

ESTABLISHING EFFECTIVE CATCHMENT MANAGEMENT TEAMS

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(Email william.magette@ucd.ie)***ABSTRACT**

The Chesapeake Bay in the eastern United States is that country's largest estuary, with a catchment basin extending from Virginia in the south to New York in the north. From the 1950's deteriorating water quality and loss of aquatic resources in the estuary had been documented. Despite significant efforts since 1983 to restore the Bay, progress had been minimal by the early to mid-1990's. To speed the restoration, a strategy for conveying ownership of pollution problems and solutions in the Bay to local citizens, businesses and governments began with the development of local tributary strategies. This paper provides a retrospective look at the development of the Middle Potomac Tributary Strategy Team from its inception through its first year of existence. This team was one of 10 such voluntary teams established in the state of Maryland to help implement the tributary strategies. Through a retrospective review of the organisation process and activities undertaken by this catchment management team, this paper offers valuable suggestions for forming effective multi-organisational teams to achieve catchment scale water quality management.

Keywords: Catchment management, diffuse pollution abatement, point source pollution control, team building, water quality management

INTRODUCTION

The Chesapeake Bay is the largest and most economically important estuary in the United States, having a catchment of 165,760 km² that includes 6 states (New York, Pennsylvania, West Virginia, Maryland, Virginia and Delaware) plus the District of Columbia (Washington, D.C.). The Bay catchment has a population in excess of 13 million persons, and it is estimated that each person lives within 0.8 km of a stream or river that eventually discharges to the Bay. These riverine discharges carry the pollutants arising from human activity. Since the 1950's, various studies documented a decline in water quality throughout the estuary's waters.

In 1976, the U.S. Environmental Protection Agency (USEPA) began an intensive 6-year study of the Bay that documented alarming trends not only in water quality, but also in important living resources such as submerged aquatic vegetation, oysters and crabs. In short, the Bay was shown to suffer from eutrophication by nutrients (nitrogen and phosphorus), with the concomitant loss of aquatic habitat and living resources. As a result of these studies, a historic agreement was made in 1983 between the states of Maryland, Virginia and Pennsylvania, the District of Columbia and the U.S. Government pledging a co-ordinated and co-operative approach to improving water quality in the Bay and its tributaries. Following a review of progress toward achieving the 1983 Bay "cleanup" goals, the same governments signed another Bay agreement in 1987, renewing their commitment to reducing discharges of nutrients into the Bay and thereby improving water quality. On foot of mathematical modelling, the 1987 Bay Agreement contained a commitment to reduce by 40% of their 1985 values, the quantities of nitrogen (N) and phosphorus (P) entering the Bay from a combination of point and diffuse sources.

The numerical target contained in the 1987 Bay Agreement, though arguable scientifically, provided a measurable goal against which to compare pollution abatement achievements. In 1992, amendments to the 1987 Agreement reaffirmed the 40% nutrient reduction goals, and also emphasised the importance of tributaries (*i.e.*, watercourses of sub-catchments within the Bay catchment) as focal points for nutrient control activities. In 1993 and 1994, panels of experts comprised of scientists, citizens, and government used public meetings, focus groups and other techniques to develop nutrient reduction strategies for implementation within the major Bay tributaries. In broad terms, these catchment (*i.e.* tributary) strategies recommended:

- educational programmes targeted at homeowners;
- improved enforcement of existing pollution abatement regulations;
- practices that had environmental benefits in addition to nutrient loss reductions; and
- control options that would be cost-effective and site-specific.

The State of Maryland, 97% of whose land drains into the Chesapeake Bay, defined 10 sub-catchments (tributaries) based on geomorphic, rather than political, criteria. Further, the State, stipulated that "tributary implementation teams" would be established to:

- develop and revise implementation plans to meet nutrient reduction goals;
- monitor implementation of strategies to help the process proceed in a timely, fair and flexible manner;
- co-ordinate co-operation among citizens, regional (*i.e.*, state) government, and local government;
- identify and communicate to relevant government agencies any problems, needs and concerns related to the strategy implementation process, and possible solutions; and
- promote the nutrient reduction strategies to the public through awareness and educational activities.

