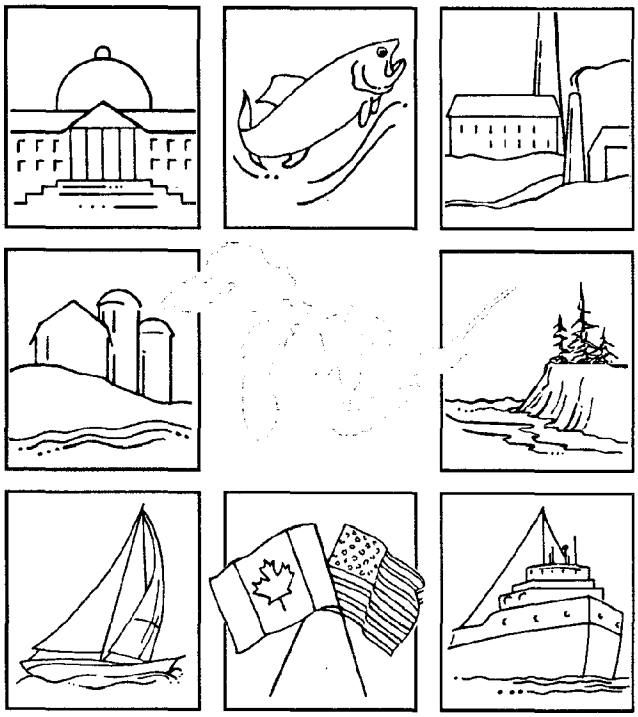

Institutional Arrangements for Great Lakes Management

Past Practices and Future Alternatives

Michael Joseph Donahue, Ph.D.

November 1987

Michigan Sea Grant College Program
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Michael J. Donahue is a former Sea Grant researcher and is a student of Great Lakes organizations and policy development. His study, titled Institutional Arrangements for Great Lakes Management: Past Practices and Future Alternatives, is the culmination of an intensive multi-year effort while a Research Associate at The University of Michigan in 1984-86.

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The views, findings and recommendations expressed in this document are those of the author in his capacity as a Sea Grant researcher and should not be attributed to those of any past or present employer or institution discussed within.

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EXECUTIVE SUMMARY

INSTITUTIONAL ARRANGEMENTS FOR GREAT LAKES MANAGEMENT: PAST PRACTICES AND FUTURE ALTERNATIVES

Background

The magnitude and complexity of the Great Lakes system and its socio-economic attributes are exhibited in terms of governance as well. The Great Lakes system is a shared, multi-purpose resource used and managed at every level from municipalities to the international arena. Two federal governments, eight states and two provinces share the Basin. Literally hundreds of governmental entities are charged with the management of some aspect of the resource, including municipalities, county health boards, state departments of natural resources, over a dozen federal agencies (U.S. and Canadian) and several regional and international bodies as well. The latter two possess important coordinative, policy development and catalytic functions in the operation of this "institutional ecosystem." Principal among them are the International Joint Commission, the Great Lakes Commission, the Great Lakes Fishery Commission and the Council of Great Lakes Governors.

The role of regional (i.e., multi-jurisdictional) institutions - in the Great Lakes Basin and elsewhere - has historically been an evolving and often uncertain one. They tend to exist rather uncomfortably in the system of federalism, and as mechanisms of the political jurisdictions, tend to be devised and instituted with political expediency and inadequate sensitivity to goal setting and development of measures of success. This observation is particularly true in the Great Lakes Basin, where a long-standing yet poorly articulated sense of dissatisfaction with its regional institutions is observed and, yet, little attention has been paid to the systematic and comprehensive review of regional resource management needs and the institutions required to provide for them.

In the past several years, numerous developments have emphasized the need for such a review:

- <u>The continuing maturation of the "ecosystem approach" concept for Great Lakes management</u>. Resource managers are becoming increasingly aware of the interrelatedness of the Great Lakes and the concomitant need for an integrated, systems-oriented management approach. This has prompted a rethinking of traditional management approaches reliant upon issue-specific authority and political jurisdictions.

- <u>The accelerated movement and dynamic nature of the institutional ecosystem for Great Lakes management</u>. In the United States, the "new federalism" philosophy has seen state assumption of many

research, regulatory and planning functions once undertaken and/or funded by the federal government. Concurrently, we observe an unprecedented level of activity in regional government (e.g., formation of the Council of Great Lakes Governors and the Great Lakes Environmental Administrators) and the business, citizen and private foundation sector (e.g., formation of The Center for the Great Lakes and Great Lakes United). As the various agencies and organizations attempt to define or redefine their respective roles, an understanding of the existing institutional network and associated needs is imperative.

- The nature of interstate and international issues emerging in the Great Lakes region. The region's jurisdictions are being confronted with increasingly complex economic and environmental challenges of a regional nature. Transboundary air pollution, toxic contamination, and Seaway maintenance and expansion are but a few. Addressing them requires a careful examination of the institutional arrangements currently or potentially available on a binational scale.

- The political context in which resource management problems are defined and addressed. Given the jurisdictional complexities of Basin resource management, the institutional network does not simply address problems and issues; it also can redefine, ignore, create, solve or exacerbate them. For this reason, an understanding of this network - its strengths, weaknesses and potential - is as critical as understanding the problems and issues themselves.

A growing recognition of these and related concerns was expressed at the June 1982 Governors' Water Resources Conference on Mackinac Island. By unanimous action, the Great Lakes governors and premiers passed a resolution recognizing that present institutional arrangements for binational cooperation - such as the Great Lakes Commission and International Joint Commission - "need to be strengthened" to effectively address current issues.

These developments form the impetus for this study entitled, "Institutional Arrangements for Great Lakes Management: Past Practices and Future Alternatives."

Methodology

The thesis upon which this investigation is premised is as follows:

The evolution of effective institutional arrangements for Great Lakes management has been hampered by an inadequate understanding and analysis of past and present regional institutions and their respective roles in addressing Basin needs. As a consequence, we find a resultant failure to incorporate positive attributes into the establishment of new management institutions or the revision of existing ones. A systematic review of the evolution of past and present institutional arrangements will facilitate the identification and analysis of management strategies and organizational characteristics that hold promise for Great Lakes management. They can

then be integrated into new or existing institutional arrangements to enhance Great Lakes management capabilities. The corresponding goal is to encourage the orderly and informed evolution of the Great Lakes "institutional ecosystem," and in so doing, advance both the efficiency and effectiveness of regional resource management efforts.

A systematic review and analysis of the evolution of past and present institutional arrangements for regional resource management in the Great Lakes Basin was conducted in the interest of attaining five objectives supportive of this goal. The objectives are:

1) To provide an historical perspective on the form and evolution of past and present institutional arrangements for regional resource management as well as examine the range of approaches employed in the United States and Canada;

2) To identify organizational characteristics and management strategies associated with those institutions that may have current or potential applicability to institutional arrangements in the Great Lakes region;

3) To explore the linkages between the components of the Great Lakes "institutional ecosystem" and identify alternate means for strengthening them;

4) To develop a list of guidelines, parameters and organizational criteria that might be considered the essential components of a viable institution or set of institutions; and

5) To design alternative institutional arrangements which might be incorporated into, replace, or otherwise augment existing arrangements to encourage the orderly and informed evolution of the Great Lakes institutional ecosystem.

To meet these objectives, four principal information sources were incorporated into the study methodology; the literature (theoretical and applied); personal interviews with selected individuals with professional interests or responsibilities in regional resource management; a questionnaire survey administered to a broad selection of same; and observation and analysis of relevant institutions.

The nine tasks associated with this methodology were pursued sequentially as follows:

1) Literature search and review - theoretical and applied - with an emphasis on case studies and institution-specific analysis;

2) Selection of institutions for review;

3) Development of a methodology for analysis of selected regional resource management institutions and their programs;

4) Identification and systematic review and analysis of selected Great Lakes management institutions and their interrelationships;

5) Identification and systematic review and analysis of selected institutional forms and existing institutions in other geographic areas with potential applicability to Great Lakes management needs;

6) Structure and conduct of interviews with selected individuals with professional interests or responsibilities in Great Lakes Basin management;

7) Administration of survey questionnaires to a broad group of regional resource management professionals to further refine output of interviews;

8) Specification of guidelines, parameters and organizational characteristics with potential applicability to the Great Lakes institutional ecosystem and its attendant components; and

9) Design and justification of alternative institutional arrangements for Great Lakes resource management.

Findings and Recommendations

While study findings and recommendations focus ultimately on this latter task - design and justification of alternate institutional arrangements - the study yielded an array of findings in other critical areas as well. Presented below is a synopsis:

A. The Search for the "Ideal" Institutional Arrangement for Great Lakes Management

It is found - in both the literature and the opinions of practitioners - that there exists no "ideal" institutional arrangement at present, nor have specifications for a comprehensive prototype arrangement been brought forward for serious consideration. Constraints in the search include: an historical superficial attention to fundamental Basinwide resource management goals and needs by resource managers; divergent philosophies (i.e., lack of consensus) within the Great Lakes constituency; the uniqueness (physical and political/jurisdictional) of the Basin; the absence of a benchmark for assessing institutional adequacy; and the inadequacy of evaluative mechanisms for assessing institutional performance and effecting change.

B. A Rationale for the Complexity of the Great Lakes Institutional Ecosystem

The study documents the complexity of this institutional ecosystem through the inventory and analysis of its component parts and the interactions among them. The notion of a complex system as an unequivocally inefficient one is rejected, and a rationale for the complexity presented. Causal factors include the physical characteristics of the Basin's hydrologic system; the multiple-use properties of Basin resources; the complex interface between hydrologic and political boundaries; the adaptation of the institutional framework to "new knowledge;" and the inherent nature of governmental behavior in a resource management setting. The latter includes a tendency toward institutional inertia; a preoccupation with

"newness" (i.e., the political appeal of creating new institutions as opposed to addressing the inadequacies of existing ones); an historical proclivity toward "crisis response" management; and the experimental nature of regional resource management.

C. Essential Parameters for Regional Resource Management Institutions

A social research and development methodology was systematically applied to the literature to elicit consensus findings as to regional resource management parameters essential for effective institutional structure and operation. Forty-nine "application concepts" were generated, addressing the following areas: management philosophy; participatory management; management functions; role of the management entity in the institutional ecosystem; physical jurisdiction; breadth of authority; membership/constituent relations; and compatibility of form and function. These application concepts were presented as a theoretically and operationally sound "checklist" to guide institutional design and revision.

D. An Assessment of Alternate Institutional Forms

An extensive literature review and series of case study analyses yielded a total of fifteen generic institutional forms for prospective application in a Great Lakes management setting. While recognizing that all forms are not distinct and variations between them do occur, the following listing was found to reflect the range of institutional forms presently available for consideration: 1) interstate compact; 2) federal-state compact; 3) state-foreign power compact; 4) interstate council/commission; 5) federal/state commission; 6) international treaty/convention/agreement; 7) federal regional council; 8) federal regional agency; 9) basin interagency committee; 10) intrastate special district; 11) single federal administrator; 12) international commission; 13) international court; 14) federally chartered or private corporation; and 15) nongovernmental organization. The preponderance of these forms were drawn from the U.S. literature; associated institutional forms in Canada for regional resource management were referenced as appropriate under these general headings.

Each of these generic forms was investigated to provide: 1) a description of key structural and operational characteristics; 2) a brief history and present status of the development of the institutional form; 3) an examination of the strengths and weaknesses on the basis of specified criteria; 4) an assessment of potential applicability to Great Lakes management (singly or in combination with other forms); and 5) likelihood of being implemented given present institutional arrangements and the political/procedural aspects of institutional change.

When examined in its totality, this "universe" of generic institutional forms yields a series of observations pertinent to the Great Lakes management effort. Those of particular significance include:

1) It is clear, as many authors have concluded, that there is no single institutional form indisputably capable of accommodating all Great Lakes management needs in and of itself. Rather, a collectivity of forms must be utilized, or a variation of existing forms

developed which incorporates the positive attributes of many into one.

2) Despite the omnipresent dissatisfaction which has accompanied the evolution of institutional forms in the Great Lakes region, such forms are actually quite advanced when compared to those developed in other regions. In many respects, the Great Lakes region has been an innovator in "experimenting" with some of the "stronger" institutional forms (e.g., compact, international commission, treaty/convention/agreement). Hence, the value of an introspective examination of institutional evolution should not be discounted; it is at least as enlightening as an analysis of institutional arrangements in other regions.

3) Despite their structural rigidity and often limited mandates, most institutional forms do exhibit substantial operational flexibility. For example, the structure of a given institution may forbid formal binational membership, yet informal arrangements might be developed to the point that structural limitations are but an inconvenience (as opposed to an insurmountable obstacle) to Basinwide management activity.

4) The generic institutional forms reviewed can be assembled on a continuum ranging from the formal and highly structured mechanisms (e.g., compacts, international commissions, treaties/conventions/agreements) to those of a more informal and loosely structured nature (e.g., federal regional council, basin-interagency committee, nongovernmental organization). From a comparative standpoint, the former tend to be long-standing, well-established, somewhat routinized and comfortably settled into a "niche" in the institutional ecosystem which dictates their operation and areas of emphasis. The latter tend to be shorter-lived; flexible (and sometimes uncertain) in assuming their institutional niche; adaptive to emerging needs; and more reliant upon the motivation of their members than established reputation in advancing the regional resource management effort. While both extremes on this continuum are found to have characteristics applicable to the Great Lakes management effort, the likelihood of implementation (for political reasons) is heavily skewed toward the latter.

5) Despite their distinct traits, certain strengths and weaknesses tend to emerge repeatedly when the various institutional forms are analyzed. For example, most lack: co-equal, U.S.-Canadian representation; autonomy in carrying out resource management functions; broad, inter-jurisdictional representation (domestic or binational); public participation mechanisms; incentive systems for active membership involvement; binding authority; and a comprehensive planning function. Conversely, most provide: a forum for information exchange; a sensitivity to transboundary, Basinwide or regional concerns; consensus building mechanisms; a degree of flexibility in addressing emerging needs; and advisory, research and coordinative services to member jurisdictions. While no single institutional form embodies all the positive attributes, it appears

that an "institution building" exercise drawing from the various forms available would be a significant contribution to the Basin management effort.

6) When the various generic institutional forms are examined in light of an appropriately derived set of the institutional parameters or "application concepts," their prospective contributions to the Basin management effort are found to be varied. For example, based on the strengths/weaknesses cited:

   a) The federal regional agency, intrastate special district, and single federal administrator forms are found to be entirely inappropriate as lead institutions in a binational basin management setting, and of questionable value as supporting ones.

   b) The interstate compact, interstate council/commission, federal-state compact, federal/state commission, federal regional council and Basin interagency committee forms do exhibit desirable characteristics for Basin management, but their domestic emphasis makes them more appropriate as supporting, rather than lead institutions.

   c) The state-foreign power compact and international treaty/convention/agreement devices do hold promise as a framework for binational Basin management, provided, of course, that they authorize the establishment of an appropriate institutional form.

   d) The international court concept has no applicability as a lead management device, but may be of value as a "last resort" mechanism should other institutional mediation efforts fail.

   e) Nongovernmental institutions provide essential support services and monitoring and catalytic functions, but due to their nature, are not candidates for a leading role in Basin management.

   f) The international commission form, based on a treaty or agreement, is the preferred candidate for a lead institution role, provided that it reflects the various institutional strengths interspersed throughout the other institutional forms identified.

These findings, coupled with the inventory/analysis of generic institutional forms, provide an appropriate baseline reference source for subsequent analysis of those forms presently employed in Great Lakes resource management.

E. Perspectives on Great Lakes Institutional Arrangements and Needs - The Personal Interview Approach

A series of twenty, in-depth personal interviews were conducted with leading Great Lakes policymakers and opinion leaders to elicit attitudes

and ideas associated with present arrangements and potential alternatives. Among others, consensus findings included:

1) the "mixed" performance of the collectivity of Great Lakes management institutions and predominant strengths and weaknesses determining that performance;

2) the marginal responsiveness of these institutions to present and emerging management needs;

3) the complementary nature of goals across institutions but the attendant absence of the required linkages;

4) the inadequacy of institutional activity in the areas of Basin research and planning, data gathering and analysis, and regional advocacy, among others; and

5) the relative satisfaction with fundamental institutional missions, with a view toward extensive refinement (by incremental means) of present arrangements.

Findings also addressed the relative strengths and weaknesses of the four institutions focused on (the International Joint Commission, Great Lakes Commission, Great Lakes Fishery Commission and the Council of Great Lakes Governors), and key management functions and structural/operational characteristics warranting integration into the institutional framework.

F. Perspectives on Great Lakes Institutional Arrangements and Needs - The Survey Questionnaire Approach

A survey questionnaire was administered to a cross section of individuals associated with the Great Lakes management effort, augmenting the personal interviews and yielding: a perspective on the adequacy of the overall management effort; an assessment of the mandates and functions of individual institutions; thoughts on characteristics of the "ideal" institutional arrangement; and the means by which these characteristics might be incorporated into the present framework. Key findings elicited from the 109 survey respondents include:

1) Views on Existing Great Lakes Institutions and Institutional Arrangements

   a) Present institutional arrangements for Great Lakes management were viewed as less than satisfactory by approximately 70% of respondents, with the preponderance finding the arrangements to be marginal at best.

   b) Although duplication of effort and conflicting goals among these regional institutions are not perceived as significant problems, most respondents (75%) believe that current levels of coordination and cooperation are inadequate.

   c) While the overall adequacy of management functions pursued by the collectivity of Great Lakes institutions might best be

termed as "marginal," the strongest areas consisted of policy development, impact assessment and coordination. Pronounced weaknesses were found in monitoring/surveillance, public participation/education and enforcement.

d) Dissatisfaction with present institutional arrangements centers around perceptions of too many institutions; fragmentation of authority; poor inter-institutional coordination; and a tendency toward "turf protection."

e) With regard to perceptions of individual institutions and their missions, 71% of all survey respondents with an opinion found the performance of the Great Lakes Fishery Commission to be satisfactory. Other figures were: International Joint Commission - 44%; Council of Great Lakes Governors - 31%; Great Lakes Commission - 30%.

f) Duplication of effort among Great Lakes institutions was found to be of concern to just over 20% of the respondents; most had "mixed" opinions or viewed the various mandates as "complementary."

g) Organizational strengths and weaknesses (of both a structural and operational nature) were identified for each of the four institutions of principal concern - with respect to their potential in addressing the breadth of Great Lakes management needs. Results for each institution, in order of frequency, are as follows:

International Joint Commission

Strengths include: binational membership; technical capability; firm legal framework (i.e., Boundary Waters Treaty of 1909, Great Lakes Water Quality Agreement of 1978); sense of "history" (i.e., firmly established); prestige and positive public profile; Basinwide orientation and subscription to the "ecosystem approach;" joint consideration of U.S. and Canadian concerns; consensus building vehicle; and independence and impartiality.

