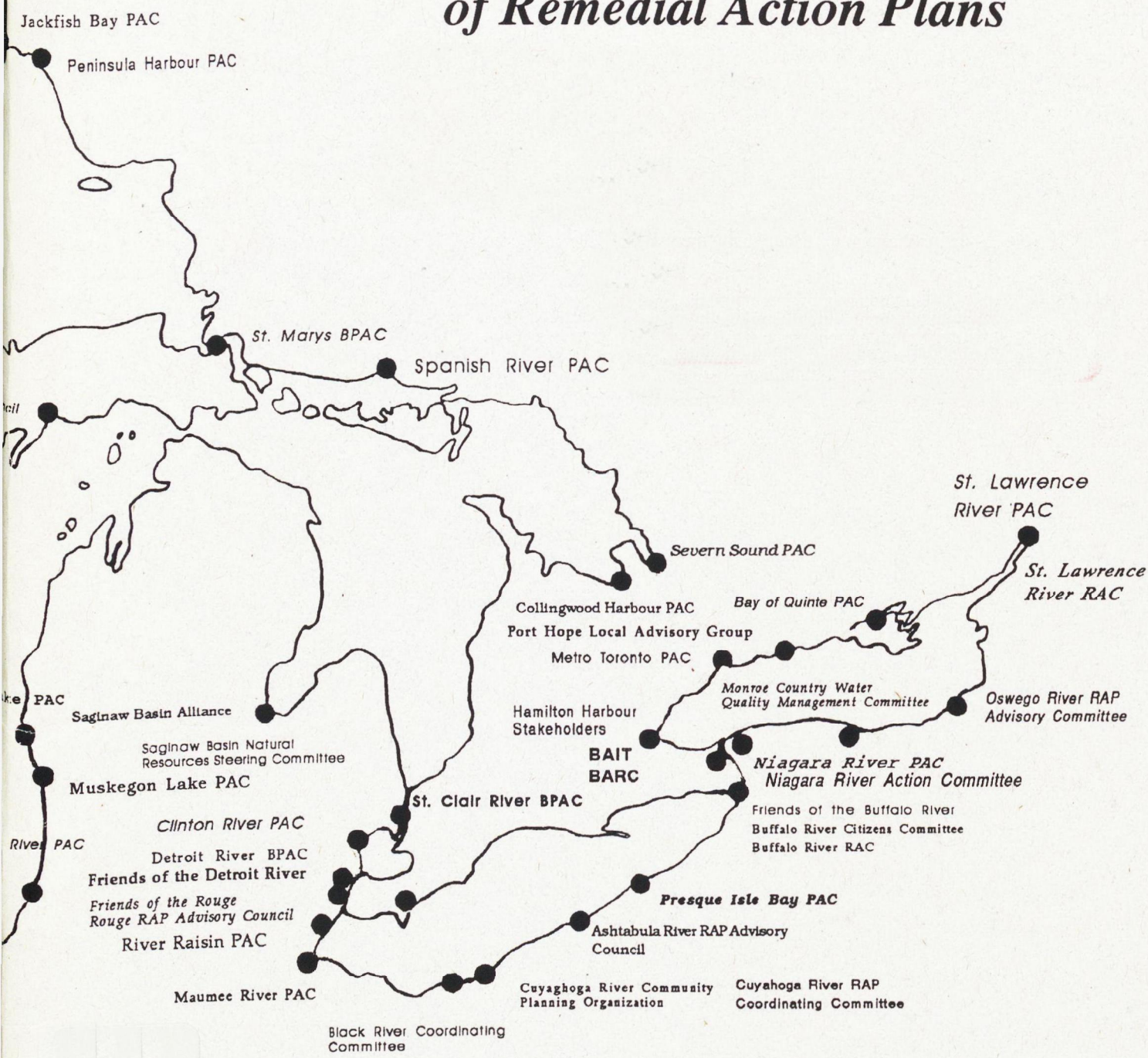
Institutional Frameworks to Direct the Development and Implementation of Remedial Action Plans



Co-sponsored by Environment Canada and U.S. Environmental Protection Agency in cooperation with Wayne State University (Detroit, Michigan)

1993

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Institutional Frameworks to Direct the Development and Implementation of Remedial Action Plans

Based On a March 1993 Roundtable Co-sponsored by Environment Canada and U.S. Environmental Protection Agency, in cooperation with Wayne State University (Detroit, Michigan)

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EXECUTIVE SUMMARY

The Great Lakes Water Quality Agreement requires use of a systematic and comprehensive ecosystem approach in development and implementation of remedial action plans (RAPs), and requires that the public is consulted in all actions undertaken pursuant to RAPs. To accomplish this will require greater cooperation, coordination, and integration among all stakeholders throughout the RAP process. Locally-designed, RAP institutional frameworks have proven to be effective mechanisms to facilitate a coordinated and integrated approach to resource management and ensure meaningful public participation.

In March 1993, a Canada-United States roundtable discussion on institutional frameworks was held to learn from nine institutional framework case studies from within and outside the Great Lakes Basin, and develop guidance on RAP institutional frameworks to help achieve implementation. Three areas of discussion were highlighted at the roundtable: essential characteristics for RAP institutional frameworks; guidance to ensure linkages to other related plans and to ensure complementary and reinforcing actions; and ways to embrace new institutional frameworks to ensure a smooth transition from RAP development to implementation. Based upon the roundtable discussions, recommendations include:

- RAP institutional frameworks should be empowered to pursue their mission of restoring impaired uses. Empowerment of RAP institutional frameworks would be demonstrated by: a focus on watersheds or other naturally-defined boundaries to address upstream causes and sources, and attain watershed "buy-in" for implementation; an inclusive and shared decision-making process; clear responsibility and sufficient authority to identify and pursue a road map to use restoration; an ability to secure and pool resources according to priorities for action using nonprofit organizations or other creative mechanisms; flexibility and continuity in order to achieve an agreed-upon road map to use restoration; a strong commitment to broad-based education, and public outreach; and an open and iterative RAP process that strives for continuous improvement.

- Governments must adopt and reward a cooperative (rather than competitive) approach to working with other stakeholders, agencies, and organizations. It is further recommended that open communication and information networks be developed across and within public agencies and organizations, and existing or new RAP institutional frameworks be used as mechanisms for coordinating and integrating planning and program functions at the local level. This "bottom-up" approach to coordination through RAP institutional frameworks should be complemented with "top-down" efforts to ensure intra- and interagency initiatives are complementary and reinforcing by: explicitly recognizing the need for coordination and integration of interrelated programs in agency mission statements; and incorporating institutional arrangements necessary for desired coordination and integration into agency program plans.

- Governments need to recognize the value of RAP institutional frameworks as a means to an end. RAP institutional frameworks can help build the capacity of government agencies

to achieve their goals. Therefore, governments should adopt long-term, visionary goals for Areas of Concern and commit to a customer-driven and value-added RAP process of continuous improvement that shares decision-making power. It is further recommended that RAP institutional frameworks consider establishing a partnership agreement for Stage II RAPs to help empower stakeholders, capitalize on resources, clarify roles, ensure integration, and increase communication. Such partnership agreements are consistent with an ecosystem approach and could serve as an important milestone to be celebrated in the Stage II RAP process. Such partnership agreements can also initiate the development of local roundtables, similar in function to the Ontario Round Table on the Environment and Economy, to help governments build consensus that will lead to the necessary commitments and endorsements to achieve full RAP implementation and use restoration.

I INTRODUCTION

The Great Lakes Remedial Action Plan (RAP) Programs of Canada and the United States were initiated by a 1985 recommendation of the International Joint Commission's Great Lakes Water Quality Board and formalized in the 1987 Protocol to the Great Lakes Water Quality Agreement (GLWQA). The purpose of RAPs is to restore impaired beneficial uses in the 43 Areas of Concern in the Great Lakes Basin (Figure 1) through a three-staged planning process (Stage I includes problem definition and description of causes; Stage II requires selection of remedial and preventive measures; and Stage III confirms restoration of impaired uses).

RAPs are unique in that the GLWQA states that RAPs shall embody a systematic and comprehensive ecosystem approach (i.e. accounting for the interrelationships among land, air, water, and all living things, including humans; and involving all user groups in management) and that the Parties (i.e. the U.S. and Canadian federal governments), in cooperation with State and Provincial Governments, shall ensure that the public is consulted in all actions undertaken pursuant to RAPs (United States and Canada 1987). To say the least, this is a noble and challenging charge to governments.

It can be argued that to ensure RAPs embody an ecosystem approach and achieve meaningful public participation will require new approaches to management in Areas of Concern. These new approaches will require greater cooperation, coordination, and integration among the involved participants to transcend politically defined boundaries. For the purposes of this report a hierarchy distinguishes these three forms of interaction. Cooperation needs to exist before coordination can occur to integrate various agreed-upon functions or activities. Cooperation is defined as a process whereby two or more parties agree to interact for mutual benefit. It should be used as a means, not an end to itself. Coordination can be both a process and a state whereby two or more parties harmonize their decisions to collectively take action for a shared resource or interest (DeLoe 1990). Integration is both a state and an end product achieved through cooperation and coordination. Each process, state, or end result may be achieved through either formal or informal mechanisms. The synergy created through cooperation, coordination and integration would enable RAP institutional frameworks to incorporate an ecosystem approach to remediation and prevention.

Indeed, RAPs are already achieving greater cooperation, coordination, and integration through RAP institutional frameworks in Areas of Concern. Currently, 39 of the 43 Areas of Concern have either a stakeholder group, basin committee, coordinating committee, public advisory council, or comparable institutional framework broadly representative of environmental, economic, and social interests in Areas of Concern (Table 1). In essence, each of these RAP institutional frameworks is working to implement a locally-designed ecosystem approach in their Area of Concern (Hartig and Vallentyne 1989).

Despite the progress that has been made toward institutional cooperation and coordination, continued efforts are needed to ensure integration and full implementation of remedial and preventive actions. The media-specific, command-and-control approach of traditional Great

Figure 1. Forty-three Areas of Concern identified in the Great Lakes Basin.

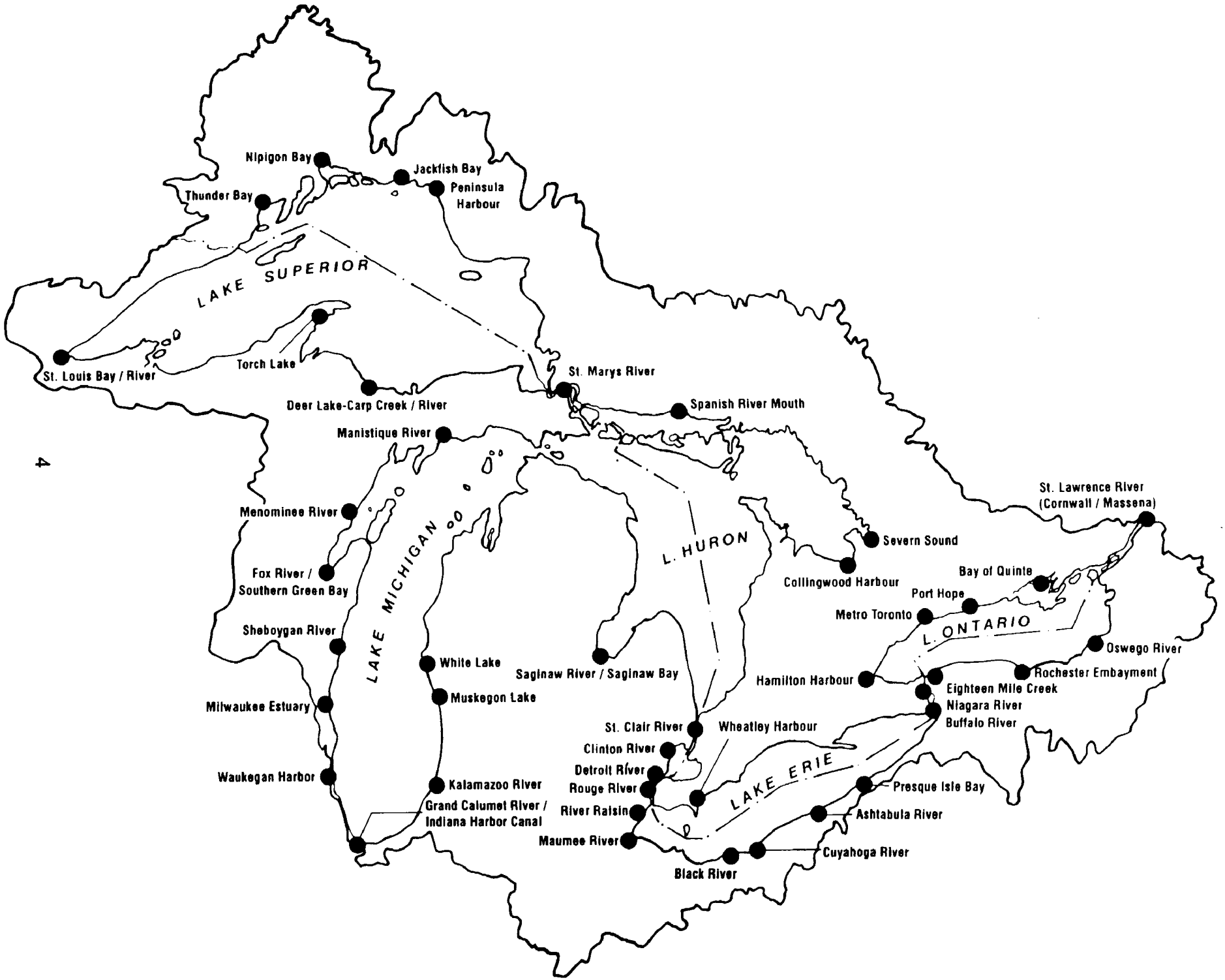

Table 1. Remedial Action Plan institutional frameworks established in Great Lakes Areas of Concern.

Area of Concern	Institutional Framework
1. Peninsula Harbour	Peninsula Harbour Public Advisory Committee
2. Jackfish Bay	Jackfish Bay Public Advisory Committee
3. Nipigon Bay	Nipigon Bay Public Advisory Committee
4. Thunder Bay	Thunder Bay Public Advisory Committee
5. St. Louis River	St. Louis River Citizens Advisory Committee
6. Torch Lake	
7. Deer Lake-Carp Creek-Carp River	
8. Manistique River	Manistique River Partnership Council
9. Menominee River	Menominee River Remedial Action Plan Citizens Advisory Committee
10. Fox River/ Southern Green Bay	Green Bay Remedial Action Plan Public Advisory Committee North East Wisconsin Waters of Green Bay Tomorrow, Inc.
11. Sheboygan River/Harbor	Sheboygan County Water Quality Task Force
12. Milwaukee Estuary	Milwaukee Estuary Remedial Action Plan Citizens Advisory Committee
13. Waukegan Harbor	Waukegan Harbor Citizens Advisory Committee
14. Grand Calumet River/ Indiana Harbor Canal	Citizens Advisory for the Remediation of the Environment Committee (CARE)
15. Kalamazoo River	Kalamazoo River Public Advisory Council
16. Muskegon Lake	Muskegon Lake Remedial Action Plan Public Advisory Council
17. White Lake	White Lake Remedial Action Plan Public Advisory Council
18. Saginaw River/ Saginaw Bay	Saginaw Basin Natural Resources Steering Committee Saginaw Basin Alliance
19. Collingwood Habour	Collingwood Harbour Remedial Action Plan Public Advisory Committee
20. Severn Sound	Severn Sound Remedial Action Plan Public Advisory Committee
21. Spanish River	Spanish River Public Advisory Committee
22. Clinton River	Clinton River Remedial Action Plan Public Advisory Council
23. Rouge River	Rouge Remedial Action Plan Advisory Council Friends of the Rouge

Table 1 continued.

