIB focuses on education, research, and restoration activities. As an organization, the CIB serves as a forum where different governmental actors and stakeholders can discuss issues, coordinate programs, and find opportunities for collaboration among the actors involved in managing the region's environmental problems. For example, the CIB worked with the DNREC to organize three tributary teams to develop strategies to implement the recommendations contained in the total maximum daily loading (TMDL) for the watershed. The CIB increased the capacity for public education and provides numerous opportunities for citizens to get involved with civic institutions whether it be through participating in habitat restoration projects, volunteer water quality monitoring, or efforts to develop the *Water Use Plan* and tributary strategies.

Tampa Bay developed an Interlocal Agreement that committed the partners to implement the CCMP and then created an independent alliance of government agencies pursuant to Chapter 163 of the Florida Statutes called the Tampa Bay Estuary Program (TBEP) (Khator 1999). The TBEP is engaged in a broad range of activities and has more clearly defined goals than the CIB. During the development of its watershed management plan, the partners created a new collaborative program that coordinates the region's environmental monitoring programs. The program has since been expanded to a larger area and is now called the Florida West Coast Regional Ambient Monitoring Program (RAMP). This improved the capacity and effectiveness of environmental monitoring programs in the region. The partners also formed the Nitrogen Management Consortium. It is a partnership between local government and industry to achieve the nitrogen reduction goals. Some local governments incorporated activities into their capital improvement programs (CIPs) to ensure that funding is allocated during the budget process and others added CCMP goals, policies, and recommendations to their comprehensive plans.

Tillamook Bay resulted in the creation of the Tillamook County Performance Partnership (TCPP). The TCPP is a collaborative organization consisting of both governmental and nongovernmental partners. It is modeled on the performance partnership concept advocated in the National Performance Review (NPR). It has no clearly defined legal status and is still in the early stages of development. However, the actors have agreed to a common set of goals and very specific targets that are measurable. The planning effort also resulted in the development of

the Tillamook Coastal Watershed Resource Center (TCWRC) that will further help to develop the capacity for local governments to address environmental problems at the watershed level.

Lake Tahoe developed a different institutional mechanism using a federal-state compact known as the Tahoe Regional Planning Agency (TRPA). The regional planning agency greatly improved the capacity for state and local governments to manage the watershed. Its policies serve as the zoning regulations for county and local governments and supplement state water quality regulations. Accordingly, the TRPA, local governments, and state water quality agencies rely on a common set of regulations and policies. The development of the TRPA and the associated political conflict spawned the development of a number of NGOs that provided additional institutional infrastructure and helped monitor the activities of the TRPA, encouraged the development of new programs (e.g., EIP), and stimulated collaboration among the actors.

The Special Area Management Plan (SAMP) developed for the Salt Ponds serves as a shared set of regulations. While it was developed, agreement was reached with the local governments so that they would simultaneously amend their zoning ordinances to be consistent with the plan's density and zoning requirements. The local governments incorporated these policies into their comprehensive plans while the SAMP is an element of the *State Guide Plan*, the repository of state policies. The Salt Ponds effort also led to changes in other CRMC regulations statewide and the development of improved local capacity for addressing environmental problems (Imperial 1999b).

Narragansett Bay has been engaged in less collaborative activity at the institutional level when compared to the other programs in our study. However, the Rhode Island Department of Administration's Division of Planning (RIDOP) did adopt the CCMP as an element of the *State Guide Plan*. Theoretically, this could produce changes in decision-making at the state and local level, although our investigation uncovered no evidence that suggests this occurred or is likely to occur. The implementation of the CCMP did result in the creation of a new program within the Rhode Island Department of Environmental Management (RIDEM). This has greatly improved the RIDEM's planning capacity and its ability to engage in collaborative activity. It also has improved the RIDEM's decision-making and improved its capacity for allocating grants pursuant to the Section 319 NPS program.

Value Added By Collaboration

Many factors influenced an organization's propensity to engage in collaborative activity. These included their culture (e.g., attitudes towards change), histories (e.g., past conflicts or collaborative experience), structure (e.g., formalization, centralization, task specialization), resources (e.g., slack resources, staff expertise and training, financial resources, organizational capacity), strategy (e.g., innovativeness, boundary spanning), and the symmetries or asymmetries of resources, power, and interdependence with other organizations (Alexander 1995; Hall 1995). Our focus here is not to examine these factors or propose a theoretical model to explain collaboration. Rather, we explore a more fundamental question: What public value is added as a result of these activities? Since collaboration is typically a voluntary activity, actors must "perceive" that benefits are associated with the activity or at least that there are relatively few costs or disincentives. If the actors do not "perceive" that public value is added as a result of

these activities they may be unwilling to incur the higher transaction costs that are almost always associated with these activities. Moreover, it is questionable whether collaboration should be used as an IGM strategy when public value is not added as a result of these activities.