Weaknesses include: lack of authority for program initiation, implementation or regulation; lack of initiative and follow through; politicized appointment and decision-making process; staffing/funding inadequacies; lack of state representation; failure to exercise full authority under existing mandate; and inconsistent and inadequate leadership.

Great Lakes Commission

Strengths include: co-equal state representation; value as a coordinative device; legal authority under the Great Lakes Basin Compact; use for interstate advocacy; staff capability and dedication; and ability to address a broad range of economic development and environmental issues.

Weaknesses include: limited mandate and absence of implementation authority; inadequate Canadian representation; limited state interest and support; inconsistent/inadequate state involvement and leadership; unclear direction at membership and staff levels; lack of follow-through and impact; inability to achieve consensus; low public profile and level of support; singular focus on issues; poor caliber or inappropriate selection of commissioners; and staffing/funding inadequacies.

Great Lakes Fishery Commission

Strengths include: Basinwide orientation; binational participation; technical capability; clear focus and manageable mandate; record of accomplishment (i.e., sea lamprey eradication); and staff dedication.

Weaknesses include: narrow mandate and focus; narrow focus within fishery management (e.g., preoccupation with sea lamprey control, production rather than habitat management orientation); low profile among the public and resource management community; inadequate funding base; lack of implementation and management authority; and focal point for "turf battles" among cooperators.

Council of Great Lakes Governors

Strengths include: high level representation and decision-making authority; political "clout;" high public and media profile; quick response capability; forum for interstate coordination.

Weaknesses include: lack of defined plan of action; lack of continuity and follow-through; lack of co-equal representation by all Basin states; politicized nature; inadequate staff size and expertise; inadequate coordination with other regional institutions; absence of statutory authority; actual/potential turnover in membership and staff; and absence of full Canadian representation.

2) Views on Desired Great Lakes Institutions and Institutional Arrangements

a) Given the opportunity to design the "ideal" regional institution, most respondents would select a binational compact commission with an appointed state, provincial and federal membership; a Basin-oriented jurisdiction; and a comprehensive management focus with some autonomy but accountable to member jurisdictions. Management functions would be broad based, with special emphasis upon Basin planning, regional policy development, coordination, data collection, impact assessment and research/issue analysis.

b) A small majority of respondents (55%) favored a centralized institutional arrangement in which all principal management functions were consolidated into a single lead entity. The balance found a decentralized, multi-institutional approach to be more desirable.

c) Issue areas of relevance to the desired institution, in order of selection, include: water quality; water quantity; levels and flows; air quality; fish and wildlife; and coastal zone management.

Those with lower rankings include: drainage; flood plain management; soils; geology; and forest/vegetation.

d) A small majority of respondents (53%) preferred allocation of management functions by level of authority (e.g., one institution responsible for regulation and enforcement, another for planning). The balance exhibited a preference for allocation by resource area (e.g., one responsible for fisheries, one for water quality).

3) Means to Implement Change

a) In an "ideal" sense, consolidation or major revision of existing agencies is the preferred approach to institutional change (50%) followed by incremental change to existing agencies (23%) and creation of new institutions (18%), among others. Given political realities, however, incremental change was viewed as most realistic (76%), followed by consolidation of existing agencies (10%) and creation of new institutions (3%). Almost 10% of respondents believe that political realities prohibit any type of change at the present time.

b) Prevailing obstacles to institutional change, listed in order of frequency include: resistance by political jurisdictions unwilling to sacrifice autonomy; lack of political will; funding/resource constraints; resistance by existing regional institutions and uncertainty over institutional needs.

c) Suggested structural and operational revisions to the four institutions of concern focused on the areas of membership/co-operator arrangements; appointment process; authority; coordination/integration; administration; scope of concern; and institutional status. (Refer to text for detailed discussion of suggested revisions within each category.)

4) Miscellaneous Questions

a) Responses yielded no single institution which the majority viewed as capable of serving as a "prototype" for addressing Basinwide resource management needs. The now-defunct Great Lakes Basin Commission was identified by 13% of the respondents, followed by the International Joint Commission and the Delaware River Basin Commission. However, the 67 responses were scattered over 38 institutions.

b) The desirable characteristics commonly associated with this range of institutions included: research capability; broad

issue orientation; firm legal basis and broad authority; co-ordinative/consensus building forum; long-term planning and a standard of professionalism.

c) Respondents identified 226 present and emerging resource management needs in the Great Lakes Basin. Assembled into nine resource categories, they are as follows in order of frequency: water quantity management; water quality management; toxic/hazardous waste management; institutional/policy needs; maritime concerns; air quality; coastal zone/land resource management; economic development; and ecosystem management. Of the above, the most frequently mentioned issue was that of Great Lakes diversion and consumptive use, followed by concern over toxic contamination of the resource.

G. Recommendations for Institutional Revision

The literature review, personal interviews, questionnaire survey and analysis of the four principal Great Lakes institutions yielded an extensive listing of individual and collective institutional strengths and weaknesses. Based on this listing (presented in detail in text), a series of recommendations are developed and categorized within four scenarios for institutional change.

Scenario One: Preserving the "Status Quo" -- This option calls for the continuation of the long observed "natural evolution" of the institutional ecosystem; an evolution influenced by a progression of discrete events and issues as opposed to concerted "outside" manipulation of the institutional structure. This option is rejected on the basis of historical observation; a regional institutional environment which resists substantive positive change; and the sheer magnitude of the Basin management task and its political, social, environmental and economic aspects.

Scenario Two: An Incremental Approach to Institutional Change -- This option accepts the fundamental legitimacy of existing institutional arrangements and advocates a series of modest operational and structural revisions to bring these arrangements in line with Basin management needs. Recommendations for the collective institutional effort (i.e., the four regional institutions of concern) include, for example:

1) Endorse a common set of goals and objectives for the use, management, and protection of the resources of the Great Lakes Basin.

2) Establish a framework for information exchange and joint action. Hold periodic "summit" meetings of key regional institution staff/officers to prepare and cooperatively implement a joint strategy.

3) Establish a regional information collection, storage and retrieval system.

4) Create a framework to monitor and coordinate Great Lakes research activity; identify and prioritize needs; and allocate responsibilities.

5) Generate inter-institutional support for a Great Lakes Information Referral Center.

6) Designate inter-institutional liaisons as a means to strengthen linkages.

7) Formalize an Interagency Personnel Agreement process to facilitate staff exchange among Great Lakes institutions and state/provincial federal agencies.

8) Establish intra-institutional evaluation processes for periodic use in assessing progress in achieving objectives and guiding necessary revisions in structure and/or operation.

Recommendations for individual institutions, numbering several dozen, are focused largely in the areas of priority setting; Basin planning; establishing internal evaluation mechanisms; broadening public input; establishing lines of accountability to, and expectations of member political jurisdictions; applying principles of ecosystem management to program activity; reviewing and exercising all organizational capabilities under mandate; assessing organizational resource requirements; strengthening inter-institutional linkages; clarification of roles vis-à-vis other institutions; strengthening the binational focus; and others.

These and other options are offered as the appropriate first steps in desired institutional change, as they are viewed as largely politically acceptable and implemented with a relative minimum of institutional disruption, economic cost and time requirements.

Scenario Three: Institutional Change Through Substantive Revision -- This option, while accepting the fundamental legitimacy of current arrangements, calls for sweeping operational and structural revision to better address identified management needs. Among numerous others, recommendations include:

1) A federal/state counterpart to the Canada-Ontario Agreement for binational water quality management.

2) Formal and co-equal provincial affiliation with the Council of Great Lakes Governors and the Great Lakes Commission.

3) Amendment of the Great Lakes Basin Compact to provide Great Lakes Commission membership with some level of standard setting, regulatory and enforcement capability.

4) A comprehensive planning mandate for the International Joint Commission.

5) An operational merger of the Council and Great Lakes Commission which leaves the compact intact yet integrates staff and individual programs.

6) An international Great Lakes Agreement which broadens the Water Quality Agreement focus, the role of the International Joint Commission Great Lakes Regional Office, and recognizes state/provincial roles in carrying out the terms of such an Agreement.

These and other recommendations are offered as positive steps to augment and expand upon the incremental recommendations presented earlier. The substantial political obstacles to implementation are recognized, however, as are the economic costs, time delays and institutional disruption involved with many.

Scenario Four: Dramatic Single Step Revision -- This scenario calls for elimination of the present institutional ecosystem in favor of a new and significantly different arrangement. The "ideal" institution for Great Lakes management is presented; a binational treaty organization with an appointed state, provincial and federal membership; a Basin-oriented jurisdiction; a comprehensive planning and management focus with standard setting and limited regulatory and enforcement powers; and a staff with some autonomy but accountable to member jurisdictions. Management functions are broad based, with special emphasis on Basin planning, policy development, coordination and data collection. Provided within the overall institutional framework are state, provincial and federal caucuses.

This institutional option is presented as a hypothetical one, recognizing the political obstacles associated with its development. However, it serves as the embodiment of desired characteristics, and as such is offered as a benchmark for guiding and evaluating less dramatic revisions.

The recommendations within these scenarios are presented to regional policy makers as a means to systematically strengthen an institutional arrangement presently incapable of addressing current and emerging issues in a fully effective and efficient manner.

SECTION ONE: CHARACTERIZING THE INSTITUTIONAL FRAMEWORK FOR GREAT LAKES MANAGEMENT

Introduction

Almost two hundred years ago, an otherwise insignificant event in the upper reaches of a then-desolate Great Lakes Basin signaled, perhaps symbolically, a new era for the lakes. It occurred in 1797, when the North American Fur Company constructed a small lock on the St. Marys River near a community now known as Sault Ste. Marie, Michigan. This new lock - designed to expedite fur shipments to the lower lakes and beyond - was the first recorded attempt to manipulate the Great Lakes system for a given commercial use. Further plans for manipulation followed in rapid and extended succession, with some of the more notable being the opening of the Erie Canal in 1825; the Welland Canal in 1828; the initial construction of the Lake Michigan diversion at Chicago in 1848; and the initiation of widespread port and channel dredging in the latter decades of the nineteenth century. Non-structural manipulation was a parallel practice and continues today: fish stocking programs, phosphorus control measures and effluent standards are but a few of the myriad initiatives influencing the physical attributes and operation of the Great Lakes system. All were the outcome of management decisions designed to broaden the limitations of the physical system or correct the unintended, deleterious impacts of earlier initiatives.

During the early years of resource development in the Great Lakes Basin, technology was the limiting factor, while environmental science and the investigation of developmental impacts were largely ancillary considerations. Although the development technology was untested and the environmental impacts speculative, the sponsoring governmental institutions generally knew what they needed to accomplish and the political process appropriate for the task. By the end of the nineteenth century, interjurisdictional arrangements - both domestic and binational - were gaining favor but largely oriented toward issue-specific needs where a broadened political constituency was the primary motive.

The twentieth century brought with it a dramatic change in the philosophy of resource management in the Great Lakes Basin and elsewhere. A century of manipulation and intensified resource use bore the unwanted fruit of anthropogenic stress. Localized water quality problems and resource depletion, along with intensifying water use conflicts, first suggested the fragility of the resource and its finite capacity for developmental pressure. Scientific understanding of the lakes increased dramatically during this period, aided by the abundance of resource problems and the emergence of our present understanding of the lakes as a single, integrated ecosystem. The inadequacies of "traditional" governmental structures in addressing such problems became increasingly self-evident and a grand and continuing experiment in resource based, multi-jurisdictional institutional arrangements began.

Interestingly, the first of the major Great Lakes institutions - the International Joint Commission - is largely viewed today, despite many subsequent "experiments," as the premier institution for Great Lakes resource management. Embodied in the Boundary Waters Treaty of 1909 - which established the Commission - is an early indication of a philosophy which recognizes management dictated by the resource base rather than by political jurisdiction. The treaty specifies that Boundary waters "shall not be polluted on either side to the injury of health or property on the other." This early recognition of the systemic nature of the Great Lakes reflected early advancements in scientific understanding. It also brought with it increasing dissatisfaction over the inability of traditional institutional forms and processes to manage the Great Lakes system. This dissatisfaction continued at a consistent level through the first half of the century, during which time a series of rather short-lived "institutional experiments" in regional management were undertaken.

A turning point in Great Lakes management is attributed to the early years of the 1950s, coinciding with plans to open the St. Lawrence Seaway. The construction and opening of the Seaway had both a practical and symbolic significance. On one hand, it established the Great Lakes as a fully navigable transportation system, linking the lakes to the commercial ports of the world. On the other, it confirmed the "interconnectedness" of the lakes themselves and the need to address their ecosystemic properties from an appropriate institutional standpoint. An unprecedented flurry of institutional activity was observed; the increased activity of the Midwest Governors Council in the early 1950s, the establishment of the Great Lakes Fishery Commission in 1954 and the establishment of the Great Lakes Commission in 1955, to name a few of the more notable examples.

Although the "seeds" of these institutions had been germinating for years (and in some cases decades), the mid-1950s proved to be the pivotal period for institutional activity. Developments in science and technology had advanced consistently and prompted an institutional response. Governmental structures for Great Lakes management, rather than directing and facilitating change, were reacting to it. Despite notable accomplishments since that time (e.g., Great Lakes Charter of 1985, Great Lakes Toxic Substances Control Agreement, 1986) it is abundantly clear that the breach between scientific and technological advancements and institutional mechanisms for harnessing them has widened steadily.

This latter statement is well documented in the literature. Kelnhofer (1972), in reviewing basinwide pollution control efforts, has remarked, "Our failures there are not failures of ignorance or technology but of funding and administration." Wendell and Schwan (1972) echo that theme as they reflect upon past management approaches: "The institutional labyrinths that seemed perfectly logical as they were designed over the years were suddenly seen as clearly inadequate when the environmental issue emerged. Public policy officials have a new 'ecological' approach to resource problems. Natural resource and pollution problems are seen to interact in ecological systems requiring comprehensive governmental solutions." As the National Water Commission (1973) points out, however, these "comprehensive governmental solutions" have yet to be devised. The Commission explains: "... research on water resources policy and political institutions has fallen short of meeting the needs for it. That shortfall, to a

considerable degree, may be attributed to lack of clarity about what specific problems in this field are both significant and also susceptible to research." The Commission further correctly noted that "scientific and technological capability to handle water management needs is almost powerless unless translated by effective and adequate institutional arrangements into significant social values."

The decade of the 1980s has established itself as a turning point as well; witnessing a re-birth (or perhaps reconfirmation) of a regional environmental ethic and a new-found appreciation of the contribution of the Great Lakes and attendant resources to the regional economy. A sense of regionalism - a shared interest among the Basin's jurisdictions - has re-emerged in unprecedent strength and placed Great Lakes resource management and economic development considerations high on the policy agenda of the region's leaders.

This renewed "regional consciousness" has been sparked and sustained by the emergence of complex resource policy and environmental issues (e.g., Great Lakes diversion and consumptive use, toxic pollutants) with Basinwide implications, as well as out of a sense of desperation brought on by a prolonged economic recession. The latter found the region's leaders the unwilling shareholders in an economy characterized by the decline of the industrial base, high unemployment and poor future prospects due in part to the strength of overseas industrial competition and the competitiveness of the "sun belt" states. Regional leaders - most notably the governors and premiers - found in the Great Lakes a hope for the future. A shared resource with unique and underutilized characteristics, the lakes represented a common bond between the jurisdictions, symbolizing the strength and resiliency of the region as well as its untapped potential.

The re-emergent "regional consciousness" in turn sparked concerted attention toward the various multi-jurisdictional institutions for Basin management. The status quo was no longer acceptable, as established arrangements were (in many cases) found to be unresponsive to emerging issues, structurally or operationally inadequate, or politically unacceptable. The sense of dissatisfaction, though poorly articulated, was pervasive. Consider the following:

- A 1982 report from the U.S. General Accounting Office entitled, "A More Comprehensive Approach Is Needed to Clean Up the Great Lakes." The report found that failings of institutional arrangements in the United States have resulted in "1) lack of effective overall strategies for dealing with Great Lakes water quality problems; 2) lack of knowledge about the extent of pollution problems and the impact of control programs; and 3) need for improved management of Great Lakes pollution cleanup activities."

- A 1983 resolution of the Great Lakes Governors Economic Summit affirming that the existence of Great Lakes organizations "sometimes results in confusion and an inefficient utilization of limited resources," and calling for "recommendations to improve the organizational structure of the Great Lakes regional entities."

- A statement by U.S. Senator Robert Kasten (Wisconsin) in 1984, characterizing the Great Lakes management effort as a "bureaucratic maze" and calling for sweeping federal legislative initiatives.

- The unprecedented flurry of institutional activity in recent years, as new institutions - both public and private - were created to address policy/management needs unmet with present arrangements. Among others, these included the Council of Great Lakes Governors, the Great Lakes Environmental Administrators, The Center for the Great Lakes and Great Lakes United.

This is a modest yet enlightening selection of recent developments which collectively generate a sense of immediacy in addressing the adequacy of institutional arrangements for Great Lakes management.

There is broad consensus in the region that the "window of opportunity" for substantive institutional change has seldom been open wider. Rising political interest in regional considerations, the emergence of critical policy and management issues, and an informed and active public have generated the requisite momentum to secure desired change. There is, however, a critical missing element, which left unaddressed, renders this momentum meaningless. This element has three components: a clear articulation of present institutional inadequacies; a sense of desired direction in institutional revisions; and a strategy for securing acceptance and implementation of those revisions. It is the intent of this study to assist in shaping this missing element.

CHAPTER ONE

THE INSTITUTIONAL SETTING FOR GREAT LAKES MANAGEMENT

The Role of the Institution in the Policy Process

An inextricable linkage exists between the prescribed mission of a given organization and the institutional arrangements and processes created to fulfill that mission. The institutional arrangement as a determinant of goal attainment is capably articulated by the National Academy of Sciences' Commission on Natural Resources (1980):

> "The characteristics of anticipating problems are shaped by existing institutions, and any attempt to improve matters that ignores this fact will probably come to very little. No amount of monitoring, or science advising, or projection modeling is going to improve our record if the relevant problem-recognition system, the approaches to mitigate the problems, and the incentive systems to provide alternatives remain unchanged. The key here is to ask if a system can be devised that gives some person, board or group the incentive to keep up with the relevant predictions, to sift through them, to make recommendations for actions where that seems warranted, and to provide funds for current study if there is reason to doubt the wisdom of any action."