24. River Raisin	River Raisin Public Advisory Council
25. Maumee River	Maumee River Remedial Action Plan Advisory Committee
26. Black River	Black River Remedial Action Plan Coordinating Committee
27. Cuyahoga River	Cuyahoga Remedial Action Plan Coordinating Committee Cuyahoga River Community Planning Organization
28. Ashtabula River	Ashtabula River Remedial Action Plan Advisory Council
29. Presque Isle Bay	Public Advisory Committee for the Presque Isle Bay Remedial Action Plan
30. Wheatley Harbour	
31. Buffalo River	Buffalo River Citizens Committee Buffalo River Remedial Advisory Committee Friends of the Buffalo River
32. Eighteen Mile Creek	
33. Rochester Embayment	Monroe County Water Quality Management Committee
34. Oswego River	Oswego River Remedial Action Plan Remedial Advisory Committee
35. Bay of Quinte	Bay of Quinte Public Advisory Committee
36. Port Hope	Port Hope Harbour Local Advisory Group
37. Metro Toronto	Metro Toronto Public Advisory Committee
38. Hamilton Harbour	Hamilton Harbour Stakeholder Group Bay Area Implementation Team (BAIT) Bay Area Restoration Council (BARC)
39. St. Marys River	St. Marys Binational Public Advisory Council
40. St. Clair River	St. Clair River Binational Public Advisory Council
41. Detroit River	Detroit River Binational Public Advisory Council Friends of the Detroit River
42. Niagara River (Ontario)	Public Advisory Committee for the Niagara River Remedial Action Plan
42. Niagara River (New York)	Niagara River Action Committee
43. St. Lawrence River (Cornwall, Ontario)	St. Lawrence Public Advisory Committee
43. St. Lawrence River (Massena, New York)	St. Lawrence Remedial Advisory Committee

Lakes management (e.g. separate programs for water quality, fish, wildlife, land, air, etc.) has often led to "empire building" within disciplines and institutional gridlock. The Canadian and United States commitment, through the GLWQA, to incorporate the ecosystem approach in the RAP process has provided the catalyst for new, integrative approaches to management and a greater impetus to overcome institutional gridlock. Remedial action planning is a cooperative learning process that accounts for interrelationships among programs and organizations in an attempt to accelerate the implementation of remedial and preventive actions to restore impaired uses. RAP stakeholder groups, public advisory councils, and citizen committees can be viewed as new institutionalized frameworks for social learning, opinion formation, and decision-making for use restoration in Areas of Concern (Milbraith 1989).

In an effort to learn from different experiences with institutional frameworks, Environment Canada and U.S. Environmental Protection Agency initiated a survey of selected institutional frameworks within the Great Lakes Basin (i.e. Hamilton Harbour, Detroit River, The Greater Toronto Bioregion, Canadian Healthy Communities Program, Cuyahoga River, St. Lawrence River) and outside the Great Lakes Basin (i.e. Lake Champlain, Chesapeake Bay, Puget Sound). Information on the case studies was compiled into a background report for a March 1993 Canada-U.S. roundtable discussion in Windsor, Ontario on RAP institutional frameworks (see Appendix II for summaries of the nine institutional framework case studies). For the purposes of this report, the term institutional framework refers to the organization and mechanism of achieving cooperative and coordinated (and where necessary integrated) planning and action among different entities and organizations whose mission impacts or is impacted by uses or users in Areas of Concern.

The purpose of the roundtable discussion was to learn from the case studies and develop guidance on RAP institutional frameworks to help achieve plan implementation. The roundtable approach provided an open forum in which stakeholders within and outside the basin were able to express collectively their ideas and experiences in a cooperative and mutually reinforcing process. Approximately fifty people participated in the roundtable discussion (see Appendix I for a list of roundtable participants). Presentations on the nine case studies provided insight on the mechanisms used to facilitate cooperation, coordination, and integration within the institutional frameworks. Later, two concurrent breakout sessions were used to discuss in greater detail the case studies and answer questions pertaining to: essential characteristics for RAP institutional frameworks; guidance to ensure linkages to other related plans and to ensure complementary and reinforcing actions; and suggestions to help embrace new RAP institutional frameworks to ensure a smooth transition from RAP development to implementation. This report presents a synthesis/synopsis of the roundtable discussions and information on the nine institutional framework case studies in an effort to help RAP practitioners learn from each others' experiences.

II SYNOPSIS OF WORKSHOP DISCUSSIONS

In an effort to summarize the roundtable discussions, all information and recommendations are organized and presented in three subsections consistent with the questions asked in the

breakout sessions. These include: essential characteristics for RAP institutional frameworks; guidance to ensure linkages to other related plans and to ensure complementary and reinforcing actions; and suggestions to help embrace new RAP institutional frameworks to ensure a smooth transition from RAP development to implementation.

A. *Essential Characteristics of RAP Institutional Frameworks to Ensure Use of an Ecosystem Approach to Use Restoration*

For the purposes of this report, roundtable discussions on essential characteristics of RAP institutional frameworks are summarized into seven categories. These essential characteristics include: a watershed perspective; broad-based participation to achieve implementation; clear responsibility and sufficient authority; human and financial resource support; flexibility and continuity to achieve an agreed-upon road map to use restoration; education and outreach; and commitment to action planning within a strategic framework. These characteristics are inherent in both development and implementation of RAPs.

1. A Watershed Perspective

To incorporate an ecosystem approach in RAPs will require an ability to transcend politically defined boundaries and address causes and effects of use impairments within watersheds or other defined natural systems. Consistent with an ecosystem approach, roundtable participants identified two strategies to overcome limitations imposed by political boundaries and achieve a more coordinated and integrated approach to RAPs: watershed planning; and delineation of "effects" and "source" Areas of Concern.

The watershed approach to planning provides a framework to evaluate natural resource problems using a natural systems' approach (Water Environment Federation - Water Quality 2000 Steering Committee 1992). This approach respects the natural boundaries delineated by the watershed within the larger bioregion to holistically account for: upstream and downstream sources and effects of pollution in a systematic and comprehensive strategy for remediation and prevention; and sustainable management of human activities within the Great Lakes Basin Ecosystem.

A watershed perspective encourages a sense of stewardship from people living, working, and recreating within the watershed. Crombie (1992) notes that this sense of stewardship can emerge when people are prepared to back a common vision that takes into account the long-term health and well-being of the watershed. The adoption of a watershed perspective enables a RAP institutional framework to recognize upstream stakeholders in watershed planning as equal partners. RAP institutional frameworks can be valuable mechanisms to communicate with other upstream communities and organizations to attain watershed "buy-in". A commonality of geography and economic activity links one community to the next, and communities may come to realize that there will be certain problems that only can be solved collectively. Consequently, the watershed approach can serve as an incentive to overcome inter-jurisdictional fragmentation and gridlock through consensus-building within the watershed.

The Rouge River, Rochester Embayment, and Hamilton Harbour are three examples of Areas of Concern where a watershed approach to RAP development and implementation is practiced. Each Area of Concern has recognized the value, both monetary and non-monetary, in delineating the watershed as the unit for remedial action planning. It became evident after years of independent clean-up activities in the lower Rouge River that downstream actions alone would not improve water quality. The Rouge River adopted a comprehensive watershed approach to urban runoff and combined sewer overflow remediation that covers the entire 1,210 km^2 (467 square miles) watershed. Subsequently, this watershed approach to planning and management has been recommended for the entire State of Michigan, including establishment of watershed organizations in cooperation with local governments to implement water quality management measures (Michigan Department of Natural Resources 1990). The Rochester Embayment Area of Concern has placed emphasis on multi-media watershed planning and has not one, but four separate plans for clean-up. The RAP is made up of a plan for the Rochester Embayment proper and watershed plans for each of the three major tributaries that flow into the Rochester Embayment. Similarly, the Hamilton Harbour RAP addresses the entire watershed and endorses an ecosystem approach to planning and action.

Depending upon the range of authority, legislative mandates, and relationships among stakeholders, the watershed approach may not be the most feasible approach to use restoration and prevention. No one agency has unilateral authority over an entire watershed, therefore attempting to get buy-in from the entire watershed may be an onerous task as not all political jurisdictions are necessarily willing to involve themselves (Donahue 1988). A RAP institutional framework may need to define smaller geographic units for management as noted above for the Rochester Embayment.

Delineation of "effects" and "source" Areas of Concern by RAP institutional frameworks is another way of accounting for upstream contributions to use impairments. The "effects" Area of Concern would consist of that portion of the tributary/harbor/nearshore Great Lakes that manifests use impairments. The "source" Area of Concern would consist of that portion of the entire watershed from which pollutants were entering and contributing to use impairments in the "effects" Area of Concern.

This two-staged approach factors in the upstream contributions to the impaired uses within the Area of Concern. However, a weakness to this approach may be the reluctance from upstream communities and users to buy-into a process that did not initially account for them. Some upstream communities may also have a lack of interest or information on how upstream actions impact the downstream areas and the relationship to the RAP. This may hinder implementation of the RAP and limit the extent of remediation that can be accomplished. To offset this weakness, it will be important to secure upstream stakeholder involvement as soon as possible in Stage II RAP development to ensure accountability for implementation. The Detroit River RAP is one example of where this approach is being applied (Michigan Department of Natural Resources and Ontario Ministry of the Environment 1991).

Each approach to planning and action has merit. The challenge is to comprehensively address all significant sources and effects of pollutants in order to sustain long-term ecosystem health for an Area of Concern. Management mandates must recognize watershed boundaries in order to achieve a more coordinated and integrated strategy for remediation and prevention.

2. Broad-Based Participation to Achieve Implementation

The RAP process is intended to build consensus about the necessary remedial and preventive actions to restore uses by seeking broad-based public participation. Each RAP stakeholder group, basin committee, coordinating committee, public advisory council, or citizen committee is made up of individuals broadly representative of environmental, economic, and social interests in an Area of Concern (Table 1). Such RAP institutional frameworks must be inclusive to be able to take advantage of the knowledge and expertise stakeholders possess about their Area of Concern and create the political will for plan implementation.

Important in the multi-stakeholder, multi-sectoral RAP process is the approach taken by the lead government agency to involve stakeholders. While traditional, top-down, command-and-control actions may be necessary to regulate specific sources of pollution, the RAP process might be better based upon a facilitation/management approach, and not just control. The Worldwatch Institute (1993) notes that prescriptive, media-specific, regulatory tools have proven to be ineffective and unlikely to spur the breadth of changes necessary to achieve full use restoration. Such a control approach may be seen as telling stakeholders that they are not to be directly involved in determining the future of their communities. On the other hand, the facilitation/management approach steers or guides the process to ensure it stays on track and encourages a partnership with stakeholders in restoring uses. Roundtable participants emphasized that lead governments are more likely to succeed if they demonstrate a strong emotional commitment to RAPs and a facilitation/management approach. Commitment to this facilitation/management approach has greater potential of assuring community ownership of the RAP as it permits distribution of responsibilities and shares decision-making power. Eiger and McAvoy (1992) have concluded that one element of a successful RAP process is the presence of a community leader or organizer with primary responsibility for forming a broad-based RAP institutional framework and ensuring public participation and outreach.

Such inclusive RAP processes which share decision-making power should be viewed as helping to design local institutional frameworks that build bottom-up support for plan implementation. A bottom-up approach can also help adapt top-down initiatives to local situations and serve as a catalyst for action. RAP institutional frameworks that are inclusive and share decision-making power can:

- provide a forum for mutual understanding and new perspectives;
- help establish trust among stakeholders which is essential for plan implementation; and
- help orient decision-makers to the process of an ecosystem approach to use restoration.

The New York State Department of Environmental Conservation and the Federation of Lakes Associations, Inc. (1990) also prescribe an inclusive planning process as it may serve as a catalyst in building political and social coalitions which are needed to sustain a positive, long-term management effort. Further, sharing decision-making power within a multi-stakeholder, RAP institutional framework can also be a good mechanism of getting organizations/entities/ communities to do what might not be in their own parochially-defined self-interest. Christie et al. (1986) have described this as enlightened self-interest (e.g. enlightenment that because all stakeholders in a watershed share a common problem, they must be committed in their own interest to its solution).

It should be recognized that each stakeholder in the RAP process not only has a responsibility to their RAP institutional framework, but a responsibility to go back to their constituency or sector and educate and elicit support from them. An important goal for the RAP process would be for each stakeholder in an Area of Concern to become a partner in remediation and prevention. Roundtable participants thought it is particularly valuable to have local elected officials represented on RAP institutional frameworks. Such broad-based participation and shared decision-making power are viewed as critical success factors in the Hamilton Harbour and Cuyahoga RAPs, and in Puget Sound, Chesapeake Bay, and Lake Champlain.

3. Clear Responsibility and Sufficient Authority

Broad-based participation that is brought about by an inclusive, shared, decision-making process must result in each stakeholder having a meaningful role in the RAP process. Meaningful participation is dependent on the clear delineation of responsibilities of all stakeholders, and sufficient authority to fulfill RAPs' mission and goals for restoring impaired uses. Roundtable participants noted that RAP institutional frameworks must also be free of governmental bureaucratic processes to ensure effectiveness and timeliness. Care must be taken to ensure that the RAP process is responsive to the legitimate public agencies who are legally responsible and empowered to act.

To achieve use restoration, the plan should be viewed as a road map sufficiently detailed to ensure accountability of implementing organizations, and yet concise enough to ensure broad communication of the critical path to use restoration. Priority elements for identifying the road map to use restoration include:

- broad-based agreement on goals, objectives, indicators, and benchmarks to measure progress and confirm use restoration;
- identification of key actions, responsibility, and sequencing of actions to restore each impaired use;
- demonstration of commitments and endorsements (e.g. formal or informal agreements) from responsible parties and stakeholders; and

- description of important activities to resolve issues that delay remediation or prevention.

Once a clear road map to use restoration has been laid out, RAP institutional frameworks need to compare the recommended actions with the existing authorities and regulatory and non-regulatory mechanisms to identify any gaps. If gaps exist, RAP institutional frameworks should be empowered to recommend or help create new authorities, statutes, enforcement mechanisms, or other means to: implement RAP recommendations; monitor the progress of implementation; and ensure responsible parties are held accountable. Such empowerment can increase individual and collective responsibility (Water Environment Federation - Water Quality 2000 Steering Committee 1992). Partnership agreements and other cooperative initiatives, like financial incentives and technical assistance, can also serve as effective mechanisms to facilitate and achieve remediation and prevention. If cooperation cannot achieve the necessary remediation or prevention, regulatory or other enforcement mechanisms will be needed to ensure implementation. It should be noted that some roundtable participants expressed concern for liability of RAP stakeholders. A combination of a "carrot" (i.e. incentives) and "stick" (i.e. disincentives) approach to implementation has proven to be effective (Hartig and Zarull 1992). There needs to be financial and technical resource incentives to encourage action and penalties or sanctions to discourage lack of action.