Collaboration can add public value in many ways. It could increase efficiency, effectiveness, or improve the equity of a process. It could introduce a new program or change decision-making process such that the actors achieve their respective missions or allocate resources more effectively. It might also involve improve organizational capacity or allow technical specialization (Moore 1996, 10; and, Bardach 1998, 9). Indeed, our cases reveal a broad array of ways that collaboration added public value and also illustrate some of the potential ways that value is lost or costs are incurred.

Unfortunately, little research explicitly examines the question of how collaboration adds public value. This paper is designed to build on the Bardach's (1998) extension of Moore's (1996) work. Since collaboration is a multi-level phenomenon, public value can be added at three basic levels: institutional or network level; organizational level; and individual level. For example, a collaborative activity could help a group or "network" of actors make decisions more effectively, it could help a single organization or department within an organization make decisions more effectively, or it could help individuals within an organization make decisions more effectively. We also identified three general areas where public value was added. First, these activities had the potential for improving policy outcomes, which in this instance are improved environmental conditions. Second, the activities could improve institutional or network performance. We term this enhanced watershed governance. Finally, the activities could produce additional societal benefits such as improved social capital and an increased civil society. The following sections discuss each area where public value was added and briefly describe some of the potential costs that can be incurred.

Environmental Improvements

Of primary concern to many politicians and agency officials that provide the funding for watershed management programs was whether they resulted in additional environmental improvements. Given the lack of good environmental data and several methodological problems,[8] our analysis focused primarily on identifying those regulatory and nonregulatory activities used to implement watershed management plans that had some promise of improving environmental conditions, enhancing watershed governance, or producing other societal benefits. These included actions taken individually or collaboratively that offered some promise of direct (e.g., construction of sewers, installation of BMPs, and habitat restoration projects) or indirect (e.g., planning efforts, changes to regulations or decision making processes, public education) environmental improvements.

When viewed from this perspective, the watershed management programs generally were quite effective and involved in a wide range of implementation activities that were either collaborative in nature or were individual activities that were influenced by other collaborative activities. Some programs made substantial investment in environmental infrastructure such as the construction of sewers (e.g., Delaware Inland Bays, Lake Tahoe, and Salt Ponds) while others emphasized stormwater retrofits (e.g., Tampa Bay), habitat restoration (e.g., Delaware

Inland Bays, Lake Tahoe, Tampa Bay, and Tillamook Bay), and the installation of BMPs (e.g., Delaware Inland Bays, Lake Tahoe, and Tillamook Bay). Alternatively, some emphasized the education of homeowners (e.g., Tampa Bay) and farmers (e.g., Delaware Inland Bays and Tillamook Bay) to address NPS problems. All of the programs had some emphasis on land use planning, although the linkage to water quality management efforts was often limited. Several efforts (e.g., Delaware Inland Bays, Narragansett Bay, Salt Ponds, and Tillamook Bay) also relied on some form of water use planning to address environmental problems and user conflicts. The major accomplishments of each watershed management program and the main challenges confronting the actors in the future also involved at least some collaborative activity that was critical to achieving the accomplishments or addressing the future challenges [Table 3].

But the increase in public value extended beyond simply achieving environmental improvements. There was often "more bang for the buck" as a result of improved cost effectiveness and projects were often done "cheaper" by using volunteers. In other cases, projects got done that otherwise could not be accomplished or existing activities and resources were allocated more effectively, presumably yielding greater environmental benefits. These added environmental benefits associated with improved governance are described in greater detail in the following section.