While the Commission on Natural Resources addressed these comments primarily to research and development initiatives at the federal level, their consideration is equally appropriate in a broader policy context. If policy is to be viewed as an output of organizations, the institutional arrangements (i.e., administrative agencies and associated laws, agreements, mandates, and directives) which shape, interpret and administer such policy become a critical determinant of the policy's impact upon society (Zile 1974). It follows then, that institutional analysis is a requisite, and perhaps dominant component of any problem mitigation strategy that purports to be comprehensive in scope and optimally effective in application.

The stature of institutional considerations vis-à-vis policy formulation is well documented in the literature. The aforementioned "inextricable linkage" between the institution and its policy objectives (i.e., mission) is discussed here in terms of the institutional role in policy development, interpretation and administration. Such discussion, albeit brief, will lay the foundation for a subsequent, more detailed foray into issues concerning the nature of institutional arrangements for regional resource management in the international Great Lakes region.

The role of the institution is a relatively subtle, but nonetheless powerful factor in policy development in the democratic system of government. The institution - at any level of government - is not merely a vehicle for

operationalizing policies formulated by legislatures or officials of a given administration. The institution itself provides an environment in which policies can be devised, altered, interpreted, advocated, ignored or otherwise transformed. In essence, the institution can determine not only the success or failure of a given policy, but the very existence of that policy.

The institution facilitates policy development via provision of a continuing process for learning and readjustment (Ostrom et al. 1970). From an incremental standpoint, we might identify the U.S. federal Office of Management and Budget, an established, powerful executive agency directing or otherwise influencing federal policy via continued incremental adjustments in federal budgetary allocations (Wildavsky 1964). In the vein of the comprehensive-rational model of organizational theory, we can also point to emerging, conceptually innovative proposals for global organizations for policy development. Institutional arrangements identified by the United Nations Conference on the Human Environment (Stockholm 1973) for the settlement of international environmental disputes are illustrative, among others (Bilder 1977). The continuum of governmental activity - from the local to global scale - substantiates the inexorable linkage between the policy development process and the institutional arrangements associated with it.

The role of the institution in the interpretation of policy is significant as well. Three examples come immediately to mind. Turning again to the Office of Management and Budget, Wildavsky (1964) documents its discretionary power in the interpretation and translation of presidential policy into budgetary decisions. Following the passage of landmark environmental legislation in the early 1970s, the U.S. Environmental Protection Agency and relevant federal departments were charged with the promulgation of rules and regulations associated with the often broad and undefined provisions of that legislation. Perhaps the most dramatic example is found in the Canadian federal/provincial systems of government, where public institutions - through the issuance of guidelines - have broad powers in interpreting and administering policies.

The interpretation of legislative intent has historically yielded institutional powers of a significant, but equally controversial nature. The U.S. Federal Council for Science and Technology (1968) substantiates the role of the institution in interpreting policy by noting that administration of a single law can have more impact upon society than ten years of research. The Council found that "effective and adequate" institutional arrangements are the critical determinant in interpreting and translating policy pronouncements and technological capabilities into significant social values.

From a pragmatic standpoint, the role of the institution as a service delivery mechanism or administrator of policy might best be substantiated via the perception of the public it ostensibly serves. When a governmental entity responds to societal stress in a delayed or otherwise inadequate manner, the differentiation between the problem and the mitigation effort is often blurred; the institution is perceived as a contributor to the problem as opposed to a solution (Ostrom et al. 1970). The complexity of institutional arrangements in policy administration is problematic as well. Wendell and Schwan (1972) describe the failings of the "institutional

labyrinth," a complex and irrational system yielding public confusion, coordination and administrative inefficiencies, and sub-optimal problem mitigation strategies. The common perception is that of institutional unresponsiveness; the frustrations of "grappling with problems of much simpler times" (Hennigan 1970). Such unresponsiveness is largely the result of institutional tendencies toward "dynamic conservatism," as proposed by Schon (1971).

Clearly, dissatisfaction with service delivery schemes and their associated institutions is not universal, nor is all such dissatisfaction unequivocally rational. It does illustrate, however, the immutable relationship between the public's perception of a problem and the institutional arrangements responsible for administering policies to mitigate the problem.

It is apparent, then, that institutional considerations serve an integral role in the development, interpretation and administration of policy. For this reason, we find that organizational forms have invariably been the focus of extended debate when a given issue arises in a public forum. Such debate has been accompanied, in all areas of government, with a preoccupation for creating new institutions, destroying the "old," altering existing ones and manipulating the linkages among them. Given the policy impacts of any resultant institutional modification, it is imperative that the evaluation of institutional arrangements proceed in an informed, if not orderly, manner.

The Role of the Institution in the Great Lakes Policy Arena

Our thesis suggesting institutional arrangements as a dominant factor in the policy process is convincingly substantiated in the arena of regional resource management in the international Great Lakes Basin. Ostrom et al. (1970) observe that existing institutional arrangements are instrumental in determining the political feasibility of Great Lakes management efforts. For that reason, a thorough understanding of those institutional arrangements, as well as the political influences associated with them, is a requisite, and perhaps dominant component of any analysis of Great Lakes water resource problems. Similarly, Hennigan (1970) has pointed out that an understanding and subsequent reform of the Great Lakes institutional system is the critical factor for establishing a "workable system incorporating the action elements of persuasion and education, legal action and economic incentives which can make effective water quality management an attainable goal."

The inherent powers of an institutional system in developing, interpreting and administering policy have encouraged - in the Great Lakes Basin and across the continent - an "almost infinite array" of institutional devices to address regional resource management issues (Federal Council for Science and Technology 1968). The requisite yet elusive harmony between the institutional form and management function has been the focus of unrelenting debate, particularly within the Great Lakes Basin, throughout this century (Derthick 1974). This continuing preoccupation with Great Lakes institutional arrangements is explained, at least in part, by the disparate, yet reconcilable perception of Great Lakes institutions as both a "part of the problem" and a "part of the solution" with respect to regional resource management needs.

The perception of Great Lakes institutions as "part of the problem" of regional resource management is attributable to the perpetually experimental and chronically undefined role of regional government in the federal system. Martin (1960) describes regional organizations as "excrescences on the constitutional system." Derthick (1974) suggests they share a common handicap "in being unusual cases, deviant new growth in a government landscape." The (once named) federal Bureau of the Budget, ever cognizant of new institutional forms that might make claims on the federal treasury, once described one regional resource management institution - the Delaware River Basin Commission - as a "constitutional anomaly to be treated with caution" (Derthick 1974). Although such institutions do serve to transcend the parochialism of established levels of government, and hence respond to solvable regional problems and needs, they are generally forced to engage in unrelenting efforts to define and defend their role. These efforts are often exercises in frustration for both the institutions themselves and the governmental jurisdictions and public they serve.

Jurisdictional complexity is perhaps the predominant characteristic of the Great Lakes institutional system evoking negative perceptions and further characterizing this system as "part of the problem." In its Final Report on U.S. National Water Policy, the National Water Commission (1973) observed that the "plethora" of organizations in the Great Lakes region impeded decision making. Bilder (1972) derides the "complex hodgepodge of proliferating and occasionally inconsistent laws, regulations and ordinances" issued separately by an equally complex series of governmental authorities. As a major obstacle to coordinated and effective management, such jurisdictional complexity fosters uncoordinated and overlapping missions (Great Lakes Basin Commission 1975); general public confusion (Kelnhofer 1972); and a lack of responsiveness to perceived management needs (Dworsky and Swezey 1974). Senator Gaylord Nelson (1977) characterized the Great Lakes institutional system as a "bureaucratic mess." Senator Robert Kasten (1984) reiterated that statement, referencing the "bureaucratic maze."

Despite the historic proliferation and diversity of Great Lakes resource management institutions and the attendant complexity, no single institution - past or present - has possessed both the Basinwide perspective and authority needed to carry out the range of necessary management functions (Dworsky and Swezey 1974). There also exists a perceived need for "formal machinery" for international coordination (Bilder 1972); a balanced developmental philosophy (Hennigan 1970); comprehensive advance planning (Republican House Members 1965), and others. While the jurisdictional complexity issue is undoubtedly overstated by a generally ill-informed, confused public and milieu of special interest groups, it is nonetheless of principal concern.

It is significant to note that an historic level of general dissatisfaction with the form, function and complexity of Great Lakes institutional arrangements has not created a pervasive atmosphere of ambivalence toward regionalism. Agency and elected officials at the various levels of government have, in general, collectively acknowledged that some level of attention to organizational and institutional arrangements is a "continuing requirement" (Kelnhofer 1972). In fact, strengthening of institutional arrangements has long been considered a matter of immediate and paramount concern. Dworsky and Swezey (1974) contend that "... the heart of the

problem of managing the land, air and water resources of the Great Lakes region lies in institutional (organizational) inadequacies on both sides of the international border and that a strengthening of present institutional arrangements is a matter of considerable urgency."

While these various characteristics tend to portray Great Lakes institutions as "part of the problem" in regional resource management, other characteristics provide a counter balance. Indeed, the origin of the regional, multi-jurisdictional form is found in the failure of the "traditional" resource management approach which recognizes the political boundary rather than the ecosystem boundary as the basic unit defining application of management policy. While dissatisfaction with specific regional institutional forms has been pervasive, the conceptual base upon which such forms are founded has seldom been questioned.

In the Great Lakes Basin, the question of relevance is not whether regional resource management institutions should exist, but rather how they should be structured and what functions and operational characteristics they should assume. As a "solution" to perceived resource management problems in the Great Lakes region, revision of the institutional system is recognized as a continuous, flexible process. Ostrom et al. (1970) call for generalized institutional arrangements to facilitate a continuing process of learning and readjustment. Derthick (1974) echoes this statement, arguing that institutional arrangements should be relatively flexible and open-ended, with a capacity to expand and adapt to changing problems and needs. Other authors, including Wendell and Schwan (1972), and the Water Resources Council (1967) observe that the nature of resource problems evolves over time, requiring a concomitant evolution of institutional arrangements to adapt to them.

It is generally agreed that an optimal, finite solution to the Great Lakes management challenge does not exist. Rather, the solution lies in developing an ongoing process of institutional review and adaptation permitting timely response to evolving problems and challenges.

The acceptance of the legitimacy of the regional management concept - even in the absence of an acceptable institutional framework - provides the foundation for developing the latter. The process, however, is fraught with obstacles. For example, the perception of institutional adequacy - in the Great Lakes or any other region - is characterized by polarized opinions and laden with subjectivity. This is a critical observation in that such perceptions complicate the legitimacy of evaluation efforts. For example, the National Water Commission (1973) maintains that complex, multi-jurisdictional regional arrangements reflect strength in regional water resources management. Kelnhofer (1972) agrees, arguing that a "constellation" of agencies is indeed appropriate, given the need to form a "system of integrated management." Conversely, Bilder (1977) views this as a "complex and confusing" aspect of the Great Lakes management.

The contrasts relating to institution-specific performance are pronounced as well. Zigurd Zile (1974) has hailed the International Joint Commission's techniques of continuous consultation as a "model for the world." Other investigators have chided that agency's ability, under its treaty limitations, to react promptly to emerging problems. Similarly, an early

supporter of the conceptual basis of the Tennessee Valley Authority, Rexford G. Tugwell (1935), boasted that it would "furnish a new pattern for civilization." Most other evaluations yielded an understandably more modest statement of success. Similar variations are evident throughout the Great Lakes and general water resources literature.

Despite the polarization of opinion regarding institutional adequacy, it is generally agreed that there is no undisputed "preferred approach" to regional resource management (Derthick 1974). Despite the historic dearth of systematic evaluations of the Great Lakes institutional system and its components, there appears to be a compelling, yet inadequately articulated sense of dissatisfaction with present arrangements. Furthermore, there appears to exist an unalterable faith that a "preferred approach," albeit yet undiscovered, or even understood, holds the promise of resolving the myriad issues present today. As described in the remainder of this initial chapter, this study seeks to place these somewhat intuitive and unarticulated modes of thought into a framework for systematic analysis.

Presentation of the Hypothesis

The thesis upon which this investigation of Great Lakes institutional arrangements is premised is as follows:

> The evolution of effective institutional arrangements for Great Lakes management has been hampered by an inadequate understanding and analysis of past and present regional institutions and their respective roles in addressing Basin needs. As a consequence, we find a resultant failure to incorporate positive attributes into the establishment of new management institutions or the revision of existing ones. A systematic review of the evolution of present institutional arrangements will facilitate the identification and analysis of management strategies and organizational characteristics that hold promise for Great Lakes management. They can then be integrated into new or existing institutional arrangements to enhance Great Lakes management capabilities.

Because this statement sets the theme and approach for the study, it is essential that its three key components are isolated and identified. They are as follows:

1) The constrained evolution of Great Lakes management due to a failure to learn from past and present institutional arrangements;

2) The need to review those arrangements, identify strengths and weaknesses; and explore applicability of the former to current arrangements; and

3) The need to incorporate promising characteristics into present arrangements and the means to proceed.

These components provide the reference base for the study goal and objectives presented at a later point in the chapter.

It is appropriate at this point to substantiate the hypothesis and, hence, legitimize the approach selected to investigate it.

The contention that analysis to date of past and present Great Lakes institutional arrangements has been inadequate appears to contradict, at least superficially, earlier statements attesting to the region's long-standing "preoccupation" with its management institutions. One must examine, however, both the orientation of investigations to date and, in a broader context, the stature of Great Lakes management needs from both a U.S. and Canadian perspective.

The inadequacy of investigations to date might be attributed to four broad factors of causation, all of which are outlined below. It is essential to note that this perception of inadequacy is not derived from any fundamental dissatisfaction with the quality of the investigations undertaken to date. To the contrary, that body of research provides the foundation on which this, and any other study must logically build.

First, we note simply that substantive institutional analysis has the scope of many research efforts. The Great Lakes Basin Framework Study (1975), a twenty-seven volume document providing an unprecedented collection of information and statistical data relative to the Great Lakes Basin, limits itself only to a listing of relevant institutions. Despite two volumes addressing state and federal institutional arrangements, the study maintained that any analysis or recommendations relative to institutional arrangements is "beyond its scope." Numerous other research efforts over the last several decades have been limited to a descriptive inventory without any associated analysis.

Several prominent authors in this research area have fully recognized the complexity of Great Lakes institutional analysis, and have acknowledged that efforts to date serve primarily to set the direction for future substantive inquiry. Lyle Craine's (1972) insightful examination of institutional requirements in the Great Lakes region, considered by many to be a cornerstone of Great Lakes regional management theory, provides a framework for further analysis, as opposed to a definitive statement of finding. In Craine's words, "this report is essentially a reconnaissance, which at best cannot go much beyond a rational structuring of the problem and of an approach to institutional changes." Dworsky and Swezey (1974), despite the depth of their investigation of international Great Lakes management institutions and strategies, acknowledged the complexity of selecting a single optimal organizational form or constructing a "composite institutional solution," an idea that was subsequently abandoned. These and other investigators have long recognized the limitations of Great Lakes institutional research and have called for further efforts to expand on the knowledge acquired thus far.

One of the two major substantive results yielded by the Canada-United States University Seminar, sponsored by Dworsky and Francis (1973), was the identification of a need for additional institutional change, as well as the need to develop a framework for undertaking such. Similarly, Dworsky and Swezey (1974) recognized a continuing need to investigate the nature of institutional arrangements capable of addressing binational resource management problems. More recently, the Council of Great Lakes Governors

(1982) called for an examination of the Great Lakes institutional system and the means by which it might be strengthened.

The relative dearth of current research activity in this area is a second factor worthy of consideration. Investigations in the general area of regional resource management have been ongoing at various levels of intensity for the last century (Derthick 1974). However, investigations oriented specifically toward institutional considerations have been sporadic at best. Comprehensive analyses of the Great Lakes institutional system have not been conducted with any level of intensity since the mid 1970s. We find, however, that Great Lakes management is a dynamic phenomenon, warranting continued attention to emerging problems and the institutional responses necessary to address them. Consequently, the research base can lose its relevance and quickly lag behind the demands placed upon it. The Federal Council for Science and Technology (1968) maintains that this has been a continuing problem in the area of water resources research. The Council very correctly noted that "scientific and technological capability to handle water management needs are almost powerless unless translated by effective and adequate institutional arrangements into significant social values." Kelnhofer (1972) and others argue that this "translation" capability in the Great Lakes management effort requires immediate and continued enhancement.

A third, and perhaps most critical limitation of research to date is the absence of concerted attention to the interactions (i.e., linkages) between the various components of the institutional system. Ostrom et al. (1970) note that little is known about the patterns of interaction; most studies have focused on one or a limited number of instrumentalities in relation to a complex system. Yet, it is generally agreed that the creation of an institution must take cognizance of existing ones (Dworsky and Swezey 1974); that the success of a single institution is dependent upon the system in which it operates (Allee et al. 1975); and that the modification of one institution will have reverberations throughout the system (Zile 1974). With respect to the institutional system for Great Lakes management, the "whole" is much more than simply the "sum of the parts." The inter-institutional linkages within this system provide the basis for such a statement.

A fourth and final factor contributing to the inadequacy of research efforts to date is attributable to the institutions themselves. "Self preservation" instincts and political realities have historically discouraged the conduct of thorough and systematic internal critiques. For example, when the co-chairmen of the International Joint Commission (IJC) organized a seminar in 1973 for that very purpose, it was hailed as an "historic" occasion (International Joint Commission 1979). Since its establishment in 1911, an internal critique of that nature had never been held, much less publicized. When conducted, such critiques generally do not address the Great Lakes institutional system in its entirety, nor are they generally recorded in a form suitable to provide a substantive contribution to the research base.

A pronounced ambivalence toward Great Lakes-specific institutional concerns at the U.S. and Canadian federal levels has exacerbated this problem. In testimony before the Foreign Affairs Committee of the U.S. House of

Representatives (May 1973), Dworsky stated "... this may well be the first committee hearing addressed specifically to the question of the management of the Great Lakes and the organization for that management... since the Boundary Waters Treaty of 1909." That hearing, it might be added, was precipitated by a crisis - lake levels that had reached the flood stage and caused extensive shoreline erosion and structural damage. Excluding issue-specific concerns of such magnitude, it is generally agreed that both the U.S. Congress and the Canadian Parliament have historically expressed little interest in institutional concerns relating to Great Lakes management (Dworsky and Swezey 1974).