4. Human and Financial Resource Support

Government leadership is essential to the RAP process that includes demonstrated commitment by senior management and a clear understanding of the lead agency role in the process. However, government alone is not capable of providing all the resources necessary to ensure that a multi-stakeholder RAP process is effective and timely. Current fiscal strain and the diversity of responsibilities within government calls for cooperative initiatives among governments (federal, state/provincial, and local), private industry, and communities alike to become partners in remediation and prevention.

The most powerful system within a government agency is the budget, as it controls what activities occur, who does them, and when (Osborne and Gaebler 1992). Expedient RAP development might be achieved through greater autonomy in RAP institutional frameworks' fiscal operations and an ability to pursue innovative funding mechanisms. Pooling of financial resources in a watershed may better account for the cumulative effects of pollution and remediation.

Human resource development is equally important as financial resource development. A sustained commitment to broad-based participation will elicit a diverse range of expertise to help develop and implement RAPs. This is consistent with the recommendation of Eiger and McAvoy (1992) that government agencies must recognize the importance of efforts that effectively increase awareness and significantly engage a wider segment of the general public in RAP implementation, and support those efforts. RAP institutional frameworks are mechanisms by which to organize the areas of expertise into specific work groups or functions.

Ideally, RAP coordinators should be senior level staff, rather than junior level staff, in order for RAPs to obtain a higher profile within an agency or ministry, thus ensuring greater authority in accessing technical staff/resources and making necessary decisions to expedite the RAP process. An alternative would be to follow the approach taken by the Grand Calumet River/Indiana Harbor Canal Citizens Advisory for the Remediation of the Environment (CARE) Committee which has had a junior level RAP coordinator, but the senior Commissioner of Indiana Department of Environmental Management chairing the CARE Committee. Roundtable participants recognized the unique interjurisdictional and interagency difficulties of binational connecting channel RAPs and suggested that the federal governments consider hiring independent facilitators to further develop or update their Stage II documents. Whatever approach is taken, roundtable participants noted the importance of using local staff within the Area of Concern or watershed to assist in the organization of institutional frameworks. Consistent participation from technical governmental staff is needed in all RAP processes.

The use of nonprofit organizations has proven to be a catalyst for RAP activities, which complement governmental efforts. Eiger and McAvoy (1992) have recommended that local and state RAP coordinators should give serious consideration to helping establish a nonprofit organization, if one does not exist in their Area of Concern, to increase their ability to leverage additional resources and provide greater flexibility in organizing public activities. The Cuyahoga River Community Planning Organization (CRCPO) is a nonprofit organization that has played a pivotal role in moving the RAP forward by providing technical, educational, and staffing resources that augment staff support provided by regional and state agencies (Beeker et al. 1991). The Bay Area Restoration Council (BARC) for Hamilton Harbour not only promotes and assesses RAP implementation, but solicits and acquires donations, gifts, and legacies in furtherance of RAP goals. Other examples of nonprofit organizations established to complement RAP institutional frameworks are summarized in Table 2. Such initiatives are invaluable components of local RAP programs.

Securing financial and human resource support for the RAP throughout the watershed recognizes that everyone who contributes to the problems must also be part of the solution. Many RAPs have already acted as a catalyst for action and initiated partnerships among government, industry, and local public interest groups (Hartig and Law 1992). RAP institutional frameworks should be empowered to help secure and pool resources according to priorities for action.

5. Flexibility and Continuity to Achieve an Agreed-Upon Road Map to Use Restoration

RAP institutional frameworks can be instrumental in achieving broad-based agreement on the road map to use restoration. As planning and implementation are pursued simultaneously throughout the RAP process, there needs to be flexibility to accommodate change (i.e. as a result of new knowledge or information), and continuity to ensure progress and accountability for action. In some cases, broad-based agreement on the path to use restoration may not always be

Table 2. Activities and functions being performed by nonprofit RAP institutional frameworks in the Great Lakes Basin.

Nonprofit Organization	Purpose	Activities and Functions
North East Wisconsin Waters of Green Bay Tomorrow, Inc.	To provide information for decisions related to water quality in the Lower Green Bay, Fox, and Wolf River watersheds in conjunction with the implementation of the Lower Green Bay RAP.	• independent analysis • fund raising • research
Saginaw Basin Alliance	To promote the preservation, restoration, resource management, planning, and responsible development through basin-wide citizen involvement, education, and cooperation.	• public education and outreach
Friends of the Rouge	To promote/advocate the restoration of the Rouge River through participation and education of citizens in cooperation with agencies, private interests, and governments concerned.	• public education and outreach • fund raising
Cuyahoga River Community Planning Organization	To support the goals of the Cuyahoga River RAP with additional technical and financial resources for planning, and to develop support for programs in public involvement, education, and research.	• fund raising • public education and outreach • planning coordination • research
Friends of the Buffalo River	To promote, preserve, protect, and take action where necessary for the natural and historical environment of the Buffalo River and the environs for the benefit of the local community.	• fund raising • public education and outreach
Bay Area Restoration Council	To provide an advisory function to the implementation of the Hamilton Harbour RAP that oversees the coordination and monitoring of implementation measures.	• independent auditing • public outreach and education • fund raising
Friends of the Detroit River	To provide and encourage public participation in the Detroit River RAP and to promote the social, economic and environmental health of the Detroit River ecosystem.	• fund raising • public education and outreach

achieved, therefore guidelines to resolve conflict or conflict resolution techniques may be necessary and minority opinions should be accepted.

A greater understanding of Area of Concern ecosystems has rendered the need for more flexible and adaptable forms of institutional frameworks to account for the interrelationships among different organizations, agencies, and entities. RAP institutional frameworks should be flexible to coordinate the specific spheres of expertise and pursue simultaneously

remediation/prevention and necessary investigations. The RAP process is intended to be iterative and to accommodate new data/information and stakeholders.

The traditional command-and-control approach practiced by governments does not readily support coordinated efforts due to the independent nature of government agencies and the separate approval mechanisms required to take action. A RAP institutional framework that encourages collaboration, particularly among public management agencies at all levels of government, can help remove obstacles and embrace a mission-driven approach to better coordinate the decision-making process. A mission-driven institutional framework is a more flexible management structure as it informs stakeholders what needs to be accomplished, but does not dictate how it should be accomplished (Osborne and Gaebler 1992). This reinforces the need for a facilitation/management approach for RAPs.

Continuity in both the RAP process and its' membership is essential to identify the critical path to use restoration. To achieve continuity, a common understanding of the RAP process and path to use restoration must be achieved and sustained, and institutional memory ensured. Empowered RAP stakeholder groups, coordinating committees, and public advisory councils are essential institutional frameworks to keep the RAP process on track and ensure continuity, as there has often been a high turn over rate of government RAP coordinators in some Areas of Concern. Such institutional frameworks can also provide continuous and vigorous oversight to ensure progress toward remediation and prevention.

6. Education and Outreach

The RAP process is a learning process for all stakeholders. Through a RAP institutional framework, stakeholders practice cooperative learning through listening, sharing, discussion, and participating in RAP development and implementation. To facilitate the RAP process and provide support to a RAP institutional framework, governments can ensure that priority is placed on stakeholder education by: clarifying and documenting roles and responsibilities; emphasizing education/training that meets the needs of all stakeholders; ensuring strong linkages between scientific institutions and non-scientific, non-technical stakeholders in the RAP process; allocating sufficient resources for education and training; performing periodic "reality checks"; empowering people; and adopting a positive reinforcement system. Because the success of a RAP institutional framework hinges on interaction and cooperation among all stakeholders, priority should be placed on cooperative learning and education.

However, equally important are the public education and outreach activities that create the necessary political will for remediation and prevention. RAP institutional frameworks can be instrumental in establishing community outreach strategies and ensuring broad distribution of responsibilities among stakeholders. Education, from primary school children to business professionals, is essential to bring about the societal changes necessary to ensure prevention and remediation. Through education, citizens can take immediate actions to begin restoration and practice pollution prevention within their community. The Saginaw River/Bay and Rouge River Areas of Concern have both benefitted from the incorporation of water quality educational

projects within the areas' school systems (i.e. Saginaw River Journal Project and the Rouge River Interactive Water Quality Project) (IJC 1991a). RAP educational programs can extend to agricultural and industrial practices, urban (re)development, land-use planning, resource management, etc. to achieve stewardship of water and land resources in Areas of Concern.

RAPs have also initiated public outreach activities to complement educational programs. Annual cleanup days have spurred environmental citizenship and elevated the profile of RAPs (e.g. Rouge River, Green Bay, Buffalo River, Cuyahoga River, Clinton River, Metro Toronto, etc.). The Cuyahoga River Community Planning Organization (CRCPO) has played a major role in education and outreach activities within its Area of Concern, specifically coordination of Riversweep, public opinion polling, and nonpoint source education. Roundtable participants concluded that RAP institutional frameworks, like the Cuyahoga River Coordinating Committee and Hamilton Harbour's Bay Area Restoration Council, should be empowered to host annual "State-of-the-RAP" events and/or prepare annual RAP progress reports to measure and celebrate progress in restoring uses.

7. Commitment to Action Planning within a Strategic Framework

Remedial action planning is a three-staged iterative process that is guided by broad-based participation and a flexible, but agreed-upon road map to restoration. RAPs, specifically Stage II, are composed of action-oriented strategies that identify responsible parties and the key sequencing of actions to attain full use restoration in Areas of Concern. Strategic planning, like remedial action planning, strives for continuous improvement. Strategic planning focuses decisions and actions that shape and guide the mission and activities of an organization (Bryson 1988).

As planning and implementation proceed simultaneously throughout the RAP process, identification of what can be done and what needs to done is pursued simultaneously. Simply put, RAPs should be recognized as an open and iterative process in which remediation/prevention and investigation should proceed in tandem, incrementally. The Hamilton Harbour Stage II RAP is one example of this strategic approach to planning through the development of Stage IIA and Stage IIB reports. Stage IIA identifies recommendations on what is being done and what needs to be done, when, and who is responsible, while Stage IIB secures the commitments to implement remedial and preventive actions.

Driven by a mission, rather than rules or functional mandates, strategic planning enables RAP institutional frameworks to have a futures-thinking capability that can identify critical issues affecting the successful implementation of RAPs (Milbraith 1989). A mission tells an organization where it wants to be, rather than a mandate that tells an organization what it should be doing at the present time. This is precisely the intent behind the 14 use impairments identified in the GLWQA. These use impairments are intended to help drive the RAP process, help stakeholders and organizations pursue their mission of restoring uses, and achieve greater accountability. Long-term commitment to, and attainment of, a mission are achieved through the implementation of a series of short-term strategies that are monitored, reported, and celebrated

as the RAP progresses toward use restoration. As a management tool, strategic planning alerts RAP institutional frameworks to externalities - opportunities and threats that may help or hinder implementation. Threats can be addressed and opportunities pursued by involving parties who have an interest in the outcome, thus potential obstacles can be overcome in order to build consensus among stakeholders (Kaufman and Jacobs 1987). Continued emphasis must be placed on accelerating implementation of existing remedial and preventive programs, while identifying the schedule and sequencing of actions beyond existing programs to fully restore beneficial uses (IJC 1991a).

B. Guidance to Ensure Linkages to Other Related Plans and To Ensure Complementary and Reinforcing Actions

Cooperation, coordination, and integration of key functions and activities need to take place at all levels of government, with local communities, and with the private sector to ensure a systematic and comprehensive ecosystem approach is taken to restore impaired uses within Areas of Concern. An ecosystem approach to remediation and prevention requires explicit linkages between and among current media-specific programs and agencies. Such linkages are accomplished on a systematic and incremental basis in order to serve immediate needs. Multi-sectoral, multi-stakeholder RAP institutional frameworks provide a mechanism to form linkages to other related programs and ensure actions are complementary and reinforcing.

Cooperation and coordination should be viewed as processes by which to account for media-specific mandates and programs, and form linkages between RAPs and other related planning efforts (e.g. land use, fishery management, etc). To re-orient government processes from a competitive culture to one that encourages integration, a commitment to cooperative management for a shared resource is required (Mitchell 1990; Donahue 1988; Francis et al. 1979). Communication among and across organizations and agencies is primary to initiate cooperation and coordination. Further, communication facilitates working relationships to integrate planning functions and helps prevent management actions from being at odds with one another.

For a RAP to be accepted on a broad scale and be effective, its mission needs to be broadly communicated to all stakeholders that impact or are impacted by use impairments. RAP institutional frameworks must ensure communication channels are open and accessible to increase the flow of information to generate a common understanding throughout the Areas of Concern. By creating awareness through cooperative learning, a RAP's mission is reinforced and additional support is acquired for implementation of remedial and preventive actions. This is particularly important where the RAP may not be a priority and cannot be realistically implemented on its own. The more people and plans that explicitly acknowledge interrelated problems and reinforce common goals, the more support there will be for a systematic and comprehensive ecosystem approach to remediation and prevention (IJC 1991b).

Linkages among interrelated planning initiatives can be best accomplished at the local level where community values, priorities for action, and accountability can be readily determined.

Roundtable participants suggested that there is greater will at the local level to implement RAPs. This can be partially attributed to the direct impact use impairments has on the quality of life within communities and the perceived future benefits derived from remediation and pollution prevention. Thus, there is generally more incentive at the local level to establish linkages and account for interrelationships.

The focus on remediation or other reactive measures should not result in losing sight of other problems - specifically anticipatory planning activities for pollution prevention. Roundtable participants emphasized that an ounce of prevention is worth a pound of remediation.

Roundtable participants suggested that partnership agreements, Memoranda of Understanding, or other mechanisms of empowerment of new or existing river/harbor/watershed boards, authorities, or councils are effective mechanisms to coordinate and integrate planning functions within a watershed or other identified ecological management units (e.g. bioregion). Indeed, empowerment of communities to meet their basic needs and care for their local ecosystem is what was called for in the '92 Global Forum held in conjunction with the United Nations' Conference on Environment and Development held in Rio de Janeiro during 1992 (The Centre for Our Common Future and the International Facilitating Committee 1992). The success of such empowerment initiatives depends on: the capacity of local communities to organize themselves and participate in projects; integration of local knowledge and environment; access to natural and financial resources; environmentally sound technology; government support; access to information and public accountability; external support; and a capacity to influence development priorities.

Solving the persistent environmental problems found in urban/industrial complexes located in many Areas of Concern will require strong linkages with urban planning and design. Therefore, it is critical that RAP efforts are integrated with municipal and regional planning. Greater emphasis must be placed on ensuring stakeholder representation from municipal and regional planning in the RAP process, and translating RAP findings and recommendations into regional and local land use plans and zoning by-laws/ordinances.