However, two potential problems first deserve mention because they can limit the environmental improvements resulting from collaborative activities. First, since collaboration is typically a voluntary activity, it often is limited to activities where agreement can be reached. This means that the collaborative activities may not address the most pressing environmental problem in a watershed, which can limit the environmental improvements that are achieved by these efforts. For example, the Delaware Inland Bays only had limited success in addressing the watersheds two big problems, nutrient loadings associated with poultry growing activities and addressing increased residential development. In this instance, other strategies were also used (e.g., legislative action, regulation, etc.). Thus, collaboration will not be the most appropriate strategy for every environmental problem. Second, while individual projects may yield environmental improvements, the overall scope, scale, duration, or number of projects may be too small to make a significant difference. This problem was so apparent in Tillamook Bay that the actors coined the term "random acts of environmental kindness" to describe it. In Tillamook Bay, there are a lot of causes for the decline in the salmon. While individual projects provide some benefits they often are not of sufficient size, scope, or magnitude to remove the limiting factors causing the declines. Accordingly, a real challenge for many practitioners is to move collaborative activities from being "project focused" (relatively easy to do) to a mores systematic effort focused on solving specific problems (much harder to do).

Improved Watershed Governance

While the results in terms of environmental improvements were quite promising, most respondents pointed to other less tangible benefits when asked about the value associated with these activities. Our analysis revealed several interrelated ways that the collaborative activities described in Table 2 added public value in terms of improved watershed governance.

Table 3: Selected Accomplishments and Future Challenges of the Case Studies

Case Study	Accomplishments	Challenges
Delaware Inland Bays	▪ Hydrologic Unit Area (HUA) program ▪ Inland Bays Recovery Initiative ▪ Water Use Plan ▪ TMDL and tributary strategies ▪ $158 million in sewer infrastructure ▪ $13 million in land aquisition ▪ Restoration project at James Farm	▪ Center for the Inland Bays (CIB) is still a relatively new organization ▪ Agricultural nutrient loadings are still a major problem ▪ Revised compreensive plans in 1988 and 1997 but development continues ▪ CCMP is decreasing usefulness
Lake Tahoe	▪ Growth controls in the *Regional Plan* ▪ Devolution of permitting to local governments ▪ Joint lobying agenda with agencies and NGOs ▪ $900 Million Environmental Improvement Program ▪ Presidential Summit	▪ Unclear if funding for EIP will be obtained, particularly local government's share ▪ Unclear what is causing declining lake clarity
Narragansett Bay	▪ Greenwich Bay Initiative ▪ Designation of state as "no-discharge zone" for recreational boating ▪ Improved planning capacity in RIDEM	▪ Collection of projects not a program ▪ State provides no implementation funding ▪ CCMP is no longer used or viable
Salt Ponds	▪ Shared zoning policies that balanced tradeoffs among sewers and OSDSs ▪ Local environmental ordinances ▪ Prevented development of undeveloped barrier beaches	▪ Lack of program to do habitat restoration ▪ Lack of collaboration with RIDEM
Tampa Bay	▪ Interlocal Agreement ▪ Nutrient Management Consortium ▪ Efforts to coordinate monitoring programs ▪ State land acquisition programs ▪ Stable implementation funding	▪ Lack of linkage with land use planning ▪ Need to address localized water quality problems ▪ Need to bring in other local government and instustry partners
Tillamook Bay	▪ Tillamook County Performance Partnership (TCPP) ▪ Funding for BMPs in state forests ▪ Development of the Tillamook Coastal Watershed Resource Center	▪ Limited financial resouces at the county level ▪ TCPP is developing as an organization ▪ Flooding events distract public attention and resources from other NPS problems

Cost-Effectiveness

Many respondents noted that collaboration could improve cost-effectiveness at the organizational and interorganizational level. This included doing projects at less cost and undertaking projects that would not otherwise have occurred or would have taken longer to complete without collaboration. It also might involve allocating existing resources and expenditures more effectively to achieve greater environmental improvements at less cost to taxpayers. The habitat restoration plan developed by Tampa Bay is good example. It redirected projects occurring in the watershed around a common set of priorities that should lead to greater environmental improvements from current expenditures. The use of volunteers in habitat restoration and water quality monitoring is another way that a watershed management effort can accomplish more with less. Collaboration could also help reduce the costs associated with organizations that interact in a regulatory process. It can also help reduce administrative costs. The informal permit review process in the Salt Ponds, the increased regulatory flexibility resulting from the Interlocal Agreement in Tampa Bay, and the delegation of permitting in Lake Tahoe are excellent examples where this occurred.