In recent years, we observe increasing efforts by regional groups to force the issue by sponsoring conferences and seminars directed at elected officials and their staffs. However, Congressional hearings on Great Lakes issues remain a rarity. Efforts by some Congressmen in the region to establish a Great Lakes Subcommittee within the House Merchant Marine and Fisheries Committee failed in 1982. An ad hoc Great Lakes Advisory Group was established the following year, but its activities ceased prior to the termination of its mandated six-month life span. Clearly, without an expressed national interest and articulated commitment to institutional requirements for Great Lakes management, research on that topical area will be understandably constrained.

The second aspect of the thesis requiring substantiation is the contention that a systematic review and analysis of past and present institutions (and their interactions) will, in fact, enhance the Great Lakes management effort. Historically, it is clear that the design and revision of institutional arrangements (in any multi-jurisdictional setting) has largely been a function of political feasibility, shaped by what Fesler (1965) has termed a "competitive, special interest milieu." Derthick (1974) maintains that the "stronger" forms of regional organization are "... political accidents, the product of ad hoc coalitions where success was fortuitous in important respects." Dworsky and Swezey (1974) add that the "ever changing limits of political feasibility" are the determinants of the present institutional arrangement. Clearly, institutional evolution is far from an orderly process dictated by thorough study and careful planning.

Although the process of institutional evolution may innately be a political one, there is an opportunity, albeit somewhat limited, for new knowledge and innovative techniques to gain a foothold through incremental change. A review of the literature, for example, does yield, both explicitly and implicitly, a series of parameters and organizational characteristics with applicability to the structure and operation of regional resource management institutions. The analysis of past and present Great Lakes institutions, as well as "parallel" entities in other regions, can contribute to this information base, as can discussions with those involved in their operation. Later chapters will address this in considerable detail.

Marcel Cadieux (1977), former Canadian Minister of External Affairs, has described the process of institutional change in Great Lakes management as a "glacial movement." If an analysis of the Great Lakes "institutional ecosystem" can yield fully articulated and "politically packaged" recommendations for change, the "glacial movement" might very well be accelerated.

Goal and Objectives

The goal of this study is to encourage the orderly and informed evolution of the Great Lakes "institutional ecosystem," and in so doing, advance both the efficiency and effectiveness of regional resource management efforts.

A systematic review and analysis of the evolution of past and present institutional arrangements for regional resource management in the Great Lakes Basin will be conducted in the interest of attaining five objectives supportive of this goal. The objectives are as follows:

1) To provide an historical perspective on the form and evolution of regional approaches to Great Lakes Basin resource management as well as examine the range of approaches employed in the United States and Canada;

2) To identify organizational characteristics and management strategies associated with those institutions that may have current or potential applicability to institutional arrangements in the Great Lakes region;

3) To explore the linkages between the components of the Great Lakes "institutional ecosystem" and identify alternate means for strengthening them;

4) To develop a list of guidelines, parameters and organizational criteria that might be considered the essential components for a viable institution or set of institutions; and

5) To design alternative institutional arrangements which might be incorporated into, replace, or otherwise augment existing arrangements to encourage the orderly and informed evolution of the Great Lakes "institutional ecosystem."

Statement of Approach

This statement is an elaboration of the aforementioned list of study objectives. The methodology utilized is reliant upon four principal information sources: the literature (theoretical and applied); interviews targeted to key individuals with professional interests or responsibilities in regional resource management; a survey questionnaire targeted to a broader selection of same; and observation and analysis of relevant institutions based on personal involvement as a practicing professional.

The nine tasks associated with this methodology are identified below:

1) Literature search and review - theoretical and applied - with an emphasis on case studies and institution-specific analyses;

2) Selection of institutions for review;

3) Development of a methodology for analysis of selected regional resource management institutions and their programs;

4) Identification and systematic review and analysis of selected Great Lakes management institutions and their interrelationships;

5) Identification and systematic review and analysis of selected institutional forms and existing institutions in other geographic areas with potential applicability to Great Lakes management needs;

6) Structure and conduct of interviews with selected individuals with professional interests or responsibilities in Great Lakes Basin management;

7) Administration of survey a questionnaire to a broad group of regional resource management professionals and resource users to further refine output of interviews;

8) Specification of guidelines, parameters and organizational characteristics with potential applicability to the Great Lakes "institutional ecosystem" and its attendant components; and

9) Design and justification of alternate institutional arrangements for Great Lakes resource management.

Each of these tasks will be discussed in subsequent chapters. The reader is referred to Figure 1 for a straightforward flowchart presentation of the tasks.

A Note on Study Scope and Definitions

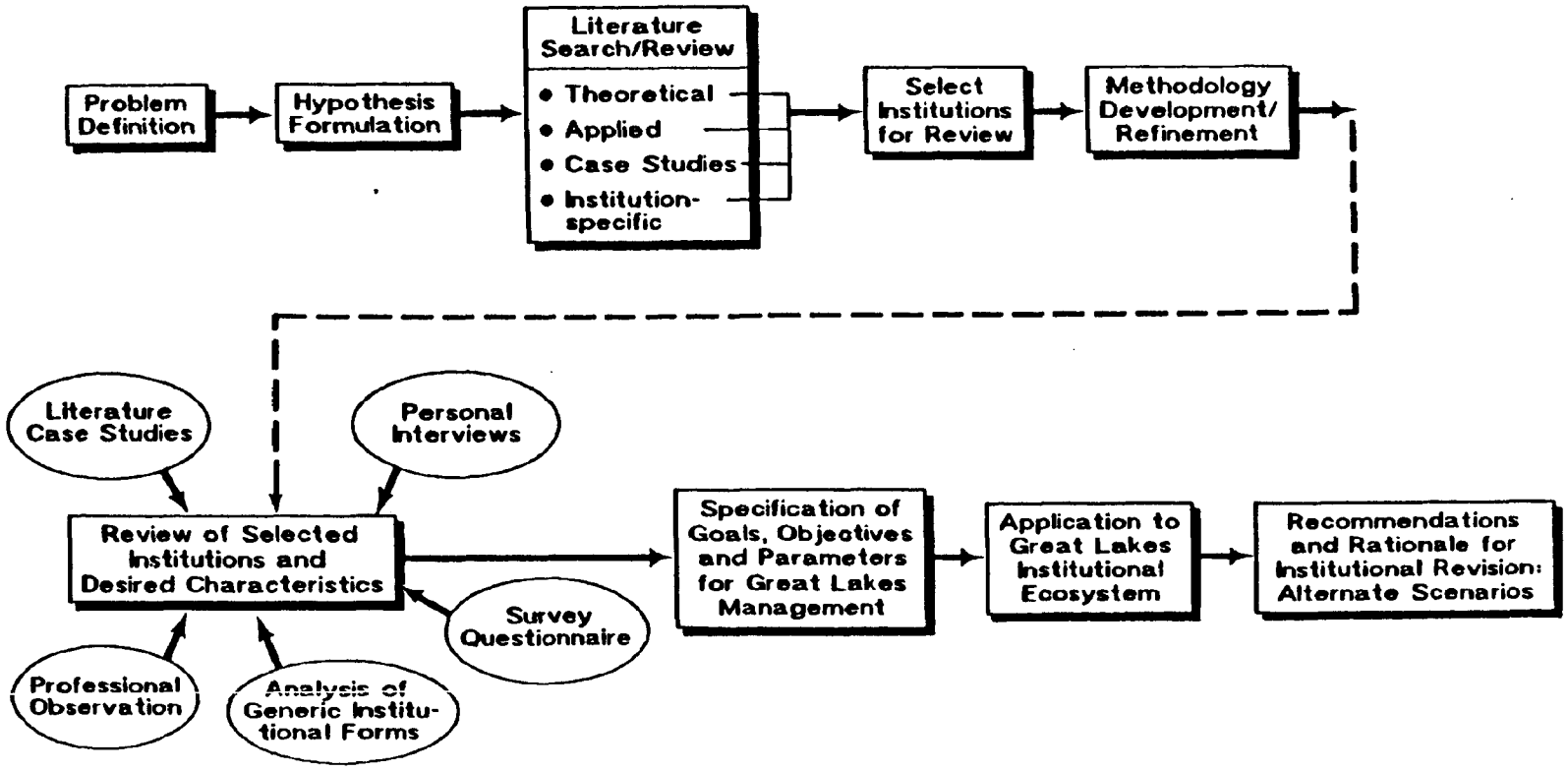
At this point, it is appropriate to emphasize that the scope of the study, while recognizing and exploring the breadth of the federal system in Basin management, is focused primarily upon one component of that system - regional institutions (i.e., International Joint Commission, Great Lakes Commission, Great Lakes Fishery Commission, Council of Great Lakes Governors). It is at the regional level that the pivotal element in Basin management is found; the level at which all the players in the federal system can coordinate their shared implementing roles and focus them toward common problems and opportunities. Regional institutions provide a framework for nurturing and facilitating the evolution of the federal system and provide a buffering capacity to temper the impact of change. By virtue of the nature of regional institutions, however - and their associated multi-jurisdictional membership - the various components of the federal system for Basin governance (including the nongovernmental sector) are addressed throughout. Chapter Three is of particular relevance.

It is appropriate also to define two terms used throughout the study afforded variant definitions in the literature. As used within, the terms "institution" and "institutional arrangement" refer to the administrative agencies and their associated laws, agreements, mandates, and policy directives which have implications for management of the water and related land resources of the Great Lakes Basin.

Figure 1

TOWARD A STRENGTHENED INSTITUTIONAL ARRANGEMENT FOR GREAT LAKES MANAGEMENT

– Sequence of Study Tasks –



The term "management" is used in a liberal context throughout the discussion, referring to any institutional activity that contributes to the planning, design and/or implementation of measures to influence the status of the resource to achieve a predetermined objective. The terms "soft" and "hard" management are introduced. The former pertains to activities such as planning, policy development, coordination, advisory services, advocacy and the like. The latter is characterized by activities such as regulation, enforcement, standard setting, construction, etc. As will be demonstrated, these various roles are distributed throughout the Great Lakes institutional ecosystem, with "soft" management functions typifying those of regional institutions.

Contribution to the Research Base and Attendant Limitations

Earlier discussion focused upon the status of research on Great Lakes institutional arrangements, noting the limited scope of most investigations to date; the expressed need to build upon those investigations; the paucity of current research; the absence of concerted attention to the interactions between the components of the institutional system; and the limited efforts of relevant institutions to initiate and act upon self critiques. Through the methodology described, this study seeks to address, at some level, the first four of these observations. In so doing, it is anticipated that action on the fifth might be encouraged.

Two principal contributions to the literature are earnestly sought via this study. First, it will utilize an "institutional ecosystem" (i.e., systemic) perspective to focus upon the system and the interrelatedness of its component parts. Secondly, it seeks to generate and justify guidelines, parameters and organizational characteristics that might be consulted as institutional arrangements are created or otherwise modified.

Clearly, the breadth and complexity of Great Lakes institutional arrangements precludes any notion that this study can resolve, or even definitively address the myriad issues involved. The study does attempt to develop a framework for analysis of the "institutional ecosystem," and in so doing, yield substantive findings and recommendations relating to various aspects of the system. Additional research needs and areas of emphasis will be suggested, as appropriate, throughout the study.

The timeliness of this investigation is worthy of note. As indicated in the Introduction, a number of developments in recent years have pointed to the need for a systematic review and analysis of existing institutional arrangements for Great Lakes management. The impetus is found in the following:

1) <u>The continuing maturation of the "ecosystem approach" concept for Great Lakes management</u>. In recent years, resource managers have become increasingly aware of the inter-relatedness of the Great Lakes and the concomitant need for an integrated, systems-oriented management approach (International Joint Commission 1978). This has prompted a re-thinking of traditional management approaches reliant upon issue-specific authority and political jurisdictions.

As this "ecosystem" orientation continues to develop, an understanding of viable institutional mechanisms to implement it will be critical.

2) The accelerated movement and dynamic nature of the institutional network for Great Lakes management. In the last several years, federal policies have encouraged state assumption of many research, regulatory and planning functions once undertaken and/or funded by the federal government. These policies, as well as a reduction in overall federal expenditures, resulted in the dissolution of the Great Lakes Basin Commission, downsizing of the U.S. EPA Great Lakes National Program Office, and the proposed termination of the Great Lakes Environmental Research Lab (NOAA), U.S. EPA Grosse Ile Lab and the National Sea Grant Program. Concurrently, we observe an unprecedented level of organizational activity in the business/-citizen/private foundation sector, with groups such as Great Lakes United, The Center for the Great Lakes and the Great Lakes Economic Policies Council being formed in recent years. (The organizational activity is far more extensive than the few examples provided here.) As the various agencies and organizations attempt to define or re-define their respective roles, an understanding of the existing institutional network and associated needs will be imperative if efficient and cost-effective management is to be realized.

3) The nature of interstate and international issues emerging in the Great Lakes region. Increasingly, the eight states and two provinces in the Great Lakes Basin are being confronted by economic and environmental problems and challenges of a regional nature (Great Lakes Commission 1982). Transboundary air pollution, toxic contamination, and Seaway maintenance and expansion are but a few of the regionally pervasive issues which demand the collective resources and cooperative attention of multiple governmental entities. A study identifying alternate institutional arrangements through which such issues might best be addressed has direct and immediate applicability.

4) The political context in which resource management problems are defined and addressed. Given the jurisdictional complexities associated with resource management in the Great Lakes Basin, the "institutional ecosystem" not only addresses problems, but can define, ignore, create, solve or exacerbate them. The process by which the "institutional ecosystem" applies itself to perceived problems is an inherently political one. As convincingly argued by Ostrom et al. (1970), the effectiveness of efforts to mitigate water resource problems is a function of one's ability to understand the institutional structures and political regimes of relevance. We find, then, that an understanding of the institutional framework in which problems are addressed is as critical as understanding the problems themselves.

A growing recognition of these and related concerns was expressed at the Great Lakes Governors and Premiers Water Resources Conference on Mackinac Island in June of 1982. By unanimous action, those in attendance passed a resolution recognizing that present institutional arrangements for

international cooperation, such as the Great Lakes Commission and the International Joint Commission, "need to be strengthened" to effectively address current issues. The resolution called for the appointment of a task force to develop specific recommendations. The findings and recommendations of the Task Force on Water Diversion and Great Lakes Institutions were presented in January of 1985, their further consideration and implementation continues. Research findings associated with this study will assist in these and related efforts in the years ahead.

Dissertation Format

The body of this dissertation is comprised of three sections and nine chapters and supported by an Introduction, Executive Summary and extensive Appendices. The sequence of the chapters is significant, as it reflects the arrangement of tasks within the study methodology. Further, the chapters are cumulative; organized into three sections which build sequentially upon one another.

The first three chapters comprise Section One: "Characterizing the Institutional Framework for Great Lakes Management." They are oriented toward: presentation of study hypothesis; goals, objectives and methodology; description of the Great Lakes physical and institutional ecosystems; and a detailed review of selected institutions for Great Lakes management. A theoretical base for subsequent analysis is provided.

The following four chapters draw from this information base, comprising a second section entitled, "A Determination of Institutional Needs for Great Lakes Management." A literature review yields a listing of "essential parameters" for incorporation into the structure and operation of Great Lakes institutions. This effort is complemented by the interpretation and analysis of findings elicited from extensive interview and survey questionnaire efforts, as well as a review of numerous "generic" institutional forms employed in regional resource management.

The third and final section, comprised of two chapters, is entitled, "Alternate Arrangements for Great Lakes Management." Findings of earlier chapters are consolidated, interpreted and applied in the interest of developing the characteristics of the "preferred" institutional framework. Goals, objectives and institutional parameters for Basin management are presented and used to assess strengths and weaknesses of present institutions. Four scenarios are examined: preservation of the "status quo;" modification of institutional arrangements via incremental change; substantive revision of present institutional arrangements; and dramatic, single-step revision involving elimination of present arrangements in favor of a new and significantly different one. A discussion of the implementation strategy and constraints associated with each is provided.

Summary statements for each of the chapters follow:

- Chapter One defines the issue of concern, arguing that the role of the institution in policy formulation, development and administration is a critical one worthy of concerted attention. The institutional setting for Great Lakes management is introduced as the focal point of the study. Study hypothesis, goal, objectives and

methodology are introduced. The strengths and limitations of research to date or Great Lakes institutional arrangements are presented in overview fashion, and the immediate need for expanded research in this area is demonstrated.

- Chapter Two provides a descriptive overview of the Great Lakes ecosystem and, in particular, its physical and socio-economic characteristics. The "ecosystem approach" concept is introduced, arguing that harmonization of institutional design with these characteristics is a critical requirement in addressing the region's present and anticipated needs. The intent is to provide a reference base for later discussion, and to identify unique or otherwise important attributes that will factor into decisions relating to institutional design.

- The political/institutional component of this reference base is provided in Chapter Three. The factors of causation associated with the complex institutional "ecosystem" are presented, as is an overview of this ecosystem and documentation of the importance of linkages among its components. An inventory and analysis of the institutional arrangements for Great Lakes management at the international, federal, regional, state, provincial, sub-state/provincial and nongovernmental levels are presented. A more detailed description and analysis of the key regional resource management institutions in the Great Lakes Basin are presented in Appendix A (i.e., International Joint Commission; Great Lakes Fishery Commission; Great Lakes Commission; Council of Great Lakes Governors).

- A broad-based literature search and interpretation provides the basis for Chapter Four. A social research and development methodology is employed to elicit a series of parameters or guidelines for use in evaluating, creating or revising a given institution or institutional arrangement. Areas addressed include: management philosophy; participatory management; management functions; role of the management entity in the institutional ecosystem; physical jurisdiction; breadth of authority; membership/constituent relations; and compatibility of form and function.

- Chapter Five analyzes fifteen generic institutional forms employed both within and outside the Basin for regional, multi-jurisdictional resource management. A checklist of parameters is employed to assist in determining the relative desirability of each for application in the Great Lakes Basin. Each is analyzed to provide: 1) a description of key structural and operational characteristics; 2) a brief history and present status of the development of the institutional form; 3) an examination of strengths and weaknesses on the basis of specified parameters; 4) an assessment of potential applicability to Great Lakes management (singly or in combination with other forms); and 5) likelihood of implementation given present institutional arrangements and the political/procedural aspects of institutional change. The findings and analyses of an extensive series of personal interviews with key members of the Great Lakes policy community are presented in Chapter Six. The interviews - involving members of the governmental, academic,

environmental and private sectors - provided insight into the range of attitudes, opinions and ideas regarding the adequacy of present institutional forms, the performance of Great Lakes institutions (both singly and collectively) and the areas in need of concerted attention.