The "bottom-up" approach to ensuring linkages needs to be complemented with "top-down" management to ensure agency programs and initiatives are complementary and reinforcing. "Top-down" support for coordination and integration can be demonstrated by senior management acknowledging the need for coordination/integration in program mission statements, and by assigning staff via annual work plans to promote coordination/integration. Federal, state, and provincial commitment to a facilitation/management approach is needed to adapt larger planning initiatives to local, site-specific problems. As an example, the Puget Sound Growth Management Act directs all affected jurisdictions to plan at a multi-jurisdictional level where issues are of regional significance. This approach enables the jurisdictions to accommodate local values by integrating planning functions through local governments, rather than implementing broad policy statements or programs developed by centralized state, provincial, or federal staff.

Roundtable participants suggested that high ranking local agency representatives be involved in the process of coordination and integration. This would help ensure "bottom-up" and "top-down" support for inter- and intra-agency cooperation and coordination through the provision of technical resources and seed money. This approach is reflected in the development and implementation of RAPs along the north shore of Lake Superior through the Lake Superior Program Office. The staff is composed of representatives from several provincial and federal agencies who work together on integration and program delivery. The end result is partnerships among government, industry, and local interest groups that coordinate and catalyze the programs and actions. Another example of effective cooperation and coordination is among the Ontario Ministry of the Environment RAP coordinators for the upper connecting channels (i.e. St. Marys River, St. Clair River, Detroit River) who are located in the same office and have close working relationships among themselves and with Canada-Ontario Agreement management. In the United States, the federal and state governments are incorporating RAPs into each state water quality management plan which helps ensure an integrated approach across media-specific program areas.

Knaap (1993) offered an another mechanism to ensure actions among government agencies are complementary and reinforcing. He suggested the generation of coordination statements that are developed cooperatively by state and local agencies to indicate how agency rules, regulations, and activities affect RAP implementation. Three possible avenues to ensure development of such coordination statements include: legislation by provincial or state governments; grant incentives; or withhold revenues from those local governments and state or provincial agencies whose rules, regulations, or activities are found to inhibit RAP implementation.

A cooperative, facilitation/management approach to integration promotes common goals and desired outcomes, yet does not threaten individual authority of agencies. However, trade-offs are inevitable to achieve effective linkages among and between agencies and other organizations/entities/individuals to overcome obstacles. To achieve full use restoration, RAP institutional frameworks will need to address a number of obstacles to developing linkages with other planning efforts. Obstacles include:

- limited, media-specific, and single objective agency mandates that restrict incorporation of an ecosystem approach;
- perceived loss of jurisdictional control;
- insufficient priority for RAPs; and
- interagency competitiveness for resources.

These obstacles present a challenge to RAP institutional frameworks, but also justify the need to link RAPs to other related planning efforts. Successful implementation of RAPs is dependent upon the generation of socially acceptable, economically feasible, and politically viable solutions (Hartig et al. 1992). The benefits of linking RAPs to other related planning efforts outweigh the

disadvantages. The benefits include:

- pooling resources to accomplish common ends;
- achieving a common understanding of problems, causes, and solutions;
- determining priorities for action;
- achieving long-term sustainability through use of a comprehensive ecosystem approach; and
- generating added public support and stewardship as other stakeholders become part of the planning process.

The complementary and reinforcing actions that are generated as a result of coordinating and integrating planning functions can only increase the credibility of RAPs within the Great Lakes Basin. Roundtable participants suggested that RAPs must be seen as part of a larger Great Lakes management effort. To help ensure a Great Lakes Basin Ecosystem perspective, RAPs need to recognize larger planning efforts that impact the implementation of RAP recommendations (e.g. lakewide management plans, coastal management plans, fishery management plans, land use/official plans, economic development plans, etc.). Periodic review of plans will be needed to ensure the process stays on track and coordination and integration are achieved. Roundtable participants noted that multi-disciplinary workshops and roundtables for each Great Lake might be useful tools for tracking progress and ensuring coordination and integration.

C. *Embracing New RAP Institutional Frameworks to Ensure a Smooth Transition from RAP Development to Implementation*

Colborn et al. (1990) suggest that RAPs represent the major test of the ecosystem approach and are the means through which the ecosystem approach will involve and affect large numbers of people and organizations. Governments are now being asked to be inclusive, account for interrelationships among agencies, departments, and organizations, and share decision-making power. To say the least, this is an enormous challenge. One frequently asked question is: "What can be done to help governments embrace/endorse new institutional frameworks as we move from RAP development to implementation?"

The introduction of RAPs into the management of the Great Lakes Basin eight years ago required governments to embrace a new way of thinking and a new way of doing business. As a result of the commitment to an ecosystem approach, governments are learning to work in partnership with local citizens - the beneficiaries of and contributors to remedial action planning. The success of RAPs depends upon continued public involvement; effective communication and cooperation; resource commitments; addressing research needs; building a record of success; effective use of an ecosystem approach and progress toward sustainable development; and

recognition of personal responsibility (Hartig and Zarull 1992). These key success factors emphasize the need for governments to adopt long-term, visionary goals and commit to a customer-driven and value-added process of continuous improvement that shares decision-making power. Value-added means using human and financial resources in a complementary fashion to help produce a desired outcome. Currently, 39 of the 43 Areas of Concern have a stakeholder group, public advisory council, basin committee, or coordinating committee to complement and enhance the efforts of governments in the development and implementation of RAPs. In addition, nonprofit organizations have also been established in seven Areas of Concern (Table 2).

Such RAP institutional frameworks are essential to building strong coalitions to create the political will for implementation. Governments need to recognize the value of RAP institutional frameworks as a means to an end. These institutional frameworks can help build the capacity of government agencies to achieve their goals. This concept of building the capacity of government agencies to achieve RAP goals has been a working principle in the Cuyahoga River RAP, the Cuyahoga River Community Planning Organization, the Hamilton Harbour RAP, the Bay Area Implementation Team, and Bay Area Restoration Council. Benefits include: establishing private/public partnerships; pursuing alternative funding sources and pooling resources; building grassroots/community support; augmenting special projects with additional technical resources; and building community pride by celebrating successful community activities.

A facilitation/management approach to the RAP process will help ensure a smooth transition from development to implementation. Roundtable participants suggested that RAP institutional frameworks be free of governmental, bureaucratic processes to help ensure a smooth transition from RAP development to implementation. Guided by a common mission rather than rules, RAP stakeholders can work cooperatively toward reaching agreement on the critical path to use restoration, yet can achieve the flexibility necessary to adapt to changing circumstances as new ideas, issues, or partners emerge. Further, long-term commitment to the mission provides continuity in the RAP process. A RAP workshop at the International Joint Commission's 1989 Biennial Meeting emphasized the need to sustain meaningful involvement of all stakeholders in the RAP process - based on a cooperative, rather than an adversarial approach (Hartig et al. 1991). Sustaining meaningful public participation from RAP development through implementation is viewed as essential.

Roundtable participants suggested that partnership agreements are an effective mechanism to unify the diversity of stakeholders to embrace a common vision and new institutional structures, and help ensure a smooth transition from RAP development to implementation. A partnership agreement is typically a succinct vision statement and a set of principles that is used to address and resolve a problem. Partnership agreements do not ignore federal, state, or provincial solutions, but rather rely first on community stakeholders and organizations closest to the problem to determine what solutions are needed. The number of partners who sign the agreement is unlimited. For example, the partnership agreement for the Grand Traverse Bay Watershed Initiative has over 100 businesses, agencies, organizations, and citizen groups as signatories (Johnson and Stifler 1993). Emphasis is placed intentionally on identifying common

ground among partners in a cooperative, positive, and reinforcing fashion. Experience has shown that this approach increases trust among stakeholders. Further, signing the partnership agreement creates a sense of empowerment to personally work on solving the problems. Other benefits of partnership agreements include: serving as a tool for capitalizing on existing programs and pooling resources; serving as an instrument to demonstrate watershed "buy-in" and coalition support in various grant applications to private foundations and government agencies; clarifying roles and responsibilities of various partners to ensure coordination and integration; and increasing communication and education among all parties. RAP institutional frameworks should consider establishing a partnership agreement for Stage II RAPs to help empower stakeholders, capitalize on resources, clarify roles, ensure integration, and increase communication. Such partnership agreements are consistent with an ecosystem approach and could serve as an important milestone to be celebrated in the Stage II RAP process.

Partnership agreements can also serve as a mechanism to initiate the development of local roundtables in Areas of Concern. Roundtables provide an opportunity for all stakeholders in the RAP process to become more active partners in the transition from development to implementation. A roundtable is defined as a tool to guide/assist the decision-making process that:

- ensures balanced, multi-sectoral, multi-stakeholder representation in a non-hierarchial forum;
- provides an opportunity to generate a mutual understanding of problems;
- helps re-orient decision-makers to the goals and principles of the ecosystem approach; and
- strategizes about the means for implementation and serves as a catalyst for action (Ontario Round Table on Environment and Economy 1991).

The roundtable approach does not challenge existing management authorities, rather it seeks out broad-based input for the decision-making process to build consensus for action. It emphasizes a "win-win" outcome through a continual two-way communication link between "top-down" and "bottom-up" management. The Ontario Round Table for the Environment and Economy (1992) actively promotes this approach in local communities throughout Ontario as it: deals more effectively with conflict between disparate interests; makes more efficient use of scarce resources; allows for an inclusive decision-making process; results in broad-range acceptance to decisions; and increases accountability throughout the planning process.

The experiences gained and lessons learned through all RAP institutional frameworks must be broadly communicated to help embrace new approaches and mechanisms for implementation. For example, in New York Areas of Concern, Citizen Advisory Committees (CACs) were replaced with Remedial Advisory Committees (RACs) for Stage II RAPs. In Hamilton Harbour, BARC and BAIT were developed to comprehensively implement and track remedial and

preventive actions for Stage II (see Figure 2 in Appendix II). Continued emphasis on cooperative learning within and among Areas of Concern is needed.

To sustain the momentum from development to implementation, RAP institutional frameworks will need to build a record of success by celebrating milestones. Both short-term and long-term milestones and benchmarks should be identified and celebrated when met. Examples of milestones and benchmarks include: government management actions; remedial and preventive actions by identified sources; changes in discharge quality; reductions in contaminant loadings; changes in ambient air/water/sediment concentrations; reductions in bioaccumulation rates; biological recovery; use restoration; or increased human use of resources. RAP institutional frameworks publishing annual or biennial RAP progress reports or hosting annual or biennial "State-of-the-RAP" events are two successful mechanisms of measuring progress and celebrating successes in a positive and reinforcing fashion.

III CONCLUDING REMARKS AND RECOMMENDATIONS

The GLWQA charge to incorporate a systematic and comprehensive ecosystem approach in RAPs, has led federal, state/provincial, and local governments, along with industry, public organizations, and private citizens, to adopt new approaches for management in Areas of Concern. Meeting this institutional challenge requires greater cooperation, coordination, and integration of planning activities and program functions pertaining to remediation and prevention. RAP institutional frameworks have proven to be effective mechanisms to facilitate this integrated approach to resource management and ensure meaningful public participation.

RAP institutional frameworks are working to implement locally-designed ecosystem approaches which address site-specific needs in a process of restoring impaired uses. The RAP process is most effective if it is mission-driven and not rule-driven. Therefore, it is recommended that each RAP institutional framework be empowered to pursue its mission of restoring impaired uses. Empowerment of RAP institutional frameworks would be demonstrated by: a focus on watersheds or other naturally-defined boundaries to address upstream causes and sources, and attain watershed "buy-in" for implementation; an inclusive and shared decision-making process; clear responsibility and sufficient authority to identify and pursue a road map to use restoration; an ability to secure and pool resources according to priorities for action using nonprofit organizations or other creative mechanisms; flexibility and continuity in order to achieve an agreed-upon road map to use restoration; a strong commitment to broad-based education, and public outreach; and an open and iterative RAP process that strives for continuous improvement.

RAP institutional frameworks represent a forum for cooperative learning to generate a common understanding of problems and build consensus for action throughout a watershed. To ensure linkages of RAPs to other related planning efforts, it is recommended that governments must adopt and reward a cooperative (rather than competitive) approach to working with other stakeholders, agencies, and organizations. It is further recommended that open communication and information networks be developed across and within public agencies and organizations, and existing or new RAP institutional frameworks be used as mechanisms for coordinating and integrating planning and program functions at the local level. This "bottom-up" approach to coordination through RAP institutional frameworks should be complemented with "top-down" efforts to ensure intra- and interagency initiatives are complementary and reinforcing by: explicitly recognizing the need for coordination and integration of interrelated programs in agency mission statements; and incorporating institutional arrangements necessary for desired coordination and integration into agency program plans.

Government agencies will undoubtedly have to embrace/endorse new RAP institutional frameworks to ensure a smooth transition from RAP development to implementation. For this to occur, governments need to recognize the value of RAP institutional frameworks as a means to an end. These institutional frameworks can help build the capacity of government agencies to achieve their goals. Therefore, it is recommended that governments adopt long-term, visionary goals for Areas of Concern and commit to a customer-driven and value-added RAP process of

continuous improvement that shares decision-making power. It is further recommended that RAP institutional frameworks consider establishing a partnership agreement for Stage II RAPs to help empower stakeholders, capitalize on resources, clarify roles, ensure integration, and increase communication. Such partnership agreements are consistent with an ecosystem approach and could serve as an important milestone to be celebrated in the Stage II RAP process. Such partnership agreements can also initiate the development of local roundtables, similar in function to the Ontario Round Table on the Environment and Economy, to help governments build consensus that will lead to the necessary commitments and endorsements to achieve full RAP implementation and use restoration.

Considerable progress has been made in re-orienting decision-makers to a more inclusive planning process that shares decision-making power with all stakeholders to become partners for action. Continued emphasis should be placed on binational sharing of RAP experiences on the nature and effectiveness of remedial and preventive actions in order to ensure progress in restoring and maintaining health of the Great Lakes Basin Ecosystem.

IV APPENDIX I - LIST OF ROUNDTABLE PARTICIPANTS

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V APPENDIX II - INSTITUTIONAL FRAMEWORK CASE STUDIES

Presented below are synopses of the nine case studies of institutional frameworks for comprehensive water resource management. These case studies represent a range of practical experiences from within and outside the Great Lakes Basin Ecosystem.

Hamilton Harbour (Ontario)

A broad-based institutional framework for Hamilton Harbour RAP development was established in 1986 with the formation of a Stakeholder Group. This Stakeholder Group was made up of representatives from agencies, organizations, institutions, governments (municipal, regional, provincial, federal), industries, environmental groups, recreational groups, and private citizen groups who make use of, who wish to make use of, or in some manner have jurisdictional interests in the Harbour. The purpose of the Hamilton Harbour Stakeholder Group was to provide input and advice to a technical, governmental writing team on: public education and outreach; the process of developing the RAP; problem definition and use impairments; principles and goals relating to the RAP; the review of remedial options; and the selection of preferred remedial actions.