The biggest obstacle confronting practitioners appears to be the actual and "perceived" transaction costs associated with the activities. Collaboration will inevitably increase coordination costs and create opportunities for strategic behavior such as turf guarding (Bardach 1996), rent seeking, shirking, and free riding. Managing these efforts can be difficult and requires a comprehensive set of skills. Volunteer efforts can also increase administrative costs associated with recruiting, organizing, and managing volunteers. Accordingly, many respondents reported being wary of collaborative activities when they perceived high transaction costs with few offsetting benefits. Others noted that "collaboration" was sometimes viewed as an end in and of itself and noted that in some cases there was no need to collaborate to achieve the same outcomes.

Improved Decision Making

Collaborative activities can improve decision making at all three levels. At the individual level, the information produced by collaborative activities (e.g., research projects, education activities, plans, performance monitoring, etc.) could improve the decision making of individuals within organizations. At the organizational level collaborative activities could lead to better-designed restoration projects (e.g., Tampa Bay and Tillamook Bay), better regulatory decisions (e.g., Salt Ponds and Tampa Bay), and better funding decisions and resource allocation (e.g., Tampa Bay). At the interorganizational level, collaboration can improve collective decision making through improved communication (e.g., Delaware Inland Bays, Tampa Bay, Tillamook Bay), policy integration (e.g., Lake Tahoe, Salt Ponds, Tampa Bay, Tillamook Bay), and policy-oriented learning (examples in all of the cases).

However, a number of problems limit the ability to create this type of public value. Many organizations (governmental and NGOs) are created to protect specific constituencies or advance specific interests and resist change or fear getting co-opted by the collaborative process. Conversely, collaboration could involve bargaining to the "lowest common denominator" such that no actor's interests are threatened. The consequence of this activity may be that the

proposed action is no longer sufficient to solve the problem in question. Asymmetries of information, power, or resources can also give one organization control over the effort or allow it to "exit" the process and act on its own, thus undermining the collaborative activities.

Leveraging Resources

Collaboration can also leverage new resources. At the organizational level, respondents in numerous state and local agencies reported that collaborative activities led directly or indirectly to additional funding, staff, information, legal authority, political support, or other resources that improved the implementation of existing programs. In some instances, leveraging resources expanded involvement in other collaborative activities (e.g., Trenholm 1998). For example, the development of shared goals and priorities at the policy-making level helped improve an actor's ability to obtain discretionary grants to conduct additional implementation projects that were also collaborative in nature. At the interorganizational level, collaborative activities often allowed the actors to leverage each other's policy networks and lobby more effectively. The best example of this was in Lake Tahoe. Once the actors who had traditionally been in conflict with one another found some areas where they could work together they were much more effective in lobbying Congress and the respective state legislatures, as evidenced by the preparation of an annual Lake Tahoe Joint Federal Legislative Agenda and the commitments that have been made to implement the EIP.

The potential downside was evident in cases such as the Delaware Inland Bays, Narragansett Bay, and the agricultural portion of the Tillamook Bay watershed where heavy reliance on federal funding for implementation efforts often meant that federal funding priorities drove implementation more than the collective priorities of state and local officials. Moreover, heavy reliance on leveraging as an implementation strategy made it difficult to move beyond a project-level focus to a systematic effort to solve specific environmental problems. This increased the potential for "random acts of environmental kindness" noted earlier.

Policy Innovation and Change

Regular interactions with other individuals and exposure to new communication channels also meant that collaboration could be an important source of policy innovation (Rogers 1995) and policy-oriented learning (Sabatier and Jenkins-Smith 1999, 1993) at the organizational or interorganizational level. There were many examples where collaborative activities led to policy innovations that were then diffused to other organizations and regions outside of the watershed. Most of the watershed management plans included goals, policies and recommended actions and the partners in these efforts often adopted these innovations. Some of the policies developed for the Salt Ponds were implemented by the CRMC on a statewide basis. The Florida Yards and Neighborhoods program and efforts to coordinate local environmental monitoring programs diffused to other regions. Collaborative activities resulted in demonstration projects that were designed to develop and test new policies, programs, or technical innovations. Almost all of the cases contain examples of the type of policy-oriented learning that are observed by Sabatier and Jenkins-Smith (1999, 1993) or the type of social learning discussed in the environmental policy literature on adaptive management (e.g., Lee 1995, 1993; Holling 1978; and, Gunderson, et al. 1995). This type of learning appears to be particularly evident in the watersheds where there is a

history of prior watershed planning activities (Delaware Inland Bays, Lake Tahoe, Tampa Bay, and Tillamook Bay).