- The personal interviews provided the basis and direction for the design and administration of a survey questionnaire to 215 of the region's policy and opinion leaders. The survey elicited information in three principal areas: views on existing Great Lakes institutions and institutional arrangements; views on desired Great Lakes institutions and institutional arrangements; and means to implement change. Chapter Seven analyzes and interprets responses, presenting consensus findings and discussing their applications.

- Chapter Eight draws previous discussions together, presenting a set of goals and objectives for Basin management and generating a checklist of structural and operational characteristics for institutional design. This information provides the framework for a subsequent detailed assessment of the strengths and weaknesses of the collective and individual institutional approaches to Basin management.

- The ninth and final chapter constitutes the culmination of the research effort. Four scenarios for institutional revision are offered on a continuum between acceptance of the status quo and outright elimination of present arrangements if favor of a new and substantially different one. The merits of each scenario are discussed and an extensive series of recommended actions (and associated rationale) is presented. The chapter concludes with a closing perspective on Great Lakes institutional arrangements and is followed by an Epilogue suggesting a research agenda for further work in this area.

Of particular note in the Appendix (A) is a descriptive review, in substantial detail, of the four key regional institutions of concern (i.e., International Joint Commission; Great Lakes Fishery Commission; Great Lakes Commission; and Council of Great Lakes Governors). The following characteristics are reviewed and analyzed for each: mandate; functions; enabling legislation; structure and operation; institutional resources; selected programs, products and accomplishments; linkages; and developmental history. Structural and program characteristics are compared and contrasted. Appendix B presents the survey questionnaire form.

CHAPTER TWO

THE GREAT LAKES ECOSYSTEM - PLACING THE PHYSICAL RESOURCE AND MANAGEMENT FRAMEWORK IN PERSPECTIVE

Introduction

As indicated in Chapter One, the regional resource management institution has historically been characterized as an experimental and rather ill-defined remedy to the failings of the traditional federalism philosophy of resource management. In its earlier application in the Great Lakes region, this institutional form - while welcomed by some - was more typically greeted with caution, studied skepticism or outright resistance. Although these attitudes have been tempered in recent years as the concept of "regionalism" has gained credence, they do remain. The creation of such institutions is fraught with obstacles and, when formed, their structural and operational characteristics often provide a focal point for continuing debate among the political jurisdictions they serve.

Despite these realities, the continued proliferation of this institutional form attests to the sound conceptual logic on which it is founded. As Derthick (1974) reasons, "...if the country could be divided into a few relatively homogeneous areas, the parochialism of state and local governments might be transcended and federal policy liberated from the presumption of uniformity and thus improved." This "homogeneity" factor is fundamental to the concept of regionalism; whether it is directed at a natural resource, an economic characteristic, a social attribute, a demographic profile or any other commonality that transcends the arbitrary boundaries of political jurisdictions.

Clearly, the "homogeneity" factor of principal concern in this discussion is that of the natural resource base, and specifically, the water and related land resources of the Great Lakes Basin. The Great Lakes hydrologic system (i.e., drainage basin) is indisputably the dominant common element and focal point for resource management activities in the riparian states and provinces. This system, which includes all resources within the drainage area, is a "classic" example of a common pool resource. As such, it demands a management approach cognizant of the interactions between and among its resources and resource users (Ostrom et al. 1970).

The validity of a basin-oriented resource management approach is well documented in the literature. Craine (1972) notes the importance of geographic integration of governmental involvement in the protection and development of the resources defining a given region. He explains that the physical definition of a "region" is generally reflective of its dominant resource characteristic, which might be an agricultural district, forest preserve, or in this case, a hydrologic system - the Great Lakes Basin. Zile (1974) agrees, adding that the physical jurisdiction for regional resource management should be based upon the identification of "integral

resources"; resources which must be contemplated in their entirety to ensure purposeful management. On the strength of this line of reasoning, the Great Lakes Basin - as a hydrologic unit - has long been accepted as the preferred physical jurisdiction for regional resource management efforts.

This preference, however (and the sound logic on which it is founded), is incongruous with established patterns of resource management where recognition of political boundaries overshadows that of Zile's "integral resources." The prevailing system of federalism generally permits the entry of a regional management institution into the "institutional ecosystem" only if the established political jurisdictions find its presence to be advantageous from a self-interest standpoint. Unless that self-interest motive is pervasive, the political jurisdictions faced with partial loss of autonomy or usurpation of power will either discourage formation of the new institution, or attempt to render it innocuous via limitation of authority.

This tendency is reflected in the orientation of Great Lakes regional institutions toward "soft management" activities such as research, coordination and advisory services. The "hard management" functions - such as standard setting, regulation and enforcement - were typically incorporated into early regional institutional design and later abandoned in response to staunch resistance by those jurisdictions wary of endangering their stature. For example, Hines and Smith (1973) observe that individual states are inherently "myopic" in assessing opportunities for participation in interstate resource management efforts. The tendency, he explains, is to reduce basinwide issues to a sub-basin level, where a given state's interests are more readily defined. Kelnhofer (1972) observes that "the individual [Great Lakes] states, as a whole, seem to be generally reluctant to devote their limited financial and technical resources to the solution of those Lake problems that are removed from their own state borders."

It is clear that the mere physical presence of a shared resource within a specified geographic area is insufficient, in and of itself, to foster interest in a regional management approach. There is required also a regional consciousness among the existing political jurisdictions and the relevant policymakers and opinion leaders; an appreciation of a shared resource and recognition of a need to manage it cooperatively. This consciousness, however, is seldom translated into definitive regional resource management programs and the establishment of institutions capable of undertaking them. Derthick (1974) maintains that the establishment of the Tennessee Valley Authority may be the only exception.

While the latter contention may be overstated, it does raise an issue of great relevance to the Great Lakes region. Proponents of multi-jurisdictional approaches to Great Lakes management have long decried the perceived absence of such a regional consciousness. This phenomenon, long observed both within and outside the region, reflects a limited awareness of the Great Lakes hydrologic system, its attendant resources, and the extent to which those resources impact the livelihoods of Basin residents and the operation of their governments. Ironically, the potential for establishing a regional identity and consciousness in the Great Lakes may far surpass the potential of any other geographic area in the United States

or Canada, given the distinct physical characteristics of the resource and its role in shaping the region's economy and quality of life. Fostering this consciousness is a pressing challenge, as it can serve as a catalytic force in strengthening the effectiveness of the collective Great Lakes management effort.

It is clear, then, that the formation of regional resource management institutions is not a spontaneous process or logical outgrowth of separate and distinct jurisdictional efforts at managing a shared resource. Rather, their formation is the product of a concerted effort to address the inadequacies of traditional approaches; an effort typically prompted by a compelling economic or environmental crisis or opportunity with regional dimensions.

The design of institutional forms for regional resource management is an exercise in the reconciliation of organizational form and management function. Martin (1960) explains, "Organizations are instruments of purpose, and they ought not to be judged apart from the objectives they purport to serve." The Task Force on Institutional Arrangements for River Basin Management (Water Resources Council 1967) emphasized that these objectives - the "present or clearly indicated future need(s)" of the region - must be articulated prior to selecting the institutional form and attendant management functions to address them. Craine (1972) simply states that "we shouldn't worry about debating the form an agency should take until its goals are established." These various comments emphasize the merit of designing regional institutions around resource management needs rather than "restructuring" the needs to conform to a pre-determined institutional structure. It is clear that the "cart-before-the-horse" philosophy is a fallacious and self-defeating approach to regional resource problems. Yet, management programs and institutions are commonly created on the basis of perceived need and political expediency, rather than a thorough understanding of those needs over the long term.

It would appear, then, that substantive knowledge of the physical, socio-economic and political climate of a given region is an appropriate and, in fact, requisite antecedent to institutional design or revision efforts. Hines and Smith (1974) confirm this statement in observing that "... the operational efficiency of such an institutional arrangement will not be a significant improvement over the present system unless social, political and economic variables are taken into account both at the outset and on a day-to-day operational basis."

This chapter seeks to place Great Lakes management needs in perspective by first exploring the region's physical, socio-economic and political (i.e., institutional) attributes. The review is by no means comprehensive, but sufficient to introduce and sensitize one to the "environment" within which institutional development must take place.

Physical Aspects of the Great Lakes System

A descriptive statement of the physical attributes of the Great Lakes resource demands the frequent, almost tiring use of superlatives. It is an ecological system of virtually unfathomable expanse and corresponding complexity. Yet, it is nonetheless a delicate system susceptible to what

might be characterized as minor stresses. It is the intent of the following discussion to illustrate the unique characteristics of this immense, yet delicately balanced system. Such discussion will serve to support the argument posited by Ostrom et al. (1970), who maintain that the unique hydrologic characteristics of the Great Lakes resource make traditional approaches to development of river basin authorities difficult to apply. Once supported, this observation will invite and, in fact, demand creative discussion of institutional forms compatible with necessary management functions.

As an expansive, intensively used fresh water system, the Great Lakes resource enjoys global prominence (see Figure 2). The system contains some sixty-five trillion gallons of fresh surface water; a full 20% of the world's supply and 95% of the U.S. supply. Its component parts - the five Great Lakes - are all among the fifteen largest freshwater lakes in the world. Collectively, the lakes and their connecting channels comprise the world's largest body of fresh surface water.

An international resource shared by the United States and Canada, the Great Lakes have played a prominent role in the development of both countries and in the nature of relations between them. The two countries share a resource with a surface area of over 95,000 square miles and a drainage area of over a quarter million square miles. As both an international border and shared resource, the system extends some 2,400 miles from its westernmost shores to the Atlantic; a distance comparable to a trans-Atlantic crossing from the east coast of the United States to Europe. Formally recognized as the nation's fourth seacoast, the Great Lakes system provides over 10,000 miles of coastline.

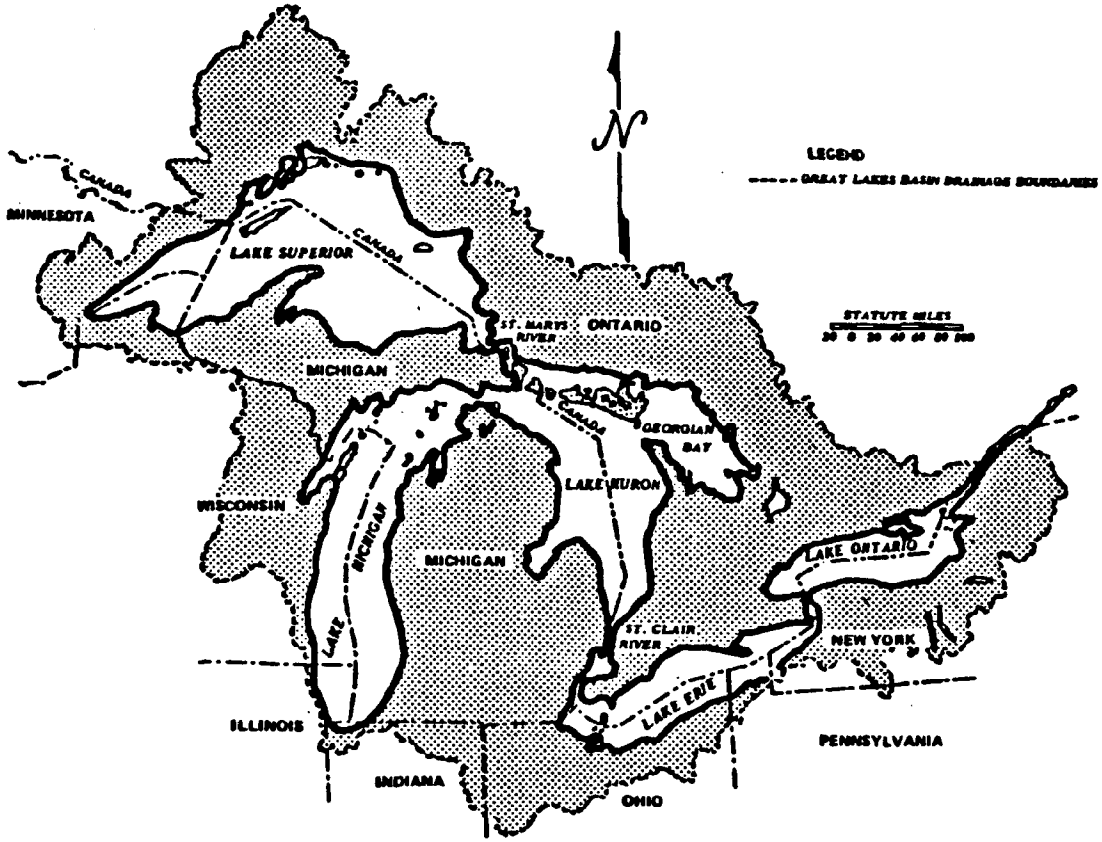
Within this Basin resides 20% of the entire U.S. population and 60% of the Canadian population; a total of more than 40 million residents. The Great Lakes system has an often subtle, yet substantive impact on the daily lives of these and other residents of the two countries; an impact reflected in their livelihoods, their health, their quality of life, their resource needs; and even the climate in which they live.

Lake Superior is the largest of the five Great Lakes and, in fact, is the largest freshwater lake in the world. Extending some 350 miles from the northeast shores of Minnesota to the northwest coastline of Ontario, Lake Superior is 160 miles in breadth at its widest point, encompassing 31,700 square miles of surface water within a coastline approaching 3,000 miles in length. The deepest of the Great Lakes (1,333 ft.) with an average depth of 489 feet, Superior contains almost 3,000 cubic miles of water. Due to this volume and the relatively constrained outlet (St. Marys River to Lake Huron), Superior has a retention time of 191 years - twice that of Lake Michigan and almost two orders of magnitude longer than Lake Erie. The drainage basin - totaling 81,000 square miles - encompasses parts of Michigan, Minnesota, Wisconsin and Ontario. Approximately 700,000 citizens of the United States (79%) and Canada (21%) reside within the drainage area.

Lake Michigan, the third largest of the Great Lakes, is the only lake entirely within the political boundaries of the United States. Hydrologically inseparable from Lake Huron, Lake Michigan extends over 300 miles from

Figure 2

THE GREAT LAKES BASIN



Note: Reprinted from: U.S. General Accounting Office, 1982, A More Comprehensive Approach Is Needed to Clean Up the Great Lakes. CED-82-63, May 21, 1982.

the northern coast of Illinois and Indiana to the Straits of Mackinac. Approximately 118 miles in breadth with an average depth of 279 feet (923 ft. maximum), Lake Michigan contains approximately 1,180 cubic miles of water. The drainage basin, approximately twice as large as the 22,300 square miles of water surface, includes portions of Illinois, Indiana, Michigan and Wisconsin, collectively accounting for 1,660 miles of shoreline. A population of 14 million resides within the lake's drainage basin - far more than that of any other Great Lake. Detention time for the lake's water volume is just under 100 years.

Lake Huron is the second largest of the Great Lakes and one of two shared (on the U.S. side) by only one state, in this case, Michigan. Extending just over 200 miles from the Straits of Mackinac to the headwaters of Lake St. Clair, Lake Huron is 183 miles across at its widest, with an average depth of 195 feet and a maximum of 750 feet. Its shoreline totals 3,180 miles in length. Lake Huron has a large drainage area relative to the other Great Lakes; its 74,800 square miles are approximately three times the total surface water area. Lake Huron's detention time is 22.6 years. Within the Basin resides a population of 2.26 million; almost 60% of whom reside on the U.S. side.

Bordered by five states and a province, Lake Erie is the fourth largest of the Great Lakes. Despite its size (length - 241 miles, breadth - 57 miles), its relative shallowness (average depth of 62 feet) yields the smallest volume of the five Great Lakes (116 cubic miles). Its detention time is but 2.6 years. The Lake's surface area is just under 10,000 square miles, surrounded by 856 miles of shoreline. The most densely populated of the five Lake basins, almost 13 million U.S. and Canadian citizens reside in the Lake Erie drainage basin. The preponderance (88.2%) reside on the U.S. side.

Lake Ontario, the smallest of the Great Lakes in terms of surface area, is bordered by the Province of Ontario on the north and New York on the south. Although similar to Lake Erie in its length and breadth dimensions (193 and 53 miles, respectively), Lake Ontario's greater average depth (283 feet) yields almost four times Erie's volume (393 cubic miles) and three times its detention time (6 years). Lake Ontario's surface area is 7,340 square miles; its drainage area approximately four times as large. A population of just over six million resides in the basin; approximately two-thirds of these residents area located on the Canadian side. Lake Ontario's coastline is approximately 726 miles in length.

Of great significance as well in characterizing the physical attributes of the system are the connecting channels. The St. Marys River is the northernmost of these, a 60 mile-long waterway providing an outlet for Lake Superior and contributing an average of 75,000 cfs of its waters to the lower four lakes. The St. Clair and Detroit rivers - and Lake St. Clair between them, - form an 89 mile long channel connecting Lake Huron with Lake Erie. At its outlet, the Detroit River flows at an average rate of 186,000 cfs into the western basin of Lake Erie. The Niagara River, linking lakes Erie and Ontario continues on for 35 miles, with an average flow of 50,000 cfs over the Niagara Falls. The St. Lawrence River, in providing the linkage between the lakes proper and the Atlantic, is one of

the world's premier waterways, extending some 383 miles as it carries an average of 240,000 cfs to the ocean.

The Basin ecosystem is as complex as it is expansive. Within the confines of its quarter million square miles of drainage are found diverse wildlife and aquatic communities, abundant renewable and non-renewable resources and intensive and sometimes conflicting multiple use resource development activities. Consider, for example, the following statistics from the Great Lakes Basin Framework Study (Great Lakes Basin Commission 1975), referring to the U.S. portion of the Basin alone:

1) over 237 species and subspecies of fish are present in the system, selectively distributed throughout the five lakes and connecting channels.

2) over 180,000 acres of coastal wetlands of significant value to fish and wildlife have been identified.

3) mineral resources (such as iron ore, crushed stone and lime) mined in the Great Lakes region comprise a significant percentage of (U.S.) national production of those minerals.

4) almost 40 million acres, or 47.4% of land area in the Great Lakes Basin is forested.

5) agricultural land comprises over 32 million acres, or 38.4% of land area.

These and numerous other resources present in the Basin region are integral components of the Great Lakes Basin ecosystem. The aforementioned "delicate balance" of the Great Lakes ecosystem is such that regional management efforts must be cognizant of a range of resource uses, their interactions, and their cumulative impacts. This concept of "integral resources," introduced earlier and credited to Kelnhofer (1972), is fundamental to the investigation of institutional arrangements for Great Lakes management.