At the outset, the Hamilton Harbour Stakeholder Group had 49 members. After four years, membership was 43, with 38 of the original groups or agencies represented. To ensure that there was adequate coordination, continuing public involvement, and that government agencies remained publicly accountable for implementation, the Hamilton Harbour Stakeholder Group recommended formation of a management group named the Bay Area Implementation Team (BAIT) and a public consultative organization named the Bay Area Restoration Council (BARC). Secretariats and a number of committees would be set up for each group. The structure of these two groups and their relationships to the Canada-Ontario Agreement (COA) Committee are depicted in Figure 2.

BAIT is made up of a core group of implementing agencies. The responsibilities of BAIT are:

* to facilitate the development of local arrangements for implementation of the RAP and to coordinate the implementation of remedial actions for which commitments exist;
* to provide consolidated reporting of actions and progress in implementing the RAP;
* to consult with the BARC, with the general public, and with other stakeholders on issues related to implementation of the RAP;
* to create and direct technical committees as required to support the implementation of the RAP;

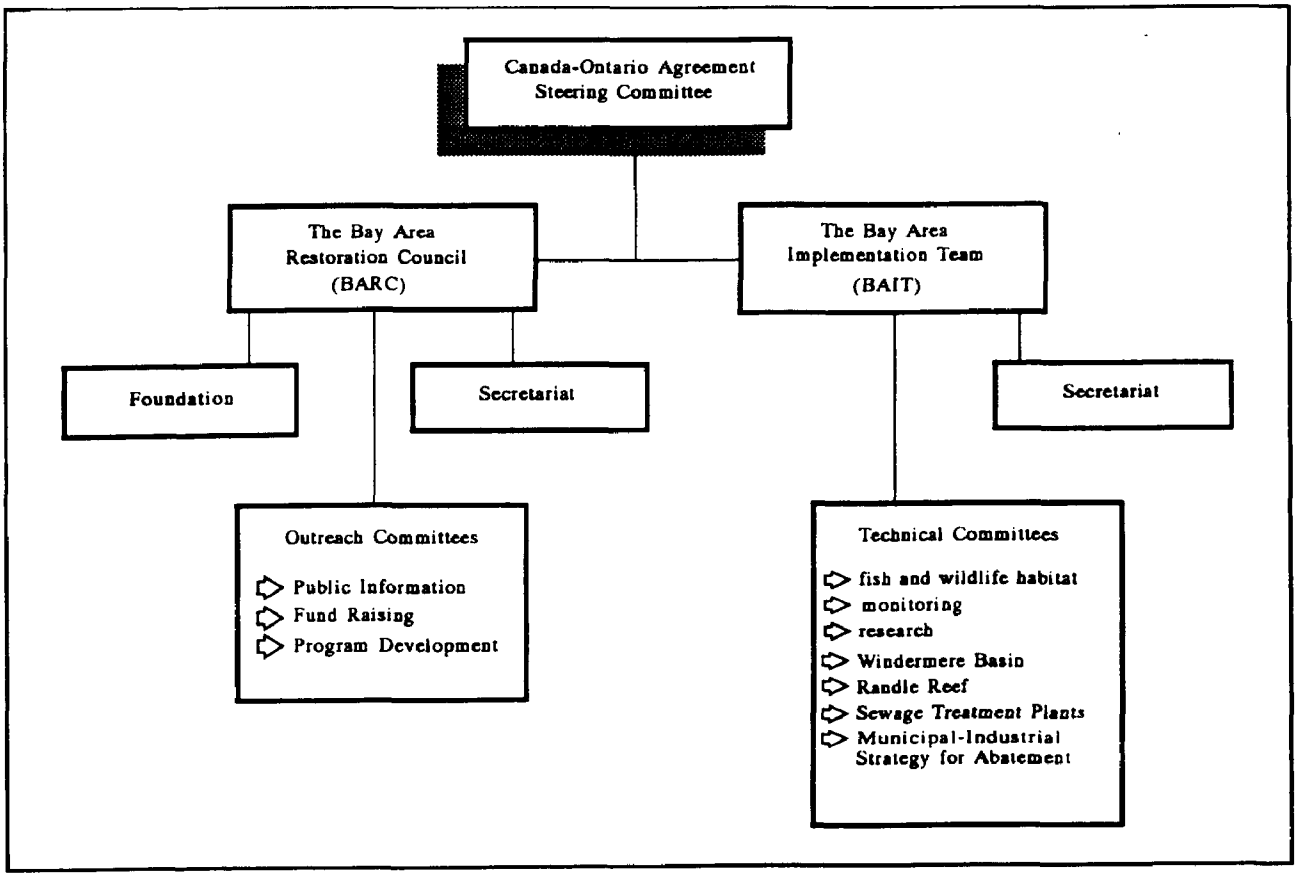
* to liaise directly with the BARC on a regular basis, including referral of progress reports and other RAP documentation for their review;

* to evaluate the effectiveness of remedial actions on an ongoing basis; and

* to report on status of the RAP to the COA Review Board through its RAP Steering Committee.

BARC uses a "roundtable" model to achieve public consultation on restoration of Hamilton Harbour as outlined in the RAP. Specifically, the purposes of BARC are to: assure protection and appreciation of Hamilton Harbour; promote and assess RAP implementation; assess public perceptions of ecosystem status; provide advice to governments on restoration; coordinate the activities of the association with those of other organizations with complementary objectives; and solicit and acquire donations, gifts, and legacies in furtherance of the objectives of the association. BARC was incorporated by law and is managed by a Board of Directors.

Figure 2. The institutional framework for implementation of the Hamilton Harbour RAP (Hamilton Harbour Stakeholder Group 1991).



Detroit River (Michigan and Ontario)

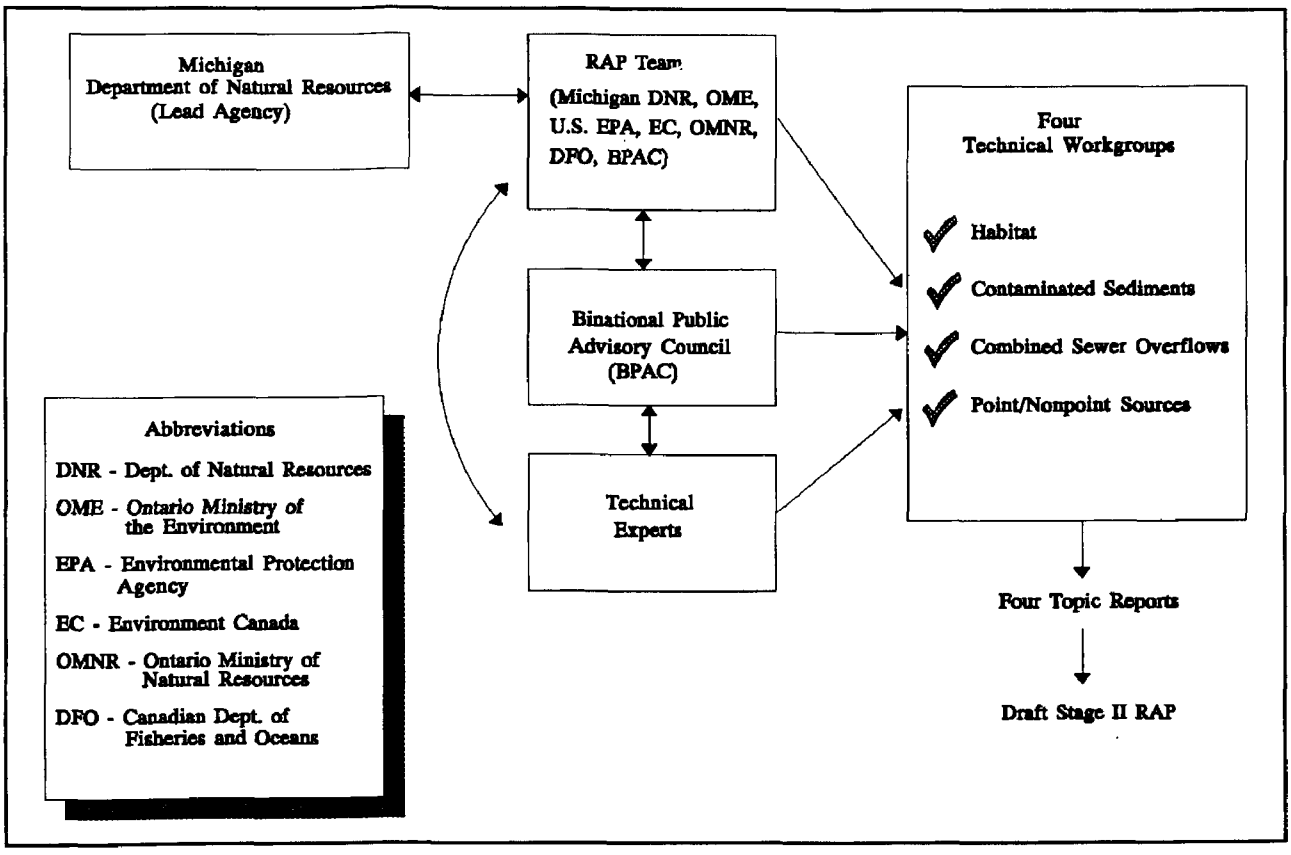
The Detroit River, a 31 mile (51 km) international boundary linking Lake St. Clair and Lake Erie, is the lowest link of the upper Great Lakes connecting channels. In 1985, the Governor of Michigan and the Premier of Ontario signed a "letter of intent" committing their jurisdictions to a binational approach to developing their shared connecting channel RAPs. For the Detroit River Area of Concern (AOC), the Michigan Department of Natural Resources (MDNR) was designated as the lead agency responsible for preparing the RAP and ensuring adequate public participation. In 1988, a Binational Public Advisory Council (BPAC) was established to facilitate public participation in RAP development. The BPAC had 20 members from Michigan and 20 members from Ontario.

The Stage I Detroit River RAP was completed in 1991 by a Detroit River RAP Team with input from the full BPAC. The RAP Team consists of representatives from MDNR, Ontario Ministry of the Environment (OME), U.S. Environmental Protection Agency, Environment Canada, Ontario Ministry of Natural Resources, Canada Department of Fisheries and Oceans, and four representatives from the BPAC. The development of the Stage II Detroit River RAP expands the multi-stakeholder partnership created in Stage I using a new cooperative and interactive approach (Figure 3).

The RAP Team agreed that the Stage II RAP should be developed jointly by members of the RAP Team, BPAC, and technical experts. Four planning workgroups consisting of selected RAP Team members, BPAC members, and technical experts have been established to develop individual reports for four major issue areas identified by the RAP Team (i.e. habitat, contaminated sediments, point and nonpoint sources, combined sewer overflows). Cross-representation of members is needed to ensure adequate communication and coordination with the RAP Team and BPAC. Each of the four technical workgroups will develop their own report which will include an assessment of completed and in-place remedial and regulatory measures as related to impaired beneficial uses in the Detroit River, a list of potential remedial and preventive options, and recommendations for preferred remedial and preventive actions. The four technical workgroup reports will become the foundation of the Stage II Detroit River RAP. Communication, cooperation, and coordination among the technical workgroups, the RAP Team, and BPAC is critical to the acceptance and success of the plan. In general, the Detroit River RAP Team and BPAC meet quarterly. Each of the four technical workgroups meet once every six weeks on average. It is expected that the four planning committee reports will be developed by April 1994, a draft Stage II RAP developed by August 1994, agency review by October 1994, public review by February 1995, and final sign-off by June 1995.

As mentioned earlier, both Michigan DNR and OME are committed to cooperate fully on the development of the Stage II Detroit River RAP in the most timely manner possible while ensuring high quality technical documents that both agencies support. Several initiatives have been taken to resolve and avoid conflicts that arise due to differences in agency philosophies and program procedures, and to facilitate planning. In addition, both MDNR and OME are strongly

Figure 3. A general framework for the development of the Detroit River Stage II Remedial Action Plan.



committed to actively seeking advice and input from the public through: local public participation programs in the Detroit metropolitan area and the greater Windsor area; and statewide and province-wide programs pertaining to all RAPs in Michigan and Ontario.

The Greater Toronto Bioregion (Ontario)

In 1988, the federal government of Canada appointed the Honourable David Crombie to act as Commissioner for the Royal Commission on the Future of the Toronto Waterfront. The Commission's three-and-a-half year mandate was to make recommendations regarding the future of the Toronto Waterfront, and to seek the concurrence of affected authorities in such recommendations, in order to ensure that, in the public interest, federal lands and jurisdiction serve to enhance the physical, environmental, legislative, and administrative context governing the use, enjoyment, and development of the Toronto Waterfront and related lands (Crombie 1990).

The problems of making Toronto Harbour publicly accessible, fishable, drinkable, and swimmable are enormous. Currently, governance in the Greater Toronto Bioregion is shared by

five regional municipalities, 30 local municipalities, and numerous federal and provincial ministries, departments, boards, agencies, and commissions. The result has been bureaucratic and political paralysis - a situation in which almost any agency can stop projects and no one can do anything (Crombie 1992). Because lines of accountability are completely distorted or hidden by this jurisdictional fragmentation, the citizen is left without any means of recourse. The jurisdictional gridlock throughout the Greater Toronto Bioregion is the single biggest obstacle to its environmental and economic regeneration - and this is not unique to Toronto.

Crombie (1992) advocates that each city region in the world develop its own institutional framework/adaptation to implement an ecosystem approach to planning. Each institutional framework/adaptation should reflect the history, culture, traditions, habits, and customs unique to that city. An ecosystem approach requires that economic development patterns, resource policies, consumer trends, and public attitudes must all be considered in terms of their actual or potential effects on the integrity of the system. This will require greater emphasis on setting goals in common, changing attitudes, coordinating plans and actions across jurisdictions, coordinating mechanisms for allocating and using resources, and planning cooperatively (Crombie 1990).

Nine principles have been recommended to guide the regeneration of Toronto Waterfront: clean, green, useable, diverse, open, accessible, connected, affordable, and attractive (Crombie 1990). Implementing an ecosystem approach and restoring Toronto Waterfront cannot be accomplished by any one agency or government in isolation. Rather, a wide range of organizations and government agencies must cooperate to implement the ecosystem approach and apply the nine principles presented above.

Features of an institutional framework/adaptation to implement an ecosystem approach to planning include:

* the recognition of the primacy of natural boundaries and processes;

* the integration of land use with environmental planning in public process and law;

* the integration of urban and rural planning to link the city with its region;

* the creation of concurrent, rather than consecutive, planning processes;

* the integration of capitol budgets of all government departments and agencies to ensure coherence, economies, and financial strength; and

* the recognition of the increasing importance of designing places and spaces that allow people to feel a part of nature while they take advantage of the pleasures that cities can offer (Crombie 1992).

The recommended strategy for developing the Toronto Waterfront, planning and building for sustainability, implementing environmental imperatives, and regenerating historic and social places involves six basic steps:

1) adopt the ecosystem approach and the nine waterfront principles (i.e. clean, green, useable, diverse, open, accessible, connected, affordable, attractive);

2) establish or adjust waterfront plans to ensure they reflect the ecosystem approach and principles like sustainability;

3) secure intergovernmental cooperation, agreements, and commitments on what needs to be done, the priorities, who does what, and the time-frames for design, construction, and delivery;

4) consolidate capital budgets and pool resources as necessary to move projects forward;

5) create the framework and conditions for private sector involvement, and capitalize on its enterprise, initiative, creativity, and capability for investment; and

6) establish partnerships among governments and between the public and private sector in accordance with planning and project requirements (Crombie 1992).