However, there appear to be limits on the degree of innovation and learning that occurs. Enabling legislation and constraints placed on agencies by the budget process may limit their ability to adopt new policies or programs. Policy change may require political costs that agency officials are unwilling to incur. Finally, some organizations and the individuals within them will be more innovative than others will (Rogers 1995).

Capacity Building

Many of these improvements in watershed governance are related to capacity building at the organizational and interorganizational level (Malysa 1996; King and Olson 1988; Honadle 1981). The collaborative activities noted in Table 2 often helped expand the capacity of the organizations and collaborative organizations to: provide additional services or improve service delivery; improve decision making; allocate resources better; select and develop administrative and institutional mechanisms to enhance or expand existing programs and implementation efforts; attract necessary inputs such as financial resources (i.e., leveraging); perform necessary policy, resource, and program management; improve performance monitoring; identify problems, develop and evaluate policy options, and administer programs to implement these policies; perform required duties and legislative requirements; and survive and flourish (Malysa 1996, 206). For example, the activities helped streamline the permitting process in Lake Tahoe. They also improved resource allocation in Tampa Bay, enforcement in the Salt Ponds, and performance monitoring in Lake Tahoe and Tampa Bay. It helped the actors in the Delaware Inland Bays undertake new collaborative activities such as habitat restoration and public education while in Narragansett Bay it improved the capacity of the RIDEM for planing and collaboration. Moreover, the development of new collaborative organizations in Delaware Inland Bays, Lake Tahoe, Tampa Bay, and Tillamook Bay helped improve the capacity for collaboration at the interorganizational level.

Aside from the problems discussed in previous sections, the biggest potential problem created by these capacity-building activities was that sometimes they did not occur in the areas where capacity was most needed. For example, the Delaware Inland Bays improved the capacity for collaborative activities in the areas of research, education, and habitat restoration. It has been less effective in improving the capacity for addressing the more pressing problems of increased residential development and nutrient loadings from poultry operations. Moreover, the ability to build capacity is constrained by the capacity that currently exists. For example, the lack of capacity in local institutions in rural watersheds such as the Delaware Inland Bays and Tillamook Bay directs capacity building to more fundamental activities such as developing new programs or developing the ability to engage in collaborative activity. Meanwhile, in well developed institutional environments such as Tampa Bay there are more opportunities for working together and a broader range of capacity building activities appeared to result.

Job Satisfaction and Motivation

A final source of public value that deserves mention occurs at the individual level. Many respondents noted that collaborative activities often improved job satisfaction and motivation. Some respondents noted that they enjoyed collaborative activities because they let them use talents that they did not utilize in current job assignments. Other respondents reported that they enjoyed the personal relationships that developed as a result of these activities. Satisfaction was also derived from the additional environmental improvements achieved and the fact that the collaborative efforts often broke down the political and bureaucratic barriers between agencies; frequently a source of frustration for respondents. Since these benefits appeared to improve motivation, it is reasonable to suspect that it could improve the productivity and performance by the workers engaged in these activities.

However, it was also clear that collaboration was a source of decreased job satisfaction and motivation for other workers. Some respondents simply noted that they did not want to "make new friends" and just wanted to do their job and go home at the end of the day while others reported that they disliked the "endless meetings" and political nature of collaborative activities. Moreover, some respondents noted that their agencies did not have a "culture of collaboration" and the upper management often failed to reward or recognize the successes of collaboration in the same ways it did other core agency functions. Complicating matters further was the fact that collaboration often entailed increased risk of failure since the effectiveness of the activity was often beyond the control of a single organization. All of these problems can create serious disincentives for staff to become engaged in collaborative activities.

Societal Benefits

Many respondents also pointed to other societal benefits associated with collaborative activities. These benefits are even more abstract and intangible than those associated with improved watershed governance. We have loosely categorized these sources of public value as increased social capital and improved civil society.

There are a number of ways that collaborative activities can build social capital. One of the most frequently cited benefits of the watershed management programs and the collaborative activities was increased trust. Trust often improved between individuals working in different organizations as well as between organizations. It is also possible that some public trust in the government institutions increased as a result of increased interactions with government institutions. Increased trust was important because many respondents reported that it led to improved communication between individuals and organizations. The trust or social capital could also be built upon in subsequent collaborative activities. This probably helps explain our observation that collaboration often begets future collaboration in that there often appears to be a trial and error learning processes involved. As actors learn to work together and trust develops, the actors are often willing to expand the range of collaborative activities that they are involved in. Trust is also an important component of the social norms, social sanctions, and peer pressure mechanisms that are an important component of these collaborative activities.