This overview of the physical dimensions and properties of the Basin, while admittedly brief, does demonstrate the importance of these factors in institutional design. The Great Lakes Basin constitutes an expansive, interconnected system of lakes and connecting channels, a land mass of more than a quarter million square miles, and a diverse ecosystem of abundant natural resources whose interrelationships both influence and are influenced by the Basin's dominant physical characteristic - the Lakes themselves. The human element in this ecosystem - population, resource use and development patterns - has played an integral role in shaping the present characteristics of this physical ecosystem and similarly, in determining the nature of institutional arrangements required to manage it.

Economic Aspects of the Great Lakes System

The role of the Great Lakes system in advancing regional and national economic development has been explored - in practice and in theory - for centuries. The mere physical presence and geographic configuration of the

system and its attendant resources was, and continues to be a determinant of locational decisions for business and industry. Much of the early economic activity during settlement of the region was directly attributable to the resource exploitation (e.g., fisheries, trapping, mining, forestry) potential and the availability of water-based transport. While the current industrial base is more diversified and somewhat less dependent upon the Basin's resources, those resources continue to exercise a substantive role in the attraction and retention of that industrial base. Growing concerns over the depletion of the Ogallala aquifer and anticipated water shortages throughout the west and southwest regions of the United States have prompted some researchers to predict a dramatic resurgence of water-dependent industry in the Great Lakes Basin. While such predictions may be overstated, they do illustrate the economic utility of the water resource, and the attendant need to devise water management and economic development strategies sensitive to that utility.

The preponderance of research in this area has focused on the observed or potential role of the Great Lakes resource with respect to a specific economic activity (e.g., sport fishery, recreational boating, tourism). Little effort has been oriented toward a more comprehensive understanding of the role of the Great Lakes in the overall regional economy. Such an undertaking is exceedingly complex, as discovered by Talhelm and Johnson (1983) in their efforts to apply an adaptive assessment process and develop a computer simulation model to investigate the role of the Great Lakes in Michigan's economic future. Properly calibrated, such a simulation model would appear to have significant resource management applications.

An overview of the economic aspects of the Great Lakes system might best be presented via the categorization of the water resource as: 1) a mode of transport; 2) a factor of production; 3) a supporting resource; and 4) a marketable amenity. These categories, admittedly overlapping, will be sequentially defined and discussed. The objective is to demonstrate both the role of the Great Lakes system in the regional and national economy and the magnitude of its multiple-use attributes; two important considerations when developing regional resource management approaches.

The potential of the Great Lakes system as a mode of transport has long been recognized and actively pursued by both the United States and Canada. In fact, historical analysis indicates that development of the transportation potential of the system was the dominant driving force behind the installation of both physical and organizational structures throughout most of the region's history.

On the U.S. side, a federal interest in the Great Lakes system was articulated initially in the Northwest Ordinance of 1787, which declared the navigable waterways into and between the St. Lawrence and Mississippi River to be common highways and forever free. That same year, Congress authorized payment for construction of lighthouses, beacons, public piers and related facilities. Ten years later, the first navigational improvement to the system was recorded when the North American Fur Company constructed a small lock on the St. Marys River at Sault Ste. Marie (Kelnhofer 1972). Further recognition of the system's transportation potential was demonstrated in 1822, with Congressional authorization of a canal to connect the Illinois River with Lake Michigan (Naujoks 1953). Two years later, the

Congress enacted the first of an extensive series of River and Harbor Acts designed to provide physical improvements to the navigation system. An extended history of improvements by both countries has been highlighted by the intensive development of the Welland Canal in the late 1920's and early 1930's, the construction of the St. Lawrence Seaway in the 1950's, and the completion of the Poe Lock at Sault Ste. Marie in 1970, among others. A review of the developmental history of the Great Lakes transportation system over the past two hundred years, including the many significant events not identified here, yields a portrait of a regional economy and social structure born of, and shaped by the presence of the Great Lakes resource.

The transportation potential of the Great Lakes system was also a catalytic force in the early development of regional resource management entities. Dworsky and Francis (1973) have observed that the initial call for a permanent, international body to address the Great Lakes resource was an outgrowth of continuing negotiations between Secretary of State Elihu Root and Canadian Prime Minister Sir Wilfred Laurier in the final decade of the 19th century. In 1895, the two countries established a Deep Waterways Commission to investigate the feasibility of constructing a seaway to permit transportation access to the Atlantic. This entity later developed into the International Joint Waterways Commission (1903) - a precursor of the Boundary Waters Treaty of 1909 and its implementing agency, the International Joint Commission. More recently, interstate deliberations in the mid 1950's leading to the formation of the Great Lakes Commission were prompted by an emerging sense of regionalism brought about in large part by the impending opening of the St. Lawrence Seaway. Numerous other transportation-related entities - both public and private - have emerged as well. While resource management and environmental protection issues have been of ongoing concern at both the domestic and international level, it is generally agreed that the historic recognition of the Great Lakes system as a mode of transport was the principal catalyst in early efforts to both develop and manage the resource.

The economic value of the Great Lakes system as a mode of transport, while difficult to quantify, is nonetheless considered a dominant influence on both the regional and national economy. Thompson and Johnson (1983), in their examination of grain transportation on the Great Lakes-St. Lawrence Seaway system, concluded: "with adequate long-range planning the Seaway will continue to serve as an important contributor to the well-being of both the national and Lake State economies." Schenker, Mayer and Brockel (1976), in their exhaustive analysis of the Great Lakes transportation system, elaborate further:

> "The major advantage of the Great Lakes-St. Lawrence Seaway System is the proximity of large industrial and resource areas to Great Lakes ports, and the complementarity of certain basic movements.... The locational decisions of many iron and steel manufacturers were based upon the economies of water transportation. The System will continue to serve the resource demands of the major industries in the Great Lakes region."

This excerpt very capably demonstrates the employment of Kelnhofer's "integral resource" theory. An economic interdependence exists between the transportation system, the commodities to be moved, the port facilities,

and the industrial complexes and sources of labor established in the region on the basis of locational decisions. We find, for example, that the major commodities in Great Lakes waterborne transport - iron ore, coal, limestone, and grain - are also produced in or within close proximity to the Great Lakes Basin states and provinces. For example, iron ore deposits in the Mesabi Range in Minnesota and the Labrador Trough in Ontario and Quebec constitute the dominant sources in their respective countries (Schenker et al. 1976). On the U.S. side, we find that almost 75% of the nation's grain crop is produced in the Great Lakes states and those contiguous to them. Collectively, U.S. and Canadian grain shipments are the dominant commodity movement downbound - almost 40% of the total commodity movement. Furthermore, it is observed that transport efficiencies associated with the waterway, coupled with the availability of other factors of production, have encouraged the location within the region of industrial processing facilities for those commodities. We find, for example, that over 62% of Canadian steel is produced in the Basin, as is 70% of U.S. steel.

The complex economic interdependencies between resource exploitation, handling, transportation and processing are pervasive in the region and shaped - either directly or indirectly - by the use of the Great Lakes resource as a mode of transport. Consider the following:

- In the more than 25 years since the opening of the St. Lawrence Seaway, over a billion metric tons of cargo, with a value of more than $200 billion, have moved through the Seaway to and from ports in North America, Europe, Asia, Africa and the Middle East (St. Lawrence Seaway Development Corporation 1984).

- The shipment of government cargo through U.S. Great Lakes ports, though minimal at present, has a substantial potential impact on the region's economy. For example, if these ports secured just 50% of all such available cargoes (i.e., that which originates in the Great Lakes states and hinterland, total benefits to the regional economy would include 3,779 jobs and $83.5 million in wages (The Center for the Great Lakes 1985).

- Almost a quarter million dollars is expended, on the average, every time a vessel is loaded at a U.S. Great Lakes port (The Center for the Great Lakes 1985).

- The impact of the Great Lakes/St. Lawrence Seaway transportation system on the binational region's economy has been estimated at $3 billion per year (St. Lawrence Seaway Development Corporation 1984).

A more detailed review of the Great Lakes/St. Lawrence Seaway transportation system would further illustrate the economic attributes of this resource use and its concomitant impact on the social and economic attributes of the region.

A second means of examining the economic aspects of the Great Lakes resource is from the perspective of water as a factor of production. We refer here to both consumptive and nonconsumptive withdrawals that

constitute a requisite component of a production process. Consumptive uses entail the withdrawal of water that is subsequently lost (i.e., not returned) to the system due to evaporation during use, leakage, incorporation into manufactured products, diversion out of the Basin, or other action. As determined by the International Great Lakes Diversions and Consumptive Uses Study Board of the International Joint Commission (1985), the seven principal consumptive use sectors in the Great Lakes Basin in 1975, in descending order of magnitude, were as follows: manufacturing; municipal; power generation; irrigation; rural-domestic; mining; and rural-stock. Totaling 4,900 cfs in 1975, these consumptive uses are expected to double by 2035. The most dramatic increases are anticipated in the manufacturing, irrigation and power use sectors. Assuming the maximum projections are met, these economic-based consumptive uses would have measurable impacts upon the levels of the unregulated lakes.

It is significant to note that the aforementioned consumptive use figures represent only 6.5% of total withdrawals from the Great Lakes system in 1975; approximately 75,600 cfs (International Joint Commission 1985). Most sectors of water use - including those identified above - are predominantly nonconsumptive. Not included under either category are instream uses, such as waterborne commerce, the fishery or waterbased recreational activities.

Total (i.e., consumptive and non-consumptive) withdrawals for domestic use or as a factor of production have been estimated by the Great Lakes Basin Commission (1979) on an individual Lake watershed basis. Cumulatively, this data suggests the following basinwide withdrawal use estimates: agriculture (151 million gallons per day; commercial/industrial (944 mgd); domestic (3,038 mgd); fish hatcheries (14 mgd); manufacturing (12,720 mgd); power production (21,438 mgd); and public lands (5 mgd).

We find, then, that an average of 38.31 billion gallons of Great Lakes water is withdrawn daily (1979 estimates) to supply the domestic and commercial/industrial needs of the Basin's residents. This factor is exclusive of all instream uses, such as waterborne commerce, which has previously been shown to contribute to the economic base of the region.

The following examples demonstrate the vital contribution of the Great Lakes water and related land resources to the region's economic productivity:

- One-fifth of all U.S. manufacturing is located along the Great Lakes coast, as is half of that in Ontario. All such activity is dependent upon access to abundant water supplies (The Center for the Great Lakes 1984).

- Lakes-dependent hydroelectric facilities in the United States produced 23.7 billion kilowatt hours of power in 1983; approximately 20 billion kilowatt hours were produced by Ontario-based facilities (The Center for the Great Lakes 1984).

- Fuel and non-fuel minerals mined in the Great Lakes states constituted 5.4% and 20.7%, respectively, of national "value-added" totals in 1982 (Schenker et. 1976).

- The Great Lakes states produced, in 1983, agricultural products exports comprising 26.2% of the national total (The Center for the Great Lakes 1984).

This cursory review is intended only to highlight: 1) the extent of Great Lakes water usage and related resources as a factor of production; 2) the multiple use aspects of the resource; and 3) the role of the resource in shaping and sustaining the economic base of the region. Although the dollar value of Great Lakes water as an economic unit is subject to debate, the impact of changes in water supply and/or quality on water-dependent economic processes is fairly well documented. From a water quality standpoint, for example, a polluted nearshore area could force a municipality to invest in an alternate water supply system, as well forego any recreation-based income that would otherwise be generated in that area.

It is apparent from this discussion that the regional economy both affects and is affected by Great Lakes water and related resources in their role as factors of production. Although a straightforward and fundamental observation, it has historically been ignored or discounted during the development of policy, both within the Great Lakes region and nationally. Policies which fail to recognize the economic implications of alternate water management programs tend to operate with sub-optimal efficiency; thereby compromising both the economic development potential of the region and the protection of the resource. A delicate balance between the "economic-exploitive" and "conservation-preservation" ethic is suggested. A middle ground typology - the "ecologic-human ethic" - is suggested by Hennigan (1970). The challenge is to incorporate such an ethic into the philosophy and operation of a regional resource management entity.

The Great Lakes as a "supporting resource" constitutes a third perspective or categorization contributing to an understanding of their economic importance. For purposes of this discussion, a "supporting resource" is considered to be one that has not only an economic value unto itself, but by virtue of its characteristics, provides for the existence of other natural resources with an economic value. With respect to the Great Lakes, such resources include, among others, the fishery, waterfowl populations, wetland resources, and more generally, the overall climate of the region.

The economic importance of these, and other lake-based natural resources is not to be underestimated. For example, in 1981 the Great Lakes sport fishery accounted for 54.9 million angler days and $766.2 million in direct revenue. Total impacts for the regional economy are estimated at well over $1.5 billion (Talhelm 1981). The Basin's substantial waterfowl population, present largely due to the existence of the Basin's water resources, is responsible for generating substantial economic benefits with regard to recreational hunting alone. The Basin's estimated 180,000 acres of wetlands serve important functions in the role in the ecosystem for groundwater recharge, flood and erosion control, thermal exchange, sediment and nutrient traps, and fish and wildlife habitat. While the value of such ecosystem functions is difficult to quantify in an economic sense, the contribution of wetlands to recreational/commercial activities (e.g., fur trading, hunting, fishing, nature observation) is significant in and of itself, estimated at $10 billion nationwide (House Merchant Marine and Fisheries Committee 1983). The Great Lakes wetland resources yield a

significant contribution to this figure. Finally, it is noted that the "lake effect" characteristics of the region's climate have a tempering impact upon seasonal temperatures; an impact which reflects favorably, from an economic standpoint, upon specialty crop production and overall agricultural productivity.

Individually and collectively, these resources and their attendant uses/effects comprise a significant contribution to the regional and binational economy. As lake-based resources, their status, in both a physical and economic sense, is directly and measurably influenced by the Great Lakes management process.

The Great Lakes water resource as a "marketable amenity" is identified as a fourth and final perspective from which one might view the economic value of the Great Lakes system. Of concern here are non-consumptive, in-Basin, essentially non-manipulative uses of the water resource that generate regional and international economic benefits. Examples include, among others, water-based recreation, quality of life factors, and in a more general sense, the aesthetic value of the resource.

Water-based recreation is an exceedingly broad category encompassing the more obvious recreational activities (e.g., boating, fishing, swimming) as well as those where the presence of the Great Lakes plays a more subtle, yet significant role (e.g., nature observation, hiking, sightseeing). Individually and collectively, the contribution of these activities to the regional economy is staggering. For example:

- Water-based recreation and tourism in the Great Lakes region generates between $8 billion and $15 billion for the regional economy on an annual basis (The Center for the Great Lakes 1984).

- Over one-third of all registered boats in the United States are located in the Great Lakes states. Six of these states are in the top ten nationally (National Marine Manufacturers Association 1986).

- Approximately $3.7 billion was expended by the 63 million visitors to the national, provincial and states parks along the Great Lakes shoreline in 1983. In the U.S., 10.6% of all visits to national parks were to those located in Great Lakes states, even though those states total only 5.2% of the park acreage nationwide. Proximity to the Basin's water resources was a leading factor (The Center for the Great Lakes 1984).

The water and related land resources of the Great Lakes Basin factor significantly into "quality of life" considerations. The presence of these resources, in either a subtle or overt manner, influences locational decisions (both personal and commercial), recreational preferences, and in a more general sense, overall living patterns. The economic implications of a favorable "quality of life" environment are largely self-evident; the resource base, by its mere physical presence, is a sufficient inducement or catalyst for economic activity. Hence, the "quality of life" attributes of the Great Lakes Basin shape an environment that fosters economic activity. Although "quality of life" factors do not lend themselves to quantifica-

tion, their impact upon the regional economy is undeniably significant. For example, a special supplement to Fortune magazine entitled, "The Great Lakes States: Our New Industrial Frontier," proclaimed that "the region has an enviable quality of life - a factor now recognized as critical to economic growth (Fortune 1985). The Center for the Great Lakes (1985) adds, "Preliminary surveys of [high growth] industries and their site location consultants indicate that the kind of waterfront related amenities already abundant in the Great Lakes region could, if marketed effectively, be persuasive inducements to new industries. Some cities along Great Lakes shores already report success with this quality of life approach."

The aesthetic value of the resource might be considered a subset of this "quality of life" consideration. An individual places a value on the resource, not as a function of its present or potential economic utility, but its contribution to one's personal enjoyment and overall sense of well-being. The aesthetic value of the Great Lakes system is shaped in large part by the magnitude of its physical dimensions and diversity of attendant resources. The extent of the aesthetic appeal of the resource can be measured only imperfectly by approximate "shadow-pricing" methods (e.g., property values, tourism patterns), but it is nonetheless an indicator of the contribution of the Great Lakes resource to the regional economy.

Political Aspects of the Great Lakes System - A Conceptual Framework

The preceding sections of this chapter examined the physical and economic attributes of the Great Lakes Basin, arguing that institutional design must accommodate and reflect these attributes if sound regional management is desired. A third and perhaps dominant consideration is comprised of the political characteristics of the institution-building effort - particularly those of the relevant jurisdictions in the region whose authority and operation will be affected by the entry of a new regional institution or the revision of an existing one. Indeed, political considerations can provide a most formidable obstacle (or conversely, a potent tool) in institutional design. Thus, a sound knowledge of the political environment in which such design must take place is of the utmost relevance.

Later chapters will inventory and analyze the governmental/institutional structure for Great Lakes resource management, and document the various political constraints and opportunities which influence the nature and direction of institutional evolution. It is the intent of this discussion to develop a framework for such analysis by briefly examining - at a conceptual level - the political influences which shape the configuration and behavior of the individual and collective components of a regional "institutional ecosystem." The discussion will proceed with a definition and description of the Great Lakes "institutional ecosystem" and presentation of findings for consideration in institutional design for Great Lakes management.

The Great Lakes "institutional ecosystem" encompasses the multitude of public and private entities which set or influence policy as well as the various formal and informal linkages and interactions among them. Specifically, this includes administrative agencies and the mandates, laws, agreements, and directives that define the boundaries of this operation. As a subset of the social sciences, "institutional ecology" might be termed

the study of the interactions of the components of an institutional arrangement among themselves and their environment. This environment is a dynamic one comprised of political, economic, social and scientific dimensions. The objective in analysis of the institutional ecosystem is to determine how the components of the system can be re-ordered, replaced, created or otherwise manipulated to achieve a predetermined policy objective.