Crombie (1992) argues that the roundtable process is the key to the public administration of the waterfront - one that brings together all parties at the appropriate time, publicly and openly, so that public values can be debated and determined, and various agencies made accountable.

Canadian Healthy Communities Program

The concept of "healthy communities" originated in Toronto, Ontario and was endorsed by the World Health Organization to help cities develop and practice a healthy approach to working on the elements that make up a community. The definition of a "healthy community" is more than physical health, it recognizes the complex interactions and holistic nature of the determinants of health, including social, mental, economic, and environmental well-being. In a background paper, the World Health Organization defines a healthy city as: one that is continually developing those public policies and creating those physical and social environments which enable its people to mutually support each other in carrying out all the functions of life and achieving their full potential. The goal of this program is to make cities the healthiest communities possible.

The healthy communities program is more about process than a product. It recognizes that the process of improving the health of a community is slow and complex; that the necessary changes in human values and attitudes are the result of a long-term commitment to a multi-faceted and broad-based process of social change; and that many of the challenges of health are interrelated and require a holistic approach for resolution.

Proponents argue that city government as a whole and the community-at-large must become involved in every effort to make a city the healthiest community possible. This calls for a broad, multi-sectoral, and community-based initiative which can be initiated by public health departments and boards, but cannot be implemented alone.

Much of what government does affects health, directly or indirectly. Therefore, it is argued that local government should make a commitment to create a healthy community and help establish mechanisms to achieve that goal. Some essential elements of a healthy community include:

* a City Council resolution of political commitment to a broad public policy approach to health;

* a commitment to an interdepartmental and intersectoral healthy community strategy;

* a commitment to full community participation in the Healthy Community Project; and

* a commitment to undertaking an evaluation of local projects/programs to ensure consistency with the Healthy Community Project goals.

Each local government department is asked to identify ways in which they presently contribute to health, and ways they could contribute to better health in the future. In addition, local governments involve local citizen groups and neighborhood associations in planning and implementation of local projects, and encourage resource support for projects from business, labor, churches, volunteer groups, etc.

A Healthy City Program is being comprehensively carried out in Toronto, Ontario. Toronto City Council established a Healthy City Office to be responsible for developing the City-wide Healthy City Initiative as outlined in the report "Healthy Toronto 2000" under the direction of an inter-departmental Healthy City Work Group (Healthy Toronto 2000 Subcommittee 1988). The Healthy City Office is an official office within Toronto city government and has a staff of six. The inter-departmental Healthy City Work Group is charged with coordinating the activities of various city departments under the Healthy City Initiative. This institutional structure addresses specific issues utilizing key stakeholders in a "roundtable" fashion.

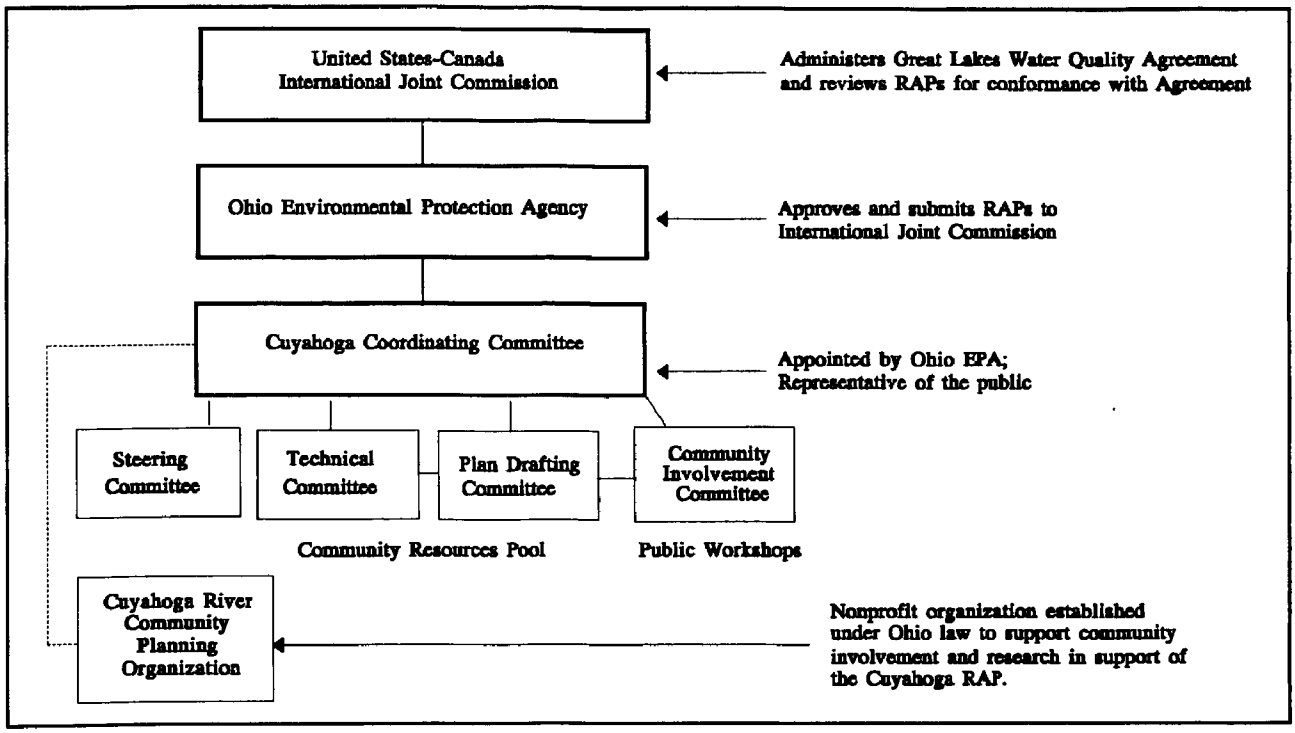
Cuyahoga River (Ohio)

The Cuyahoga River Remedial Action Plan Coordinating Committee (CCC) was established by the Ohio Environmental Protection Agency (EPA) in 1988 to provide local, state, and federal public agencies, industries, and citizen groups an opportunity to fully participate in a partnership in all aspects of the RAP planning process. It is argued that this broad-based participation will broaden and deepen community ownership of the RAP and heighten prospects for implementation (Beeker et al. 1991).

The CCC is comprised of 35 members or stakeholders. From the outset, it was given a plan development role, not simply a public advisory role. The CCC and the committees under its direction provided the institutional framework for developing the Stage I RAP.

Much of the detailed planning work was carried out by four committees: Steering Committee; Technical Committee; Community Involvement Committee; and Plan Drafting Committee (Figure 4). Broader public participation was also actively pursued on a routine basis in all committee work.

Figure 4. Cuyahoga River institutional framework for development of a Stage I RAP (Cuyahoga River Remedial Action Plan Coordinating Committee 1992).

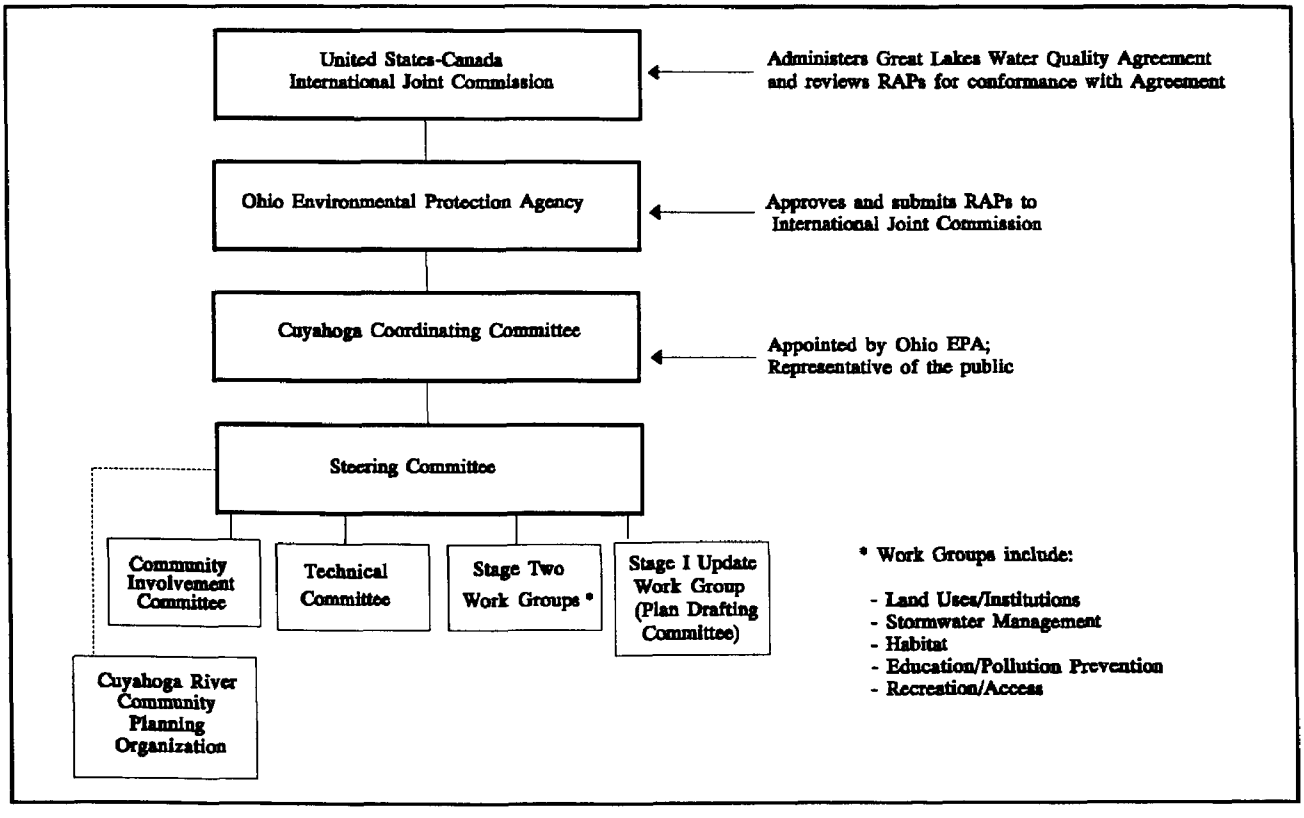


The primary role of the Steering Committee was to facilitate the CCC's oversight effort by setting meeting agendas and providing a forum for shaping issues for CCC consideration, debate, and decision. The Technical Committee coordinated ongoing field investigations of public and private entities participating in the RAP and initiated additional studies to fill data and information gaps. The Community Involvement Committee was responsible for ensuring broad public involvement in the RAP process. Much of the work of researching and writing the Cuyahoga River Stage I RAP was carried out by the Plan Drafting Committee. This committee, in turn, formed six subcommittees (Biota Impairments, Toxics Consumption, Recreation Impairments, Socio-economic, Point Sources, and Nonpoint Sources) which were responsible for preparing background on problems/causes which eventually provided the foundation for the Stage I RAP. Staff support to the Cuyahoga RAP process is provided by the Northeast Ohio Areawide Coordinating Agency (NOACA) and Ohio Environmental Protection Agency (Ohio EPA).

With the encouragement of the Ohio EPA, the CCC created a nonprofit organization under Ohio law named the Cuyahoga River Community Planning Organization. The purpose of this nonprofit organization is to support the goals of the RAP with additional resources for planning, and to develop and support programs on public involvement, education, and research. Financial support for the Cuyahoga River Community Planning Organization was obtained through grants from the George Gund Foundation, the Cleveland Foundation, and the U.S. EPA. Operating expenses during 1991 and 1992 were $152,000 and $100,000, respectively. These grants, combined with both member and nonmember contributions, provided the support for the following: a full-time environmental planning coordinator to augment staffing of NOACA and Ohio EPA; a part-time public involvement coordinator; a study investigating the direct and indirect benefits of river cleanup; a public opinion poll; public workshops; and an urban nonpoint source education program. The CCC and its committees are viewed as a successful institutional framework for developing the Cuyahoga River Stage I RAP. Full endorsement for the Stage I RAP was obtained from the CCC in 1992.

This inclusive, participatory, community-based planning process is now being used to develop the Cuyahoga River Stage II RAP (Figure 5). Overall direction is provided by the CCC

Figure 5. Cuyahoga River institutional framework for development of a Stage II RAP.



and Steering Committee, in cooperation with the Cuyahoga River Community Planning Organization. Under their direction, the Community Involvement and Technical Committees continue to function. However, the efforts of these committees are complemented with Stage II Work Groups on land uses/institutions, stormwater management, habitat, education/pollution prevention, and recreation/access, and a separate work group to update the Stage I RAP.

St. Lawrence River (New York and Ontario)

The St. Lawrence River is a binational connecting channel linking Lake Ontario to the Atlantic Ocean. This binational Area of Concern includes waters shared by New York State, the Provinces of Ontario and Quebec, and the Mohawks at Akwesasne. Two separate RAP processes are being undertaken - one by the New York State Department of Environmental Conservation (NYSDEC) at Massena, New York, and the other by Environment Canada and Ontario Ministry of the Environment (OME) for the Cornwall/Lake St. Francis area in Ontario. Binational activities by the NYSDEC and OME have increased the coordination of the two separate RAP processes. The Governments of Akwesasne were officially recognized as a supporting third party in February 1989 by the United States, Canada, Quebec, Ontario, and New York State to participate in the St. Lawrence River RAP process.

The institutional framework guiding the development and implementation of the St. Lawrence River RAP at Cornwall is led by a RAP Team made up of representatives from Environment Canada, Ontario Ministry of the Environment, Ontario Ministry of Natural Resources, the Mohawks at Akwesasne, and the Cornwall Public Advisory Committee (PAC). The RAP Team has been working since 1986 to analyze and complete a data base on the environmental conditions and causes of use impairments. The technical component of the RAP process is balanced with a formal public participation program that stems from the RAP Team. A Cornwall PAC was formed in November 1988, which subsequently initiated the formation of four subcommittees: Goals; Public Outreach; Technical; and Remedial Options. The Cornwall PAC holds monthly meetings and is attended by more than forty members, including Massena RAP participants. In addition, a Steering Committee consisting of the PAC Executive provides direction for the PAC.

The public participation process is further encouraged through the Public Outreach Subcommittee that develops and implements both independent and joint projects with Environment Canada in support of the RAP public involvement program. This subcommittee has been instrumental in involving and receiving feedback from the community on RAP activities. Other subcommittees are responsible for the development of the PAC's goals (Goals Subcommittee), reviewing and providing feedback on technical information (Technical Subcommittee), and the development of remedial options in cooperation with the RAP Team and the PAC throughout Stage II (Remedial Options Subcommittee).