The formal reliance, in a near-partnership arrangement, of government on these local implementation teams to help achieve broad environmental targets was unique at the time. Almost simultaneously, however, the USEPA promoted a catchment-based approach to water quality management (Anonymous, 1996). This approach has also been adopted by the European Union as a fundamental principle in the Water Framework Directive. To a limited extent, the use of catchment-based water quality management has been undertaken in the Three Rivers Catchment Monitoring and Management Scheme in Ireland (Byrne *et al.*, 2002).

From a European perspective, given the importance placed in the Water Framework Directive on catchment-based water resources management, it is worth noting the successful elements of tributary implementation teams in the State of Maryland. The focus of this paper is on the start-up process during which teams were formed and began working. The illustrations that will be given pertain mostly to the Middle Potomac Tributary Team, for which the author served as first chairman.

METHODS

The Middle Potomac Catchment

The Middle Potomac Catchment is a portion of the Potomac River basin, itself a catchment of some 36,260 km² that drains parts of three states (Maryland, Virginia and Pennsylvania). The Middle Potomac part of this vast catchment encompasses the greater metropolitan area of Washington, D.C., the American capital. With a population of 1.3 million living in this sub-catchment, point sources (municipal wastewater treatment plants) were the major source of nutrients to the river. However, diffuse sources (agriculture and construction) of nutrients and eroded soil were also important.

Due to its location, the Middle Potomac catchment had a somewhat unique demographic composition that included a larger than normal proportion of full-time politicians (local, regional and national), members of the legal profession, and high-income earners. However, the population was racially mixed and also included inner city poor, farmers, and “average” people from all walks of life. Due to its proximity to Washington, D.C., the Middle Potomac catchment was also home to a variety of national non-governmental organisations (NGO’s) with strong environmental interests.

Team Selection, Terms of Reference and Start-up

The Office of the Governor of Maryland, working with local governments, selected and subsequently appointed the members of the Middle Potomac Tributary Team. Selection criteria included candidates' previous involvement in environmental issues (particularly those related to the Chesapeake Bay) and / or leadership of important stakeholder interest groups (including local government). Each person was an outspoken advocate for the stakeholder group they represented.

There were no rules of organisation for the team, nor for how it was to conduct its business, and there was no plan for how the team might discharge its responsibilities. There were only broad guidelines about team objectives and responsibilities, articulated in the terms of reference for all teams that were drafted by the Office of the Governor of Maryland in concert with state-level environmental management agencies. The team's brief was to:

- identify actions needed in implement previously drafted tributary strategies for the reduction of nutrient discharges in a timely and equitable manner;
- develop an educational strategy to enhance voluntary implementation of and promote understanding of tributary strategies;
- facilitate the implementation process by acting as a catalyst through advocacy, independent oversight, co-ordination and networking activities; and
- publicly report on implementation progress.

The tributary team had no authority to:

- become embroiled in site-specific controversies within the catchment;
- enforce or modify laws or regulations; or
- require actions to be taken by property owners or state or local government.

All organisational details had to be worked out within the team under the leadership of an interim chairperson selected by the Governor of Maryland. In essence, a team created on paper had to become a team in reality, with shared goals and a team spirit to accomplish these. The nominal group process (NGP) was used to bring members together, to develop ideas about what needed to be accomplished, and to make decisions and set priorities about the work to be done. An atmosphere of mutual respect was established at the outset so that all members could speak freely without censoring ideas *a priori*.

RESULTS AND DISCUSSION

Initial Start-up

The original membership of the Middle Potomac Tributary Team is shown in Table 1. As shown in Table 1, the membership consisted of local government representatives (both elected and civil servants), environmentally active private citizens without any defined stakeholder group, environmental NGO's, semi-governmental bodies (both national and local in scope), and private business. The makeup of the team reflected the political philosophy of the Office of the Governor that the electorate and their representatives should work together in the area of environmental management, particularly given the interdependence of environmental management, population / growth management, and economic management.

One salaried employee of a state agency was appointed to be a non-executive member of the team for purposes of facilitating the team's activities, and importantly, for assuring access of the team to key government officials.

Table 1. Original membership of Middle Potomac Tributary Team (1995-96).