The existing (and, in fact, historical) "institutional ecosystem" for Great Lakes management is commonly and quite accurately portrayed as a complex and rather ill-defined amalgam of governmental and private sector entities with the authority to manage, or the ability to influence the management of, the Basin's resources. This includes numerous international, federal, state, provincial, regional, and substate/provincial public agencies, as well as the constellation of research institutes, academic units, citizen organizations, private businesses and other nongovernmental entities with an interest in the resource. Allee et al. (1975) have astutely observed that "the dynamics of interorganizational relationships in river basin management can be compared in their complexity to the dynamics of the hydrology of a river basin." As will be discussed in Chapter Three, this complexity is largely attributable to: 1) the physical characteristics of the Basin's hydrologic system; 2) the multiple-use properties of the resource; 3) the complex interface between hydrologic and political boundaries; 4) the adaptation of the institutional framework to "new" knowledge; and 5) the inherent nature of governmental behavior in a regional resource management setting. Chapter Three also examines the federalism of the Great Lakes: the sharing of tasks and implementing roles among the various levels and units of government within the Basin.

The political properties of the Great Lakes institutional ecosystem bear strong resemblance to - and in many cases parallel the behavior of - the biological properties of the natural ecosystem of the Great Lakes. For example, both have numerous and complex components and linkages; they exist in a dynamic state with many checks and balances; they are subject to both internal and external impulses and stresses; and they struggle to adapt to an often hostile and ever changing environment. Unlike the natural ecosystem, however, the institutional ecosystem demands some degree of human manipulation to sustain and direct itself.

While further review of the parallels between the natural and institutional ecosystems is beyond the scope of this discussion, in very broad terms the comparison does provide a useful framework to investigate key political and behavioral considerations in institutional design. The influence is reflected in the following five generic behavioral attributes of an institutional ecosystem:

1) <u>Impact of the External Environment on the Role and Function of the Individual Components of an Institutional Ecosystem</u>. In the institutional ecosystem, the individual institution maintains a dynamic relationship with its environment. In theory, to maintain an "optimal" functional level, it must demonstrate an ability to 1) adapt to external stimuli; 2) modify its environment to ensure desirable conditions; and 3) anticipate environmental change and adaptive needs.

In practice, however, "optimal" performance tends to be ill-defined, and incentives for adaptation are less pronounced, given Schon's (1971) contention that "the organizational equivalent of biological death is missing." Further, the "crisis response" mode tends to prevail and anticipatory "senses" are generally under-developed and underutilized. A marginal loss of stature and effectiveness is generally selected over substantive institutional change, as survival is seldom at issue under status quo conditions and somewhat more questionable when substantive change is pursued.

In a regional resource management setting, the institutional ecosystem tends not to adequately control for marginal performance; the outcome is complexity and inefficiency. Contributing (and perhaps controlling) factors are those of ill-defined expectations and a lack of accountability. Institutional goals and objectives - particularly in multi-jurisdictional settings - are typically vague. Further, management authority is typically "soft;" coordinative, advisory, research oriented, etc. As a result, regional management institutions seldom receive the appropriate level of attention and oversight from the political jurisdictions they ostensibly serve. Marginal performance tends to be rewarded by silent approval, as it generally raises fewer "turf protection" issues or regional concerns that will trigger the active interest of these jurisdictions.

As will be discussed later, regional, multi-jurisdictional institutions for Great Lakes management - both singly and collectively - tend to reflect these observations. The absence of measurable goals and objectives and/or the absence of a system of accountability to constituents provides a layer of protection which reduces incentives for adapting to emerging needs.

2) <u>"Survival of the Fittest" in the Institutional Ecosystem</u>. This concept has long been applied in a social science setting under the term "social Darwinism" to describe, for example, competitive tactics in business to establish economic superiority. In the Great Lakes institutional ecosystem, however, the specter of biological or economic death is not relevant, and measures of institutional "fitness" tend to be both subjective and politicized. The competitive spirit is most assuredly demonstrated, largely in the form of "turf protection" battles, but the "winner" does not always prevail simply because it is more efficient or adaptable, and the "losers" do not cease to exist; they generally remain marginally functioning components of the institutional system.

The "survival of the fittest" concept is appealing from an institutional standpoint in the sense that it could be used to promote organizational efficiency and reduce unwarranted complexity, provided that the "losers" are removed from the institutional ecosystem once their functions have been displaced. Adherence is not regularly observed in the Great Lakes institutional ecosystem, however. The result is an increasingly complex institutional network in which components are established in response to unfulfilled needs; endowed with a specific mandate; and drawn into a routinized,

inertial state. As new stresses emerge, the process repeats itself. This pattern of "dynamic conservation" is, in Schon's (1971) words "a tendency to fight to remain the same". This issue is addressed in both the Introduction and subsequent chapters, which note the creation of "ad hoc" arrangements and new formal structures which assume functions which have (or could have) been addressed by existing institutions.

3) Competitive Exclusion in the Institutional Ecosystem. As applied to an institutional ecosystem, the principle of competitive exclusion in theory precludes the assumption of a defined management task or set of tasks by two distinct institutions. If such an arrangement emerges, one institution will prevail while the other will either perish or adapt to a related yet distinct role. This is generally applicable although quite relaxed when examined in light of institutions for Great Lakes management. These institutional roles, as previously mentioned, focus almost exclusively on "soft" management functions. As these roles tend to be loosely defined, the requirements for institutional survival are seldom specific. Hence, the "niche" into which a given institution is placed is broad and rather amorphous. It is unlikely that two or more institutions with identical functions can co-exist for any length of time, but significant overlap and some redundancy (actual or potential) among distinct institutions with related mandates is noted. In such instances, the variant political allegiances among the various jurisdictions in the region tend to perpetuate a fragmented institutional ecosystem and preclude undivided support for a single institutional device.

4) Interdependency Among Components of the Institutional Ecosystem. Autonomy, self-sufficiency and stature are prized attributes in the institutional ecosystem. This observation is supported by a long-established tradition of federalism in which distinct mandates are vested in distinct political jurisdictions and cooperative arrangements between them, when pursued at all, are usually prompted by some form of hierarchical arrangement or other incentive. Multi-jurisdictional, resource-based management - such as that in the Great Lakes Basin - has been a reality for some time; the various political jurisdictions have recognized the advantages of cooperative action in managing a shared system. However, it must again be noted that Great Lakes institutions are characterized by limited authority. The "traditional" political jurisdictions - state, provincial and federal agencies - have been patently unwilling to sacrifice some level of autonomy to a regional institution where they are but one of many "shareholders" and lack a controlling interest. This unwillingness is perhaps the dominant conservative factor influencing Great Lakes institutional design.

5) Functional Specialization. Functional specialization is a predominant characteristic of the institutional ecosystem, and is associated with the evolution or maturation of a given institution. In some instances, such specialization is hastened by a narrowly and explicitly defined mandate. In most, it is an extended process

originating in institutions with broad and rather ill-defined functions.

This characteristic is of relevance to the Great Lakes institutional ecosystem. In its early years (and in some cases, throughout its existence) an institution will attempt to be "all things to all people," rigorously pursuing a broad mandate by allocating limited resources over a sizable management landscape. Turf battles, emerging and changing priorities, crises, and resource limitations are but a few of the factors which will induce a given institution to selectively pursue some subset of its mandated functions. This maturation process will invariably find the institution establishing its niche at that point where its set of institutional strengths coincides with the set of perceived resource management needs. While this process of specialization tends to compartmentalize the management process - particularly when ecosystem management is the objective - it does encourage efficiency in the sense that institutions will tend to pursue those functions they are most capable and comfortable of dealing with.

The tendency toward functional specialization in the Great Lakes institutional ecosystem is pronounced; often derided as one which fragments management authority and encourages institutional complexity. While this is indeed problematic, it must also be recognized that - even without specialization - the magnitude of the Great Lakes management effort is such that it is likely beyond the capacity of any single agency to address.

These political aspects of the Great Lakes institutional ecosystem suggest numerous measures to strengthen the management effort, such as the establishment of measurable goals and objectives and a system of accountability for regional institutions; a mechanism to withdraw "marginal" institutions from the ecosystem; establishment of performance evaluation procedures; and strengthening of inter-institutional linkages. Later chapters will elaborate.

A final item in this overview of the political aspects of the Great Lakes institutional ecosystem pertains to alternatives for effecting desired institutional change. In a simplistic yet accurate sense, options for change are three-fold: 1) a "status quo" scenario in which change evolves from within the institutional ecosystem in the absence of concerted "outside" manipulation; 2) an incremental approach in which long-term objectives are established and pursued in a sequence of ostensibly ordered yet often unpredictable steps over time; or 3) a dramatic single step revision where the present institutional ecosystem (or at least a number of its components) are abruptly replaced by a "preferred" arrangement. (As later discussion indicates, other alternatives do appear on this continuum. However, these three provide principal points of reference.)

Given political realities, the first and third options can be summarily dismissed in fairly short order. In the Great Lakes Basin, as elsewhere, the regional, multi-jurisdictional institutional form is not sufficiently developed to become a self-sufficient and self-sustaining entity (Derthick 1974). It is wholly dependent upon its member jurisdictions for its development and maturation, as well as its very existence. The "status

quo" approach breeds Schon's (1970) typology of institutional inertia. Thus, the regional institutional form must be endorsed and nurtured if positive change is the desired outcome.

The third option - that of dramatic change in the composition of the institutional ecosystem - may idealistically be preferred, assuming that the successor arrangement is a carefully constructed one. In reality, however, such dramatic change is politically untenable unless precipitated by a resource management crisis of substantial proportion. Even then, the change tends to add institutions to the ecosystem rather than replacing them. Further, crisis situations seldom produce well thought out, comprehensive management institutions with a capability to do more than simply address the crisis at hand.

Experience in the political arena - both within and outside the Great Lakes Basin - has demonstrated an historical aversion to large-scale reform of governmental institutions. It is clearly more politically feasible to incrementally "fine tune" present institutions than to effect wholesale change. To return to the analogy with the natural ecosystem, it is also clear that incremental change avoids the debilitating trauma associated with a stressed ecosystem. The relationships among components of the institutional ecosystem are as complex and delicately balanced as those within a natural ecosystem. Sudden and pronounced change can often cause irreversible harm.

The preceding discussion, in highlighting selected physical, economic and political characteristics of the Great Lakes Basin and its management structure, provides a brief but useful background for subsequent discussion of specific institutions and management needs. These characteristics - and the attendant implications for institutional design - are reflected in that discussion.

CHAPTER THREE

THE INSTITUTIONAL SETTING FOR GREAT LAKES MANAGEMENT: COMPONENTS AND ATTENDANT LINKAGES

Introduction

A review of the components and attendant linkages of the institutional arrangements for Great Lakes management, in light of the physical, socio-economic and political profile presented in Chapter Two, provides a baseline for a determination of adequacy and (if appropriate) investigation of alternatives. Such an effort is consistent with the study hypothesis, which states, in part: "A systematic review of the evolution of present institutional arrangements will facilitate the identification and analysis of management strategies and organizational characteristics that hold promise for Great Lakes management. They can then be integrated into new or existing institutional arrangements to enhance Great Lakes management capabilities."

This discussion will be prefaced with an overview of the institutional framework for Great Lakes management and documentation of the importance of linkages among the components of this framework. These components - consisting of the various levels of governmental and non-governmental institutions - will be categorized and briefly described. Appendix A will review, in additional detail, the four key regional governmental institutions for Great Lakes management identified earlier (i.e., International Joint Commission, Great Lakes Fishery Commission, Great Lakes Commission, Council of Great Lakes Governors) and their attendant linkages.

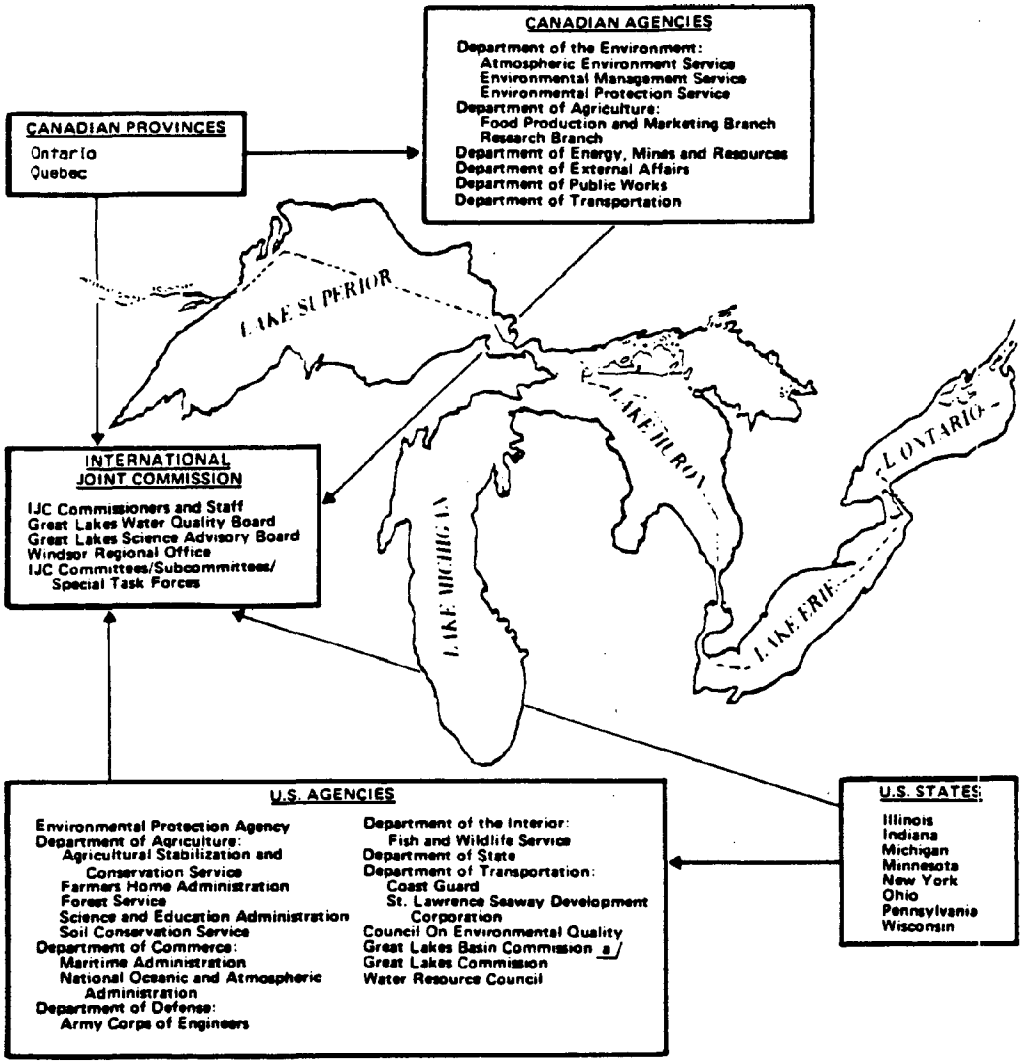
The chapter is presented in eight sections, organized by level of government (i.e., international; regional; federal (U.S. and Canadian); state and provincial; sub-state/provincial and nongovernmental). This discussion is preceded by an overview of the Great Lakes management framework and followed by closing remarks and recommendations on sources for additional detail. Figure 3 provides a useful reference on selected components of this management framework to demonstrate the complexity of such.

The Complexity of the Great Lakes Institutional Ecosystem - An Overview and Rationale

The Great Lakes system is a shared, multi-purpose resource intensively used and managed at every level from the local to international arena. Eight states and two Canadian provinces share the Basin; each has a governmental structure in place to manage its vested interest in the Basin's resources. Well over a dozen federal agencies - U.S. and Canadian - have a mandated interest in the Basin resources as well. Literally hundreds of other governmental entities are charged with some resource management responsibility, including municipalities, county health boards, and

Figure 3

THE GREAT LAKES INSTITUTIONAL ECOSYSTEM - AN OVERVIEW OF SELECTED COMPONENTS



a/The commission was abolished effective Sept. 30, 1981.

Note: Adapted from: U.S. General Accounting Office, 1982, A More Comprehensive Approach is Needed to Clean Up the Great Lakes. CED-82-63, May 21, 1982.

regional and international agencies, among others. A constellation of research institutes, citizen groups, business/labor organizations, policy centers, foundations and special interest coalitions have flourished as well, using the various access points to governmental institutions to influence the direction of Great Lakes management.

Complexity is a fact of life in the federal system of Basin governance - particularly in a binational setting. Federalism, in fact, assumes a very distinct definition when one examines and compares U.S. federal-state and Canadian federal-provincial relationships.

Clearly, the U.S. federal government has broad powers and responsibilities for administering federal laws and programs; providing liaison, financial and technical assistance to state and local governments and upholding obligations under international treaty. Through fiscal dominance and conditional grant funding, its influence is substantial. Federal environmental legislation has a strong intergovernmental orientation - standard setting and regulation writing as the federal role, with state and local responsibility in the areas of implementation and enforcement. Examining the federal role in light of constitutional powers, the Great Lakes Basin Framework Study (1975) concludes that: "The federal government may interpret the power to manage water resources almost completely if the Congress chooses to do so."

In recent years, the emergence of a "new federalism" philosophy is clearly altering this role, as Great Lakes problems are increasingly viewed as state problems and, therefore, subject to state solutions. Programs and responsibilities have been handed to the states, often without the requisite funding support to implement them. The fact that the already miniscule federal research budget for the Great Lakes was slated for an 80% decrease for several years running in the early 1980s is indicative.

The state and local role in the federal system of Basin governance, though often overlooked, is in many respects a key element in the management process. The Great Lakes states have long maintained broad responsibility in the areas of water supply; waste disposal; water quality; fish and wildlife; planning; standard setting, and others. The local level is where plans and policies are translated into action: sewage treatment plant construction; nonpoint source control programs; shoreline zoning, and phosphorus control are just a few examples.

If the states have long been the "second class citizen" in Basin management - as will be argued - then the local governments have been the forgotten citizens. Cases in point are the Great Lakes Water Quality Agreements of 1972 and 1978 - reviewed and negotiated exclusively by the federal governments, yet the successes achieved are largely attributable to the investments at the state, provincial, and local levels. An example is found in the local phosphorous control initiatives undertaken in response to the provisions of Annex 3 of the 1978 Agreement.

As it relates to Great Lakes management, Canadian federalism assumes distinctly different characteristics. As will be discussed, the British North America Act of 1867, in allocating legislative authority between the provincial and federal governments, places the preponderance of such for

water resource management in the hands of the former. In a binational setting, given the federal government's primacy in treaty-making power and external affairs, the sharing of roles and tasks in Basin management becomes essential.