The other important source of social capital appears to be the development of institutional infrastructure. Just as future collaborative activities build on the trust developed between individuals and organization as a result of previous activities, developing new institutions (e.g., new policies and collaborative organizations) allows subsequent individual and collaborative efforts to build upon this institutional infrastructure. For example, the development of shared priority sites for habitat restoration allowed Florida's land acquisition programs and other funding agencies to link their funding priorities to those in the habitat restoration plan. The development of a new collaborative organization also creates another vehicle for protecting the interests and constituency affected by the problems in the watershed.

Another important source of public value noted by many respondents was that the collaborative activities often create numerous opportunities for civic involvement in government institutions and volunteerism. The collaborative organizations provided opportunities for public input at meetings. Many implementation activities involved new planning efforts that relied on citizen involvement with the efforts to develop a Water Use Plan and tributary strategies in the Delaware Inland Bays being just two examples. Several programs utilized volunteer water quality monitoring programs (e.g., Delaware Inland Bays, Salt Ponds, and Tillamook Bay) while other utilized volunteers in specific restoration projects (e.g., Delaware Inland Bays, Tampa Bay, and Tillamook Bay). These activities appeared to be particularly important in rural areas like Delaware Inland Bays and Tillamook Bay where local government institutions are less developed and there is a heavily on volunteer involvement.

While increased social capital and improved civil society can be an important source of public value, they also have a corresponding set of costs. Collaborative activities can generate trust but they can also lead to distrust as well. It also appeared that a negative experience had a more profound effect on respondents than a positive effect. In other words, a positive experience may not be a strong rationale for becoming engaged in collaborative activity in the future but a negative experience was often used to justify not being engaged in an activity. Another potential negative is when the public is involved in or exposed to interagency conflicts and turf fights. This could serve to generate a negative view of government institutions or reinforce damaging stereotypes about bureaucracy and government. Finally, while citizen involvement in government institutions and volunteerism are important values, there is a corresponding administrative cost associated with providing the opportunities and recruiting, training, and managing the volunteers.

Using Collaboration as a Strategy for IGM

Our analysis identified several lessons about the role that collaboration plays in watershed management. One lesson was that collaboration was best used when collaborators faced a common shared problem or there was an agreed upon a proposed policy solution or implementation activity that advanced the mutual interest of the potential collaborators, or at least it did not create significant costs. In other words, it appears best used in win-win or win-no lose situations. This necessarily implies that collaboration is strategic in nature. Moreover, in order to maintain collaborative relationships, collaborators had to be willing to agree to disagree in the areas where there was disagreement and be willing to respect these differences.

It was also the case (e.g., Lake Tahoe, Narragansett Bay, Slat Ponds, Tampa Bay) that actors who were in conflict in other policy areas often found important ways to work together to address common problems. Therefore, it was clear to us that a history of prior conflict among potential collaborators was surmountable. Often this was achieved by finding the type of win-win and win-no lose situations noted above and by linking different aspects of a common problem (e.g., environment, transportation, economic development, affordable housing, etc.) in ways that built support and created perceived benefits for collaborating that exceeded the potential costs. Thus, it is similar in nature to the process of coalition building.

Because collaboration is limited to issues of mutual interest, it often has limited utility in addressing controversial issues. Practitioners should recognize that collaboration might not be an effective strategy for addressing the most significant problems in a watershed. In some cases the nature of the problem and the actions required to address the problem might prevent the type of win-win or win-no lose situations noted above without bargaining to the lowest common denominator and developing ineffective policy proposals. In these instances, unilateral action (e.g., adoption of regulations), litigation, or lobbying may be more effective. Thus, a clear lesson was that collaboration was not an effective strategy for addressing all environmental problems.