Name	Affiliation / Stakeholder Group
V. Greenfield	County government environmental protection agency
S. del Giudice	County government county councillor
C. Wiegand	County government water resources management office
D. Lake	County government water and wastewater management
P. Haddon	County government planning office
D. Motta	Regional parks and planning commission
T. Allen	State government Chesapeake Bay liaison office
S. Strauss	City government
P. Folkers	City government, assistant city manager
G. Lechluder	State level farmers' organisation
M. Rea	County level rural resources management agency
J. Criss	County level agricultural liaison office
M. Giles	Private interest, engineering consultancy
D. Murray	Private interest, engineering / planning consultancy
M. Price	Local businessperson
S. Elmendorf	Private interest, legal profession
J. Glaes	Citizen
N. McDonald	Environmental non-governmental organisation
J. Davis	Local church leader
N. Fitzpatrick	National wildlife non-governmental organisation
W. Corkern	Local environmental education foundation
J. Clarke	National environmental non-governmental organisation
R. Ragan	University professor
W. Magette	University professor (team chairperson)
J. Wolfe	U.S. Army Corps of Engineers
A. Nemura	Metro Washington Council of Governments
C. Jones	Regional water and wastewater management agency
N. Baig	National parks and planning commission
C. Haywood	Interstate commission on the Potomac River
M. Atkin	Citizen
D. Lucid	State agency employee appointed (and paid) to facilitate work of the tributary team

It is important to note that although membership on each tributary team was strictly by gubernatorial appointment, the teams were nevertheless voluntary organisations. No one except the facilitator appointed by state government was paid for his / her work on the tributary team. The decision by central (*i.e.*, state) government to utilise *voluntary* tributary implementation teams to help reach nutrient reduction targets was a radical departure from the traditional "top down" approach to environmental management in Maryland. Prior to embarking on the tributary team approach (both for setting nutrient reduction targets and implementing them), the State of Maryland followed what Godschalk *et al.* (1994) called the "conventional" decision-making process for environmental management (and other) activities:

- Plan (in closed sessions)
- Announce the Plan (at public hearings or legal notices)
- Defend (take on board input from affected interest groups)
- Re-plan (go back to the drawing board, repeat the cycle)
- Implement

In some ways, the Middle Potomac Tributary Team resembled a team in any group sport. Indeed, much like individual players on a sports team, each member of the tributary team possessed special skills regarding environmental management. However, unlike the members of a sports team, members of the Middle Potomac Tributary Team came to the team with different agendas and generally, widely divergent views (based on the stakeholder group they represented) about water quality management. There were significant differences about what course of action was necessary to achieve the Chesapeake Bay (and local) nutrient reduction goals.

These views became apparent through the nominal group process used during the initial meetings of the tributary team. Monthly meetings were held of 2-3 hours duration each, typically at the end of the normal working hours. Due to the expanse of the catchment area, the venues for meetings rotated in an effort to minimise inconvenience to the same group of members each week.

The very first meeting of the Middle Potomac Tributary Team proved to be extremely significant in setting the stage for team development. This meeting had every potential to be chaotic, as it brought almost 30 strong personalities together, each having widely different views on how to approach a problem. The behaviour of individual members reflected their past involvement in environmental management, which had been very political and fraught with disappointment and frustration. Thus, members came to the first meeting with very definite opinions to express, and very definite ideas about what needed to be accomplished.

Much time was needed for a “venting” process to occur. The interim chairperson allowed this process to occur under strict “ground rules” that individuals would be respectful, courteous and non-confrontational. At the very beginning, a meeting environment was created in which every genuine viewpoint was considered relevant, and every team member could speak freely and honestly, knowing they would have the attention and respect of other team members. Although it took several months for a team spirit to develop, creating the conditions for the mutual respect of diverse viewpoints was a crucial first step that allowed the team to coalesce.

Developing Consensus

At the very first meeting, the interim chairperson also presented for consideration possible models of organisation and operation. After considerable debate, the membership ultimately voted to organise themselves into various "issue groups", each of which would take responsibility for explore specific issues and preparing recommended courses of action for the entire team's consideration.

Through the nominal group process, ideas were solicited from members about what activities the team should pursue in order to accomplish its brief. The number of ideas was lengthy (over 38 specific action items put forth) and diverse. These were eventually combined into 5 thematic areas:

- Team Resolutions regarding member responsibilities (requiring that each team member educate him- or herself about the key technical and socio economic issues, to embrace others in the Tributary Strategy process, to decide what is important, and to communicate and pursue the goals that are defined by the team to be important);
- Economics and Funding regarding the pursuit of funding to enable specific implementation initiatives that the team identified;
- Education regarding the establishment of an effective public education programme, to be co-ordinated wherever possible with similar efforts undertaken by other tributary teams, other educational programmes on-going in other agencies;
- Local Dialog / Liaison (leading to eventual action) regarding the commitment to gain endorsement by local jurisdictions of implementation plans developed by the team, thereby help stimulate the political will to make difficult decisions about environmental management (some of which might be locally unpopular); and
- Technical and Watershed (catchment) Analysis regarding urban nutrient management issues, understand current conditions, and tracking future implementation.