The NYSDEC was the lead agency in the development of the RAP for Massena, New York. A Citizen Advisory Committee (CAC) was established in 1987 and was the primary means for the public to participate in the Stage I RAP process. The CAC was comprised of

thirty members from different interest groups and advised NYSDEC on all aspects of the development of the RAP. Technical and Public Outreach Subcommittees had been formed to deal with specific aspects of RAP development. A Steering Committee was also formed to direct RAP development and coordinate activities of the CAC and the NYSDEC. Members of the Steering Committee included NYSDEC program and communication staff, the executive members of CAC, the chair and vice-chairpersons of the full committee, and the chairs of the Technical and Public Outreach Subcommittees. The Steering Committee was chaired by the NYSDEC and reviewed the progress and activities of the CAC and its subcommittees. It set agendas for the CAC's approval and was the forum for discussion on policy matters.

Through public outreach activities planned and conducted by the NYSDEC and the Public Outreach Subcommittee, the message of the RAP was taken to the community. Activities included distributing fact sheets and newsletters, presenting information to community groups, having a display at sportsmen's shows and festivals, and sponsoring a poster and song writing contest in schools.

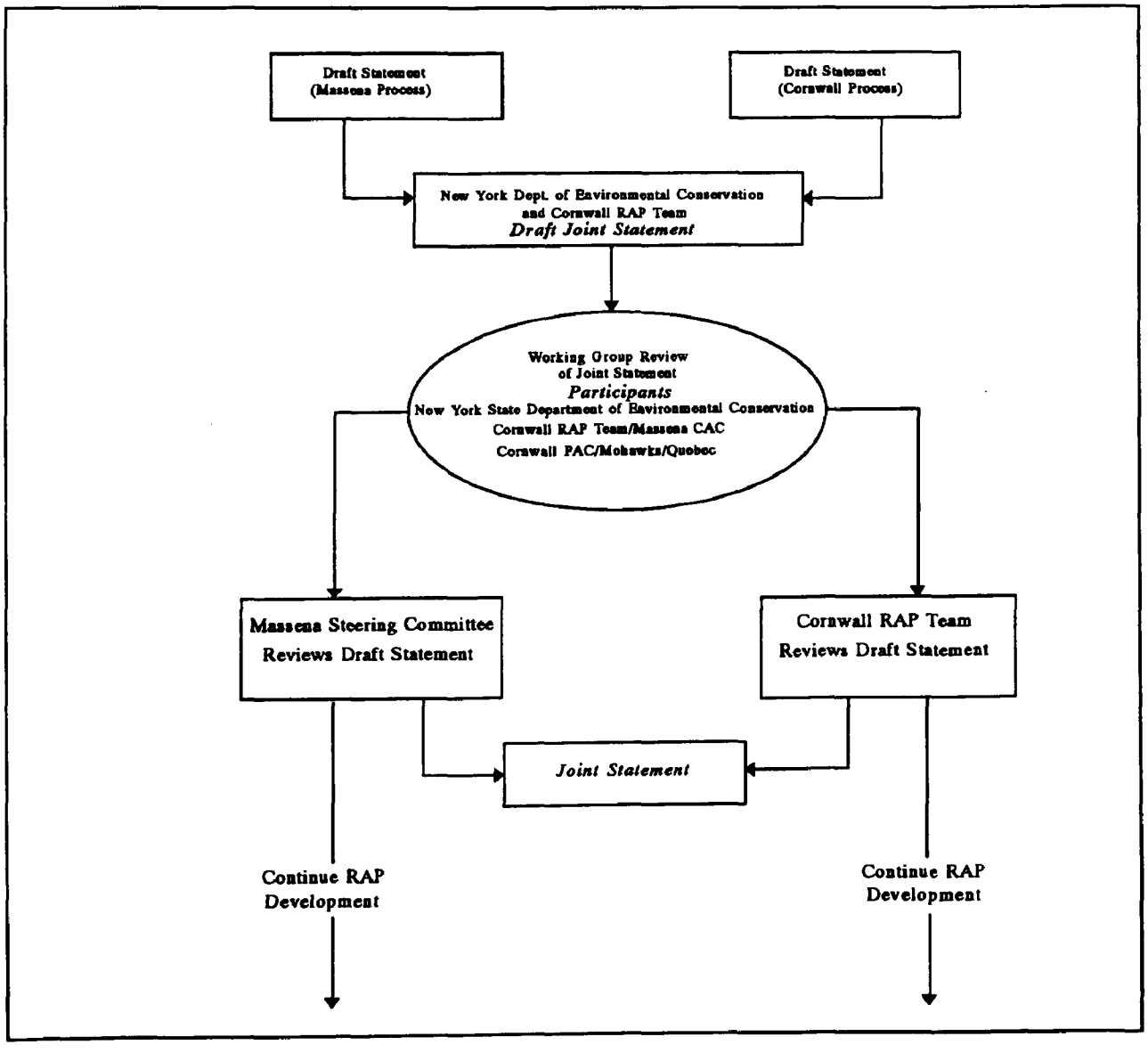
A Remedial Advisory Committee (RAC) was established in 1991 to assist the NYSDEC with the implementation of the Stage II RAP and assess RAP progress and recommend actions. To ensure continuity in the RAP process, original members of the CAC have been appointed to this committee as well as elected and appointed government officials, and representatives from public interest groups (non-economic interests), economic interests, and private citizens. The NYSDEC Division of Water Quality will provide the general coordination for the implementation of the remedial strategy.

Progress toward RAP institutional cooperation has been made through an agency agreement to develop a joint goal statement and joint problem statement. A citizen's group called the St. Lawrence River Restoration Council (1989-1991) was accepted by the PAC and CAC as a mechanism for communication among the three groups on RAP development. The Council was composed of representatives from the Cornwall PAC, the Massena CAC, and the "Mohawks Agree on Safe Health" group. It was a forum for information exchange and acted as an intermediary between the two institutional structures, the PAC and CAC. This was a consistent link established between the two RAP processes. In 1991, the Cornwall PAC withdrew its support due to internal difficulties with representation on Council. Other mechanisms for binational communication are informal, for example attending Cornwall PAC or Massena CAC meetings.

The Governments of Mohawk Akwesasne (the Mohawk Nation Council of Chiefs, the Mohawk Council of Akwesasne, and the St. Regis Mohawk Tribal Council) are participants in both RAP processes. They participate in the preparation of the RAP, provide expertise and information, provide an important perspective on the St. Lawrence River, and participate in the evaluation and implementation phase of the RAP. Mechanisms for the involvement of Environment Quebec have also been established to liaison with the St. Lawrence River RAP processes.

The goal of a cooperative approach to RAP development between Ontario and New York was partially achieved in May 1988 with an agreement between Environment Canada, Ontario Ministry of the Environment, and the NYSDEC to develop joint statements on environmental problems and goals for the Cornwall-Massena Areas of Concern. The Canadian and United States RAP teams have outlined a process for the development of these joint statements which requires input from Environment Canada, the Mohawk People of Akwesasne, and the Canadian and United States publics (Figure 6). A joint goal statement has received the approval of the

Figure 6. St. Lawrence River Remedial Action Plan institutional framework for the development of the joint goal and problem statement (Environment Canada et al. 1992).



Cornwall PAC, Massena CAC, Mohawk People through the St. Lawrence River Restoration Council, as well as Environment Quebec. This goal statement includes the following:

> The goal of the Cornwall and Massena Remedial Action Plans is to restore, protect, and maintain the chemical, physical and biological integrity of the St. Lawrence River ecosystem, and in particular, the Akwesasne, Cornwall-Lake St. Francis and Massena Area of Concern in accordance with the Great Lakes Water Quality Agreement.
>
> The goal of the Cornwall and Massena Remedial Action Plans includes protecting the downstream aquatic ecosystem from adverse impacts originating in the Akwesasne, Cornwall-Lake St. Francis, and Massena Area of Concern (St. Lawrence River RAP Team 1991).

In addition, a joint summary statement of use impairments has also been prepared. The joint summary report outlines conclusions on the description of problems in the Area of Concern with evaluation of the Great Lake Water Quality Agreement 14 indicators of use impairment. The separate processes of both RAPs are also described.

In 1992, a binational monitoring workshop was also held to share ideas and approaches for the continued education on monitoring in the Area of Concern during remedial activities. This joint workshop was a result of the cooperative institutional framework established by the RAP process.

Lake Champlain (New York, Vermont, Quebec)

Lake Champlain, situated at the border of New York, Vermont, and Quebec, is the sixth largest freshwater lake in the United States. It has considerable economic and social significance, both regionally and internationally.

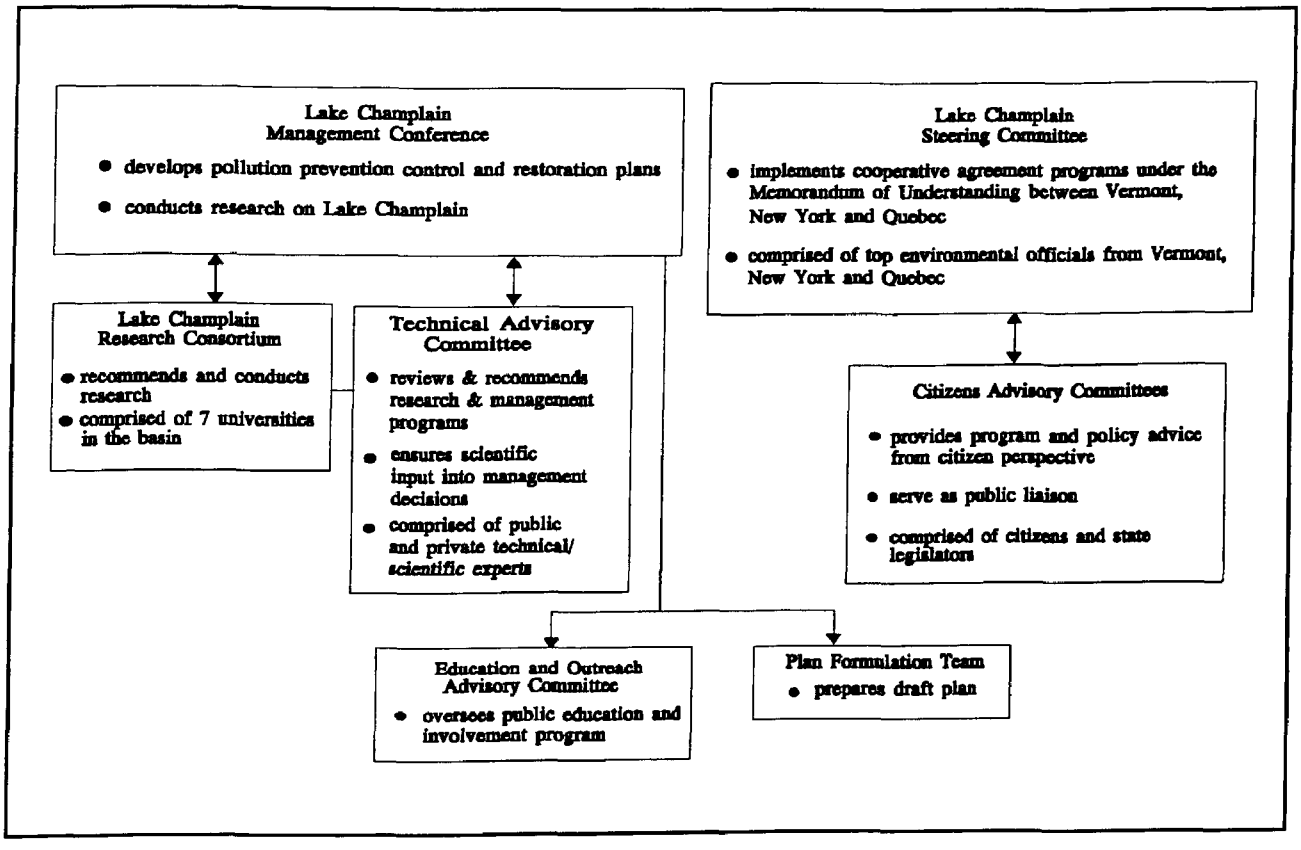
In recognition of the value of Lake Champlain and the need to strengthen and consolidate efforts to preserve and protect it, the Lake Champlain Management Conference was formed and authorized under the Lake Champlain Special Designation Act of 1990 to serve as an institutional framework for developing a Comprehensive Pollution Prevention, Control, and Restoration Plan for the Lake. The Plan will provide a framework for managing the various, and sometimes divergent, uses of the Lake so that its environmental integrity is maintained, while social and economic concerns are reflected.

In order to accomplish its goal, the Lake Champlain Comprehensive Pollution Prevention, Control, and Restoration Plan will identify corrective actions and compliance schedules for minimizing the threat from existing point and nonpoint sources, and a strategy for pollution prevention which will reduce the amount of pollution generated within the Lake Champlain

Basin. This will be accomplished by clarifying the duties of responsible parties, especially federal and state agencies, in pollution prevention and control activities, incorporating environmental management concepts established and implemented through other existing programs, and describing methods and schedules for funding of programs, projects, and activities identified in the Plan. The Management Conference can incorporate additional recommendations in order to fulfill its mission.

The Lake Champlain Management Conference, which represents a broad-based group of interests, shares in common a goal of developing a management program to protect and enhance the integrity of the Lake and its basin, taking into account social and economic benefits. Through the Management Conference, federal agencies (i.e. U.S. Environmental Protection Agency, U.S. Department of Agriculture, U.S. Department of Interior) work together with state/provincial governments, local communities, academic institutions, and public interest groups in development and implementation of the Management Plan (Figure 7).

Figure 7. Lake Champlain Project (Pearson 1992).



Lake Champlain is managed for multiple uses (e.g. commerce, swimming, fishing, boating, drinking water supply, wildlife habitat) through the Management Conference. The uses are to be balanced to minimize stresses on any part of the lake system. Maintaining a vital economy is an integral part of managing the Lake and its basin. The Management Plan is to

ensure that the Lake and its basin will be protected, restored, and maintained so that future generations will enjoy its full benefits.

Funding for the Lake Champlain Management Conference is provided from the Lake Champlain Special Designation Act of 1990. These funds are used to facilitate the Management Conference and support research efforts, surveys, demonstration projects, modelling, technical support work, and public education for developing the Management Plan. The Management Conference allocates funds to these purposes. Authorized funds to carry out this work are $2 million for each of fiscal years 1991 through 1995. In addition, complementary resource support is obtained through designation of Lake Champlain as a special project under the U.S. Agricultural Conservation Program. This provides technical and financial resources in support of the agricultural nonpoint source component of the Management Plan.

Chesapeake Bay (Maryland, Virginia, and Pennsylvania)

Chesapeake Bay and its tributaries, wetlands, and dependent natural resources make up an ecosystem shared and used by the State of Maryland, the Commonwealth of Virginia, and Commonwealth of Pennsylvania. Chesapeake Bay is the largest estuary in the United States. Considerable degradation of Chesapeake Bay has occurred as a result of human activities in the watershed. As a result, there has been substantial concern for rehabilitating and protecting the Bay, particularly as the population in the watershed is expected to grow by 20 % to over 15 million people by the year 2020.