Since collaboration is typically a voluntary activity, there also have to be incentives for organizations and the individuals within them to collaborate. Incentives can operate at three levels. At the interorganizational level, the history of existing relationships, political pressure, and organizational resources (e.g., budget, staff, etc.) appear to influence an organization's willingness to collaborate with other organizations. Asymmetries of power, information, and resources create other incentives or disincentives. For example, participation may provide an opportunity to influence another organization or gain necessary information or resources. However, asymmetries can create options for an organization to exit the collaborative process or to control the work of the collaborative group (e.g., TMDL lawsuits, using political power, using existing legal authority, etc.). These "exit" options can disrupt collaborative relationships and increase transaction costs.

At the organizational level, there must also be incentives for collaboration and a "culture of collaboration" that supports and rewards organizational subunits for these activities. Many respondents suggested that the failure to reward organizational subunits or punishing them when collaboration reduces resources available for core programs are important disincentives for collaboration. Other respondents suggested that top management is sometimes reluctant to share credit or is primarily focused on environmental improvements rather than recognizing the other types of public value added as a result of these activities. Collaboration is also an inherently risky endeavor since organizations lose control over whether a project succeeds when the activity's success become dependent on the actions of others.

Organizations are also some measure of the individuals that work within them. Some individuals will be drawn to collaborative activities because it increases job satisfaction while others resist participating because they dislike the activities. Motivational factors such as increased workload and higher stress coupled with no corresponding increase in pay or recognition by upper management can be a strong disincentives for participating in collaborative

activities. Previous histories of interpersonal relationships (e.g., trust, personal dislikes, etc.) can also serve as incentives or disincentives to cooperation.

However, even if there are positive incentives, organizations must have the capacity to collaborate. This requires slack resources (e.g., financial, staff, etc.) that can be devoted to these activities. If no organization can do more then send staff to a meeting, then it is unlikely that the group of organizations can accomplish much. The more successful collaborative efforts proved to be those that had staff to support the group's work. It also appeared that stable funding was important as was flexibility in how the funds could be used. Otherwise the priorities of the funder (e.g., federal government) drove collaborative efforts instead of state and local priorities.

There were also many examples of where collaboration occurred in a "nested" fashion, with a collaborative organization developing shared policies that guided operational activities and some collaborative activities leading to subsequent activities. Different actors or individuals within an organization may be involved in the activities that occurred at each level. Politicians and agency heads may be involved at the institutional level, line managers at the policy-making level, and line staff at the operational level. However, collaborative activities need not occur in a "nested" fashion and may be unconnected with one another. It is also possible that collaborative activities will be located at only one level. For example, in Narragansett Bay the effort never achieved much more than operational level collaboration. The lesson this suggests to us is that practitioners interested in encouraging a wide range of collaborative activities that systematically addresses specific problems should consider using a nested arrangement. Nested arrangements also appeared to increase the capacity for performance monitoring and created the accountability mechanisms necessary to sustain the collaborative effort over time while at the same time encouraging policy-oriented learning through repeated interactions and monitoring efforts.

The polycentric structure of our federal system and the incremental development of a complex environmental governance system over the last 30 years also creates a great deal of collaborative capacity in most watersheds. Collaborative capacity is likely to be greater in institutionally rich environments such as Tampa Bay where well-developed agencies and NGOs with greater slack resources exist and there are stable and diverse revenue sources that can be devoted to these activities. The collaborative capacity in the intergovernmental system may also more evident as a result of the increased specialization of programs and the overlapping nature of the programs creates ongoing interactions between programs. Conversely, in less developed institutional environments with limited overlap between federal, state, and local institutions collaborative capacity may be more limited. Delaware Inland Bays lacked much of the institutional infrastructure at the disposal of the actors in Tampa Bay and their efforts focused more on capacity building and creating opportunities for interaction to help expose the collaborative capacity that existed and to create new capacity. However, while the nature and scope of collaboration in each watershed was different, a common observation was that collaboration often followed a trial and error process. Practitioners started small and gradually expanded the scope and scale of collaborative activities over time as they discovered new ways to add public value and the culture of collaboration became established within and across the organizations involved.

Summary and Conclusions

The heavy reliance on collaboration suggests that "watershed management" should be viewed as an exercise in intergovernmental management (IGM) rather than an effort to create a new government programs to "manage" a watershed. Perhaps this is best demonstrated in the fact that many of the recommendations in the watershed management plans focus on ways to improve how the existing portfolio of government programs functions and interacts with one another. We do not find this surprising given the intergovernmental nature of the policy problems the watershed management programs focused on. Enhancing the way government addresses these problems will often require collaboration among different organizations at different levels of government with NGOs and private citizens playing constructive roles.