The team adopted these themes as a guideline for its future work. In addition, the team organised itself into three issue groups:

- An urban wastewater group to focus on issues related primarily to nutrient reduction at wastewater treatment plants within the catchment, and particularly the implementation of biological nutrient removal;
- A rural / agricultural group to focus on issues relating to nutrient reductions from the rural landscape; and
- An urban watershed management group to focus on assessing existing conditions in the catchment, identifying priority areas within the catchment needing particular work, and developing a monitoring strategy to document activities and water quality improvements.

Reaching this point of consensus, though difficult and time consuming (2-3 monthly meetings), was another step in the process to becoming an effective team, and of developing a team spirit. Although an important achievement, the team still had to decide specifically what work it would attempt. Developing specific work packages, timelines and budgets (as appropriate) was left to the individual workgroups to develop and eventually bring forward to the entire team for consideration and endorsement. Such an approach engendered a sense of ownership among team members for specific action items. With ownership of the action plan also came commitment to make the plan a success.

Ending the First Year

As individual workgroups began to deliberate their specific action plans, they soon faced an undeniable element of environmental management: there never seems to be enough information available to make necessary decisions. Thus, the latter months of the first year of the team's existence were filled with various activities to both gather necessary information, and articulate to relevant officials the data gaps that were obstacles to progress in implementing the team's brief.. Despite these difficulties, the team was able to make solid contributions to the overall nutrient reduction effort in the state of Maryland. This was accomplished through information / education programmes, through lobbying with state and federal decision makers, and through their input directly to the Governor of Maryland in a meeting with he and his cabinet. Many of the issues and suggestions identified during the teams first year of operation have since been implemented in some form by state government.

SUMMARY AND CONCLUSIONS

The tributary team approach for water quality management was a radical departure from the traditional means of environmental management in the State of Maryland. It was undertaken for two reasons. Firstly, from a purely scientific perspective, the origins of pollutants to the Chesapeake Bay were in the tributary areas that formed the Chesapeake Bay catchment. Thus, efforts to control these pollutants had to be directed at the source, *i.e.* the tributaries.

A greater influence, however, was anecdotal experience with the Chesapeake Bay cleanup effort that indicated “the public” did not grasp the relationship between their actions as individuals and water quality in the Chesapeake Bay. For many people, the Bay was hundreds of kilometres away from where they lived and worked. Indeed, many residents in the Chesapeake Bay catchment had never seen the Bay, and therefore had little, if any, feeling of responsibility for its demise (or its survival). Local tributaries that drained into the Bay, however, were on average little more than 0.5 km away from each resident.

The tributary team approach was a means to overcome two obstacles to reducing nutrient contributions to the Chesapeake Bay. On the one hand, it helped instil a sense of ownership among the public for pollution problems by focusing their attention on local water quality impacts. Secondly, it gave the public a greater sense of involvement through a participatory process that engaged them individually, or a part of a local group, in deciding how and what to do about nutrient pollution. A side benefit was greater awareness of the need for, and political support of, environmental legislation and the financial requirements such as legislation and pollution control mechanisms entailed.

Although the selection and appointment of tributary team members took approximately six months, the team building process was a time-consuming one lasting most of a year. While this time could have been shortened by defining a priori specific work packages for the team, this approach would not have instilled the same degree of ownership of and commitment to the action items the team developed on its own. In the span of one year, the Middle Potomac Tributary Team became a true team, and an effective force in implementing a nutrient reduction strategy for the catchment.

In retrospect, the success of the tributary team can be attributed to a combination of factors. Firstly, the individual commitment of members to environmental management was genuine. Secondly, creation of a meeting environment in which all views were equally legitimate, and divergent views were received with respect allowed members with vastly different ideas to work side by side. Thirdly, even though the team was a voluntary organisation without any operational budget, it had credibility and influence due to the fact that members had been appointed by the highest executive officer of state government, the governor. Lastly, the very choice of the label “team” for the name of the group established the tone for a collaborative process between government, citizens and businesses in which to manage the environment.

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