In recognition of the degradation of Chesapeake Bay and the need for wise use, conservation, and management of Chesapeake Bay, the Chesapeake Bay Commission was created in 1980 by the General Assemblies of Maryland and Virginia (Chesapeake Bay Commission 1991). The legislation was amended by mutual consent in 1985 to include Pennsylvania as a full member of the Commission.

The membership of the Chesapeake Bay Commission consists of seven representatives from each of the three states. Each state's delegation includes two Senators, three Delegates of Representatives, the Governor or his/her designee, and a citizen representative. The Commission has a small staff with offices in Annapolis, Maryland; Richmond, Virginia; and Harrisburg, Pennsylvania. Current funding for the Chesapeake Bay Commission is approximately $125,000 annually from each state.

The primary purpose of the Chesapeake Bay Commission is to encourage and assist in achieving cooperative, coordinated planning and action among the executive agencies and legislatures of the three states (Chesapeake Bay Commission 1991). To accomplish its purpose, the Chesapeake Bay Commission:

* identifies specific management concerns requiring interjurisdictional coordination and cooperation;

* recommends to all levels of government the legislative and administrative actions which are needed to achieve effective and coordinated management of the Bay;

* collects, analyzes, and disseminates data and information about the watershed for the General Assemblies:

* represents the common interests of the states as they are impacted by activities of the federal government;

* monitors federal activities; and

* provides a forum for discussion and resolution of interstate conflicts.

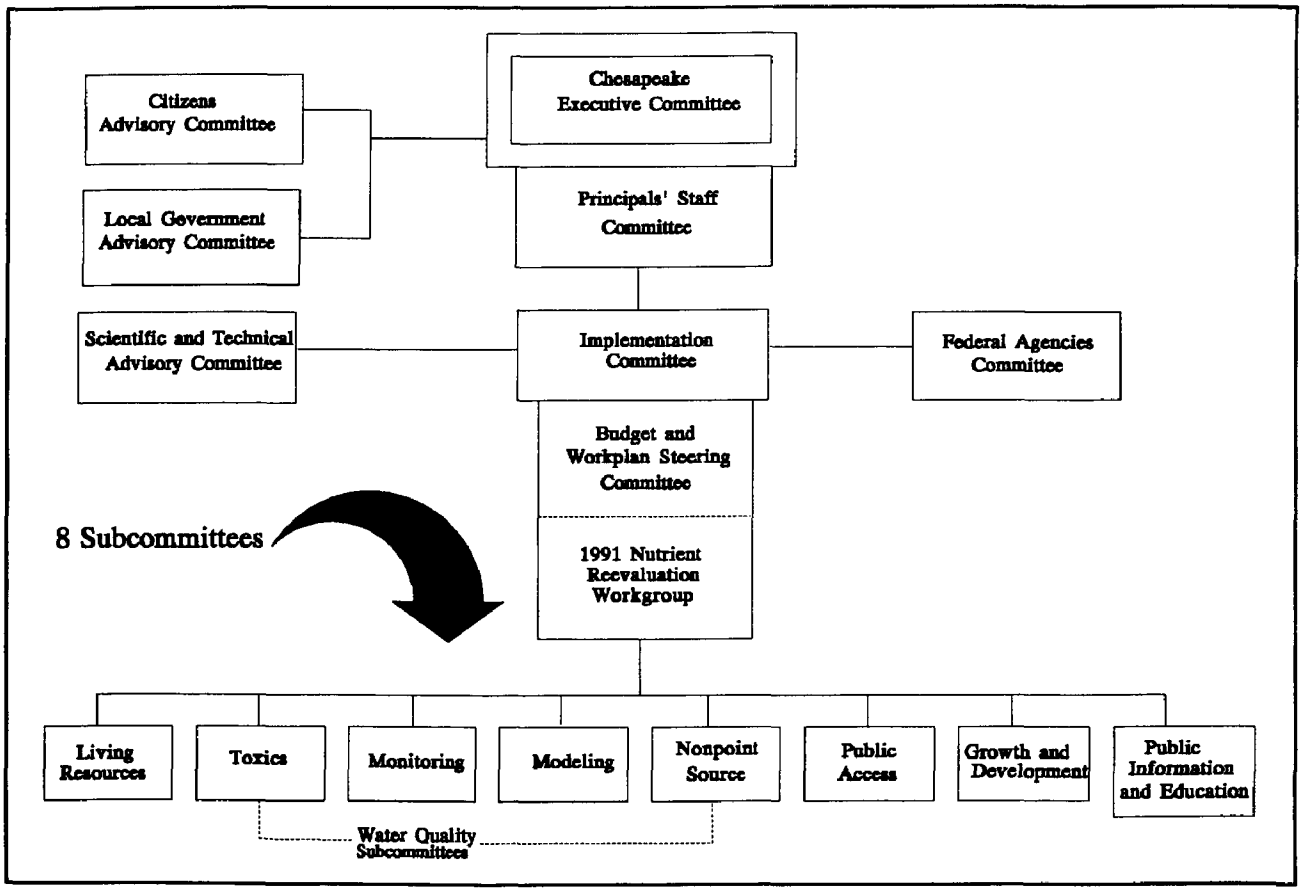
Since the Commission was formed it has been instrumental in sponsoring legislative and budgetary actions in the three states to promote restoration of Chesapeake Bay. The Commission also actively reviews executive agency actions to ensure that programs are implemented expeditiously and effectively. The range of interests of the Commission is broad and far reaching including:

* fisheries and living resources management;
* agricultural nonpoint source pollution;
* sediment control;
* stormwater management;
* nutrient control strategies;
* sewage treatment;
* toxic pollutants;
* population and land use;
* institutional arrangements;
* water use activities; and
* shoreline erosion.

The Chesapeake Bay Commission works with other organizations which have been created to coordinate management, particularly the Chesapeake Bay Program which consists of the Chesapeake Bay Liaison Office of U.S. Environmental Protection Agency, the Chesapeake Executive Council composed of the Governors of Pennsylvania, Maryland, and Virginia, the Mayor of the District of Columbia, and the Administrator of the U.S. Environmental Protection Agency, its Implementation Committee of state and federal resource management agency representatives, and its Citizens and Scientific and Technical Advisory Committees (Figure 8). The Chesapeake Bay Liaison Office of the U.S. Environmental Protection Agency helps coordinate cleanup activities of federal and state agencies, and is authorized by the 1987 Amendments of the Clean Water Act to spend up to $ 13 million a year on Bay activities, with most of that money going into matching grants that help fund state programs (U.S. Environmental Protection Agency 1989). The Chesapeake Bay Liaison Office also provides administrative and

technical support to the network of regional committees, subcommittees, and work groups which run the Chesapeake Bay Program under the direction of the Chesapeake Executive Council.

Figure 8. Major committees in the Chesapeake Bay Program (Chesapeake Bay Commission 1991).



The signing of the Chesapeake Bay Agreement in 1987 represented a significant milestone in the evolution of the multijurisdictional effort to restore Chesapeake Bay. The Agreement committed the U.S. Environmental Protection Agency, Maryland, Virginia, Pennsylvania, the District of Columbia, and the Chesapeake Bay Commission to work together to achieve a set of specific goals in a specific timeframe. All parties are working together, for the first time, to develop and implement mutually agreed-upon programs to achieve a healthier and more productive Chesapeake Bay ecosystem. Activities of the Parties to the Agreement are directed by goals and priority commitments for: living resources; water quality; population growth and development; public information, education and participation; public access; and governance.

The 1987 Chesapeake Bay Agreement has spawned numerous interjurisdictional working groups which involve all interested parties in a partnership to find acceptable solutions to common problems. Figure 8 presents the post-Bay Agreement organizational structure for the

Chesapeake Bay Program.

Commitments related to governance in the Chesapeake Bay Agreement cover a broad array of issues dealing with the overall administrative structure and function of the Chesapeake Bay Program. Specific commitments include:

* developing an annual Chesapeake Bay work plan which is endorsed by the Chesapeake Bay Council;

* continuing to support Bay-wide environmental research and monitoring to support management decisions;

* strengthening the Chesapeake Bay Liaison Office by assigning staff persons from the signatories to assist with technical support functions;

* developing and implementing a comprehensive research plan in support of the Chesapeake Bay Program;

* developing a Bay-wide monitoring plan for selected commercially, recreationally, and ecologically valuable species;

* establishing a local government advisory committee to achieve local participation in the Chesapeake Bay Program;

* reviewing the feasibility of establishing an independent Chesapeake Bay Board; and

* ensuring that the U.S. Environmental Protection Agency develops a coordinated federal workplan which identifies specific federal programs to be integrated in support of the Chesapeake Bay Program.

A Local Government Advisory Committee was formed to focus attention on issues of concern to local governments such as infrastructure funding, development standards, and immediate response to hazardous substance spills. It consists of 20 members representing local governments from each of the signatory jurisdictions. As the states begin to address human population growth and development, and attempt to develop growth management strategies, it is expected that the Local Government Advisory Committee will play an increasing role.

Puget Sound (Washington)

Puget Sound is located in the northwestern portion of the State of Washington along the coast of the Pacific Ocean. Puget Sound is an extraordinary national resource which supports considerable international commerce, abundant commercial and recreational fisheries, and varied wildlife habitats. The area also provides recreation to 3.2 million people. By the year 2010, the population of the Puget Sound Region is expected to increase to 4.4 million.

In response to growing public concern for the health and well-being of Puget Sound, the Washington State Legislature created the Puget Sound Water Quality Authority in 1985 to prepare, adopt, and oversee the implementation of a comprehensive, coordinated plan (i.e. the Puget Sound Water Quality Management Plan) to clean up and protect Puget Sound (Puget Sound Water Quality Authority 1991). The Puget Sound Water Quality Management Plan is a comprehensive estuary management plan that addresses: municipal and industrial discharges; nonpoint source pollution; shellfish protection; contaminated sediments; stormwater and combined sewer overflows; wetlands protection; monitoring and research; education and public involvement; and household hazardous waste. Over 500 jurisdictions and public agencies have some responsibility related to Puget Sound, therefore, one of the principal roles of the Authority is to ensure that there is regional coordination and cooperation in protecting and rehabilitating Puget Sound.

The Authority is an independent state agency governed by an eleven member board representing a broad range of interests and geographic areas around the Sound. Nine members are appointed by the Governor of Washington (i.e. one representative from each of the six congressional districts surrounding the Sound and one representative from cities, counties, and tribes). In addition, the Director of the Washington Department of Ecology and the Commissioner of Public Lands or their respective designees serve as ex-officio members. The Director of the Department of Ecology serves as the Authority's chairperson.

The Governor of Washington also appoints an executive director for the Authority, who selects, supervises, and manages the work of the Authority's staff. The mandate of the Authority currently extends to 1995. Funding for implementation of the Puget Sound Water Quality Management Plan was approximately $24 million during the 1987-1989 biennium and approximately $36 million during the 1989-1991 biennium. Additional state, federal, and local funds are needed and being sought under the direction of a Puget Sound Finance Committee.

The Puget Sound Water Quality Authority, in cooperation with U.S. EPA, Washington Department of Ecology, and the Puget Sound Estuary Program Management Committee, coordinates implementation of the Puget Sound Water Quality Management Plan. Specifically, the Authority: informs federal and state agencies and local and tribal governments of their responsibilities under the Plan; participates in committees and work groups; provides formal and informal guidance; and assists in obtaining funding. Authority staff act as facilitators, working closely with each federal agency, state agency, tribal government, and local government given responsibilities under the Plan. As part of the Authority's coordination responsibilities, it continuously reviews and amends program tasks as necessary to ensure Plan implementation.

In addition to the Puget Sound Water Quality Authority, a Puget Sound Foundation was established in 1991 by the Authority as a public nonprofit corporation to ensure continuity toward long-term goals of the Plan and ensure sufficient priority is given to education and research programs.

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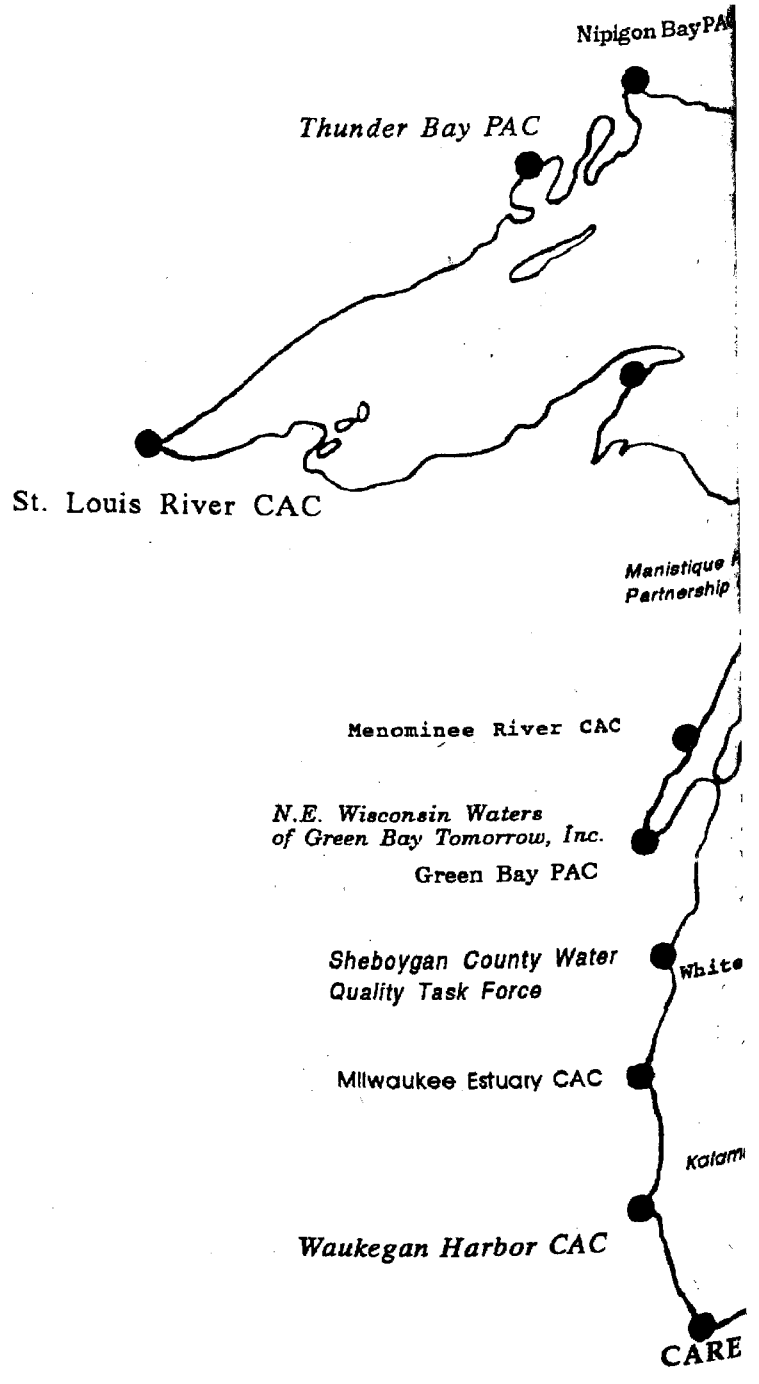

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