There were also encouraging signs that each watershed management program led to environmental benefits. However, the greatest public value could lie in the more intangible ways that the activities enhanced watershed governance and produced other societal benefits. Unfortunately, Congress, state legislatures, and many federal and state officials are primarily concerned with the environmental improvements associated with these efforts rather than recognizing the other important ways that these activities add public value. We believe that this is inappropriate for two reasons. First, it causes the public officials to underestimate the public value attributable to watershed management programs. Second, greater recognition of the other forms of public value would create additional incentives for practitioners at the state and local level to become engaged in a wider range of collaborative activity.

While collaboration can be a useful strategy, it is not the only strategy. Unilateral action by agencies, legislative action, legal action, grass roots lobbying, and other activities will always have an important role to play. We do not count ourselves among the "true-believers" that view collaboration as some sort of magical elixir that will cure all governance problems and certainly do not view collaboration as an end in and of itself. Rather, collaboration should be valued only if it produces better organizational performance or lower costs than can be achieved without it. Accordingly, we join Bardach (1998, 17) in offering the following advice:

> "We should not be impressed by the idea of collaboration per se. That collaboration is nicer sounding than indifference, conflict, or competition is beside the point. So, too, is the fact that collaboration often makes people feel better than conflict or competition. I do not want to oversell the benefits of interagency collaboration. The political struggle to develop collaborative capacity can be time consuming and divisive. But even if no such struggle were to ensue, the benefits of collaboration are necessarily limited."

Even the most imaginative practitioner will be constrained by the realities of a federal system that places government organizations at the federal, state, and local level in conflict with one another. These organizations often represent different constituencies and have competing or conflicting values and missions. Moreover, there will always be an underlying tension about whether federal, state, regional, or local government priorities should govern decision making at the watershed level. Because these fundamental conflicts exist, there will always be limits on how much different organizations are, or should be, willing to sacrifice for the sake of collaboration, no matter how noble the goal. Moreover, no amount of creativity will overcome

the shortage of resources (e.g., staff, money, etc.) that is an obstacle to government action or eliminate the constraints that exist due to the manner in which federal funding is allocated to address environmental problems (Bardach 1998, 17).[9]

Accordingly, while the portfolio of government programs addressing problems such as NPS pollution and habitat loss and degradation creates opportunities for collaboration, there will be limits on how much of this collaborative capacity practitioners can or should be willing to utilize. The challenge for practitioners is to find opportunities for collaboration that add public value, enhance the operation of existing programs, and better achieve their organization's mission while at the same time minimizing the problems and transaction costs resulting from these activities. Practitioners are therefore cautioned to use collaboration wisely. When used incorrectly or in inappropriate situations it can cause more problems than it solves.

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Endnotes

[1] For more discussion about intergovernmental management and its applications see: Agranoff 1996; Agranoff and McGuire 1999a, 1998; Radin, et al. 1996; Gage and Mandel 1990.

[2] We should note that our interest in this study is primarily on the role that collaboration plays in implementing watershed management plans. All of the cases relied on some form of participatory planning process, which is itself an IGM strategy.

[3] Our final report to the Academy and the supporting detailed technical reports (i.e., case studies) provide additional information and documentation to support the findings described in this paper. For more information see: Hennessey and Imperial 2000a; Imperial 2000a, 2000b; Imperial, et al. 2000; Imperial and Hennessey 2000; Imperial and Summers 2000; and, Kauneckis, et al. 2000.

[4] Imperial worked as a research assistant with the CRC from 1989 to 1991. The author worked as a policy analyst for the CRMC from 1991 - 1994. Both of these actors had involvement in the two Rhode Island case studies. Hennessey has also been involved in projects with the CRC that was involved in both case studies.

[5] Additional documentation and discussion of the research design can be found in our final report to the Academy (Imperial and Hennessey 2000).

[6] Our definition is somewhat broader than Bardach's (1998) and explicitly includes nongovernmental organizations (NGOs) who are often involved in these activities as well.

[7] Tillamook Bay also had a STAC but it was never able to move beyond serving as an advisory committee during the planning process.

[8] For a detailed discussion of these methodological problems and a discussion of the actual changes in environmental conditions in these watersheds see Imperial and Hennessey (2000).

[9] For a discussion of these funding problems and the constraints they place on watershed management efforts see Imperial and Hennessey (2000).

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