The role of the nongovernmental organization - in both federal systems - is substantial and increasing in stature. Reference is made to both non-profit entities, academic institutions, labor interests, for-profit businesses, and the like. As will be documented, this component of the federal system is under represented in formal arrangements for Basin governance, and particularly so in regional institutions. Yet the role has been increasing as "new federalism" takes hold. A prime example is in the non-profit sector where activity since 1980 has been unprecedented in scope. Examples include the establishment of The Center for the Great Lakes, Great Lakes United, Great Lakes Economic Policies Council, Great Lakes Maritime Forum, and the International Great Lakes Coalition, to name a few. The role of such organizations in the management process varies widely, but generally includes one or more of the following: education; information sharing; advocacy; coordination; issue analysis; and perhaps most importantly, a catalytic function that has proven quite effective with the various political jurisdictions in the Basin.

Overlying these various levels of Basin interests, of course, are the regional, multi-jurisdictional institutions on which this study focuses. In providing a forum for collaborative discussion and decision making, these institutions are best described as the pivotal elements in the federal system. As such, attention to their capabilities is of paramount importance.

Over the years, a number of researchers have attempted, for various reasons, to inventory and document the management functions of all or part of this broad and rather ill-defined institutional ecosystem. For example, Haynes and Madau (1978) identified 91 Canadian governmental units (excluding municipalities) involved in Great Lakes management. Bulkley and Mathews (1973) identified 650 governmental units - from the municipal to international level - with jurisdiction over the Great Lakes shoreline. Cowden, in the late 1970s, conducted an analysis of 133 governmental units involved specifically in management of Lake Erie. Most recently, The Center for the Great Lakes (1985) assembled a listing of 1300 Great Lakes-related institutions in compiling the The Great Lakes Directory of Natural Resource Agencies and Organizations. Admittedly, these various inventory efforts were not approached in a similar manner, nor have any claimed to be comprehensive. At the minimum, however, they are indicative of the magnitude and complexity of the Great Lakes institutional ecosystem.

We must summarily reject the notion, however, that the large number of management institutions is indicative, in and of itself, of an inefficient and ineffective management system. Such a determination can be made only by assessing management performance in light of resource management needs. As the Water Resources Council (1967) indicated in the formative years for federal-state river basin commissions, "...before a new institutional arrangement is established in any basin, the needs of the basin should be determined and the major outlines of a basic comprehensive plan for the conservation, development and management of the basin should be clearly

seen." In brief, institutional form must follow management function. The complexity of the form is a liability if and only if management needs are unmet or inefficiently addressed. As Cadieux (1970) has noted, subscribing to the notion that "form follows function" makes the choice of institutional arrangements "not only easier, but also less important." A renewed commitment to this notion is viewed as a fundamental requirement in any effort to enhance the present institutional approach to Great Lakes management.

With this as background, it is appropriate to explore the factors of causation associated with the complex management system presently in place in the Great Lakes Basin. This complexity is largely attributable to 1) the physical characteristics of the Basin's hydrologic system; 2) the multiple-use properties of the resource; 3) the complex interface between hydrologic and political boundaries; 4) the adaptation of the institutional framework to "new" knowledge; and 5) the inherent nature of governmental behavior in a resource management setting. Commentary on each of these factors is provided as follows, in the interest of fostering an important perspective to the subsequent inventory of institutions.

1. Physical Characteristics of the Basin's Hydrologic System

By virtue of its expansiveness alone, one might readily infer that management of the Great Lakes Basin's resources demands a complex, multi-jurisdictional approach. The 95,000 square miles of surface water in the Great Lakes drain approximately twice as much land area. The Lakes' 65 trillion gallons of fresh water reside in a system of lakes and connecting channels that spans 2,400 miles from Duluth, MN, to the Atlantic Ocean. Over 10,000 miles of coastline provide access to the resource.

Aside from the sheer expansiveness of the resource, the Basin's unique hydrologic characteristics have contributed to the evolution of a complex management framework. Hydrologically, the Basin bears little resemblance to the several major riverine systems in North America that have been intensively used and managed over much of United States and Canadian history. The Great Lakes system is not, in the conventional sense, a free-flowing system where upstream uses and downstream impacts are readily documented and therefore managed in an integrated manner. The Great Lakes system is essentially a series of large retention basins and comparatively minor connecting channels which permit a continual but rather constrained flow. We note, for example, that retention time for the waters of the upper Great Lakes is approximately 22.6 years for Lake Huron, almost 100 years for Lake Michigan, and approximately 191 years for Lake Superior. Lyle Craine (1972) has recognized this "standing water" property as a key factor in the evolution of past Great Lakes management approaches and an important consideration in devising new or revised ones.

2. Multiple Use Properties of the Great Lakes Basin Resource

Unlike other major bodies of fresh surface water in North America, the Great Lakes possess four properties that lend themselves to intensive multiple use. The Great Lakes system provides: 1) a tremendous volume

of fresh water; 2) a generally high quality supply of water; 3) accessibility by population and industrial centers; and 4) a hydrologic configuration conducive to development as a viable transportation route for commodity movement. Chapter Two documented the multiple use attributes of the Great Lakes system, recognizing it is a mode of transport, a factor of production, a "supporting" resource and a marketable amenity. Several uses within these categories (such as transportation, sport fishery and recreational boating) are billion dollar industries in terms of annual revenues.

While the Great Lakes have yet to be considered the leading "drawing card" for industrial/business relocation in the region, their stature is increasing both regionally and nationally. As demonstrated by the findings of the Congress on the Economic Future of the Great Lakes states (1984), the strength and diversity of the regional economy has been shaped and sustained by the aforementioned properties of the Great Lakes system.

As with any "common pool" resource, intensive multiple use activity generates conflicts among the various user/interest groups, with the resultant stresses reflected in the physical status of the resource. As a consequence, industry associations, citizen coalitions, and a range of other interest groups have proliferated, seeking to influence (directly or indirectly) the resource management policies and programs of relevant governmental institutions. Although such activity is increasingly focused on the Great Lakes system in its entirety, it has historically had a rather localized, issue-specific orientation. Hence, we find a large number of such entities throughout the region, many with similar goals but a distinctly local orientation.

Intensive multiple use activity and its attendant conflicts also explain, in part, the proliferation of governmental entities with a Great Lakes management function. At any level of government, resource management functions tend to be compartmentalized and geographically confined. Within a given state, for example, distinct departments may address water quantity, water quality, transportation, economic development and water-based recreation/tourism concerns. This approach has historically typified other levels of government as well. Policy and program conflicts emerge as units within and among political jurisdictions pursue the specific management functions assigned to them. The emergence of regional, Basin-oriented institutions and related coordinative mechanisms has been credited with assuaging such conflicts, but in so doing, has added to the complexity of the Great Lakes management framework.

3. <u>The Complex Interface Between Hydrologic and Political Boundaries</u>

For purposes of governance, water bodies have historically been perceived as convenient lines of demarcation between adjacent political jurisdictions as opposed to hydrologic units in need of comprehensive management. Such is the case with the Great Lakes, where separate and distinct U.S. and Canadian governmental institutions for Great Lakes management preceded by at least a century even the most rudimentary form of hydrologically based management. These many political

jurisdictions, possessing some degree of autonomy and a mandate to serve the needs of their citizenry, have assumed and retained a range of management functions impacting, in some manner, the water and related land resources of the Great Lakes Basin.

On the U.S. side alone, over a dozen federal agencies, eight states, several dozen state agencies, 190 counties and literally thousands of communities within the Great Lakes Basin have long been involved in managing the Basin's resources for the benefit of their constituents. While an individual community's water withdrawal, water treatment, zoning and industrial location policies may not have a measurable impact Basinwide, the cumulative impact of these policies for thousands of such communities is clearly significant. Thus, even the modest Great Lakes-related management efforts undertaken at the local level must be considered in the review and analysis of the overall Great Lakes management framework. While the emergence of the ecosystem management concept is likely to be embraced, in some manner, by the various units and levels of government in the Great Lakes Basin, it is equally unlikely that these units of government will be amenable to a loss in their autonomy or authority to manage some aspect of the Basin's resource base. Hydrologic and other regionally-oriented institutions have been established as something of a "band-aid" solution to the failings of such traditional resource management approaches, but they have generally augmented these approaches, rather than replacing them.

4. <u>The Adaptation of the Institutional Framework to "New" Knowledge</u>

Institutional complexity, both within and among entities in a given sphere of interest, constitutes an adaptive response to the introduction of "new" knowledge. In the Great Lakes institutional arena, such knowledge has both a scientific and social/political component.

Scientific understanding of the physical properties and processes of the Great Lakes system has increased dramatically in recent decades. Sophisticated monitoring and surveillance techniques, technological advances and intensive studies have improved, in unprecedented fashion, the articulation of Basin problems and permitted the refinement of management approaches. "New" scientific knowledge emerges from two sources: 1) the identification of long standing, but previously unnoticed ecological processes and/or problems; and 2) the identification of emerging problems not previously experienced. The former includes, for example, technological advances which permit detection of trace amounts of toxic contaminants whose presence has been long-standing yet unnoticed. An example of the latter might include anticipated problems associated with wetland loss or dredging activities. In either case, the introduction of "new" knowledge has resource management implications; the relevant institutional framework must process the "new" knowledge and adapt accordingly.

The social/political environment within which the institutional framework operates comprises a second source of "new" knowledge. The operational characteristics of a resource management institution are

shaped not only by the institution's understanding of the resource and its attendant management needs, but by the prevailing social and political climate. Over time, the institution sensitizes itself to changes in this climate; it "learns" to interpret social and political change, investing this knowledge to adapt accordingly. A case in point is the continuous evolution of regional resource management entities in the Great Lakes; entities which "learn" to process, and adapt to, changing societal demands and political philosophies.

Adaptation of the institutional framework to emergent scientific and social/political influences culminates in one of three responses: 1) internal re-ordering and/or expansion of management processes within existing institutions; 2) formation of inter-institutional linkages to address implications of "new" knowledge; or 3) creation of new institutions to address unmet management needs. In each case (and combinations thereof), increased institutional complexity is the observed outcome. When one considers that the Great Lakes physical system is a vast, "freshwater frontier"; and its experiments in regional management constitute a "political frontier," the continuing trend toward institutional complexity is neither surprising nor inherently undesirable.

5. The Inherent Nature of Governmental Behavior in a Resource Management Setting

A fifth and final explanation for the complexity of the Great Lakes management framework relates to the behavioral attributes endemic to governmental bureaucracies. The political science literature - and more specifically, that relating to organization theory - provides a basis for understanding the evolving structure, function and authorities of the various levels of government. The five behavioral characteristics presented below have influenced the present, complex Great Lakes management structure.

a) A tendency toward institutional inertia. Donald A. Schon (1971), in Beyond the Stable State, convincingly argues that governmental structures are "memorials to old problems." He explains, "When the problems and crises disappear or change drastically in nature, the old organizational structure persists. In government, as in most other established institutions, the organizational equivalent of biological death is missing." When stresses are introduced into the realm of an institutional network, the studied response is one of "dynamic conservation" - "a tendency to fight to remain the same."

Dynamic conservation has long been exercised by the established political jurisdictions in the Great Lakes region. Schon (1971) observes, "Everything known about changing organizations indicates that change in bureaucratic organizations is a slow and difficult task, resisted by the organization itself." The adaptation to a changing environment is typically subtle; institutional changes are, in general, incremental and prolonged. Rather than responding to regional stresses with dramatic alterations to the status quo, the established political jurisdictions tend to resort to ad hoc

working groups, inter-governmental committees, interagency agreements and a host of other "soft" management forms in lieu of dramatic changes to their own structure and function.

Great Lakes regional organizations (and the array of other institutional mechanisms in the region) are largely products of the "dynamic conservation" phenomena. Rather than subject themselves to dramatic change to address emerging regional challenges, established institutions appear willing to sanction (or at least practice indifference to) new mechanisms. As a result, numerous regional organizations have been established over the years. Largely coordinative and advisory in nature (e.g., Great Lakes Basin Commission, Great Lakes Commission, Basin Interagency Committees), they have been carefully designed to remain accountable to established political jurisdictions, while filling needs heretofore unaddressed. These organizations and mechanisms have prolifered over the years, as the established political jurisdictions have studiously practiced dynamic conservation. The observed result is an increasingly complex institutional framework in which entities are established in response to unfulfilled needs; endowed with a specific mandate; drawn into a routinized, inertial state; and prompted to react to regional stresses by sanctioning the creation of new entities to address "new" unfulfilled needs.

b) Historical proclivity toward "crisis response" management. Even a cursory review of the developmental history of Great Lakes institutions reveals a long-standing tendency to engage in reactive management; responding to, rather than anticipating and avoiding crises. Such a review also reveals that reactive management often culminates in the establishment of new institutions or inter-institutional mechanisms. As Kelnhofer (1972) correctly notes, "The scope and seriousness of Great Lakes problems appear to be beyond the powers of present programs and policies." As long as the institutional network is driven by regional stresses, its complexity will increase. Only at such time that a comprehensive management framework is able to anticipate, confront and adequately address these stresses will the tendency toward institutional complexity be curtailed.

Regional Great Lakes institutions -- most notably the International Joint Commission, the Great Lakes Fishery Commission and the Great Lakes Commission -- were established as delayed responses to specific regional crises or well-established resource management needs. Hence, none were designed to be comprehensive management institutions capable of anticipating and addressing the full range of emerging regional problems and opportunities. Bilder (1972) capsulizes the need to reject the "philosophy" of crisis management:

> "Clearly, it is better to anticipate potential disputes and prevent them from arising than to try to adjust to them after they have emerged. Thus, we have to think in terms of an entire structure of dispute avoidance and management techniques involving both substantive and

procedural law, and of approaches of various types and at various levels..."

Establishing such a structure, heretofore unknown in the Great Lakes system, is the challenge. An effort toward that end was undertaken in 1979 under the auspices of the International Joint Commission with the conduct of an anticipatory planning workshop.

c) A preoccupation with "newness". Political leaders often find it more advantageous to create new institutions or institutional mechanisms than to review and refine existing ones. As the Great Lakes Basin Framework Study (1975) observes, "The easy solution when things are not working as desired is to create a new institution. The more difficult approach, but undoubtedly more effective in the long run, is to build new relationships among existing institutions." Yet, such approaches are generally studiously avoided; institutional memory is carefully set aside in favor of "new" initiatives, policies, institutions, etc. The effective result is one of constrained institutional evolution and lost opportunities to build upon past experiences.

A case in point relates to the Great Lakes Commission, an established agency afforded (by virtue of the Great Lakes Basin Compact) broad research, coordination and advocacy functions. Within the realm of its mandate, the Commission has long been capable of undertaking virtually all the initiatives that have been directed instead to newer organizations/groups such as the Great Lakes Environmental Administrators and the Council of Great Lakes Governors. As an established institution, however, perceptions of its past performance and sense of priorities overshadow perceptions of its potential. Hence, new institutional mechanisms were established to pursue functions unexercised by, but within the mandate of, the Great Lakes Commission.

d) Regional institutions are embodiments of, and therefore constrained by, the prevailing political will of the member jurisdictions. Regional institutions in the Great Lakes Basin are generally of limited autonomy, directed by and therefore accountable to, the political jurisdictions which comprise their membership. As Dworsky and Swezey (1972) have determined, the extent to which they pursue their mandate is a function of the political will of their relevant political jurisdictions. At times, this will can be limited, as these jurisdictions spurn regional cooperation when their domestic interests are of more immediate concern. Hines and Smith (1973), for example, find the Great Lakes states to be "myopic." They observe, "The individual Great Lakes states, as a whole, seem to be generally reluctant to devote their limited financial and technical resources to the solution of those Lake problems that are removed from their own state borders." Martin (1960) finds federal and state opposition to regional institutions to be "ubiquitous if often inarticulate." In brief, regional institutions can do only what the member political jurisdictions allow them to.

As a consequence, we find that the preponderance of past and present Great Lakes institutions have only "soft" management authority (e.g., research, coordination, advisory, advocacy, data collection). None are permitted (or have taken the initiative to) assert themselves as the guiding force for the breadth of the region's resource management efforts. The consequence, as Kelnhofer (1972) notes, is that "no one is in charge." Booz, Allen and Hamilton (1970), in a report to the federal Office of Water Resources Research, decry the "lack of a regional authority with direct dispute management authority." The absence of a "leading" regional authority, coupled with the historical piecemeal approach to Great Lakes management, has fostered complexity in the institutional ecosystem.

e) The experimental nature of regional resource management. Regional management institutions, in the Great Lakes Basin and elsewhere, fall victim to the perpetually experimental and chronically undefined role of regional government in the federal system. Perceptions of institutional adequacy, explained in Chapter One, are therefore characterized by polarized opinions and laden with subjectivity. Regional resource management institutions - particularly those involved in coordination, research, monitoring and other non-regulatory functions - are notoriously lacking in objective techniques for measuring performance. Perceptions therefore tend to be a reflection of a given individual's experience with the institution rather than an objective evaluation of the institution's ability to address its mandate. Chapter One also documented the historical dearth of evaluative activity vis-à-vis performance of Great Lakes institutions. The absence of external evaluative efforts is further complicated by institutional structures which have failed to develop internal evaluative mechanisms.

Furthermore, there is common agreement in the literature and among practitioners that no "ideal" prototype of a regional management institution is in existence today. The uniqueness of the Basin's hydrology, geography and political jurisdictional status tends to discourage the application of institutional forms in place in other regions. For these reasons, we must therefore accept the fact that regional management efforts remain experiments and, hence, must remain open to change. Complexity in the institutional framework is the observed outcome.

International Institutions/Mechanisms for Great Lakes Management

As the "highest" governmental level for Great Lakes management, it is clear that international activities influence and are influenced by the collective actions of all other levels of government. The two principal institutions with specific Great Lakes management responsibilities at the Canada-U.S. binational level include the International Joint Commission (IJC) and the Great Lakes Fishery Commission (GLFC). Of these two, the IJC possesses, by far, the broadest management role.

o International Joint Commission

The IJC is a permanent bilateral body created under the auspices of the international Boundary Waters Treaty of 1909 to prevent disputes regarding the use of boundary waters and to settle questions arising between the United States and Canada along their common frontier. The IJC provides the framework for international cooperation on questions relating to water and air pollution and the regulation of water levels and flows.

Three principal functions are undertaken by the IJC:

1) Quasi-judicial - The Commission is authorized to approve or disapprove applications from governments, companies or individuals who propose obstructions, uses or diversions of Great Lakes water which affect the natural level or flow of waters across the international boundary.

2) Investigative - The Commission investigates questions or differences along the U.S.-Canadian frontier via studies (i.e., References) which are submitted by the two governments. The Commission reports the facts and circumstances to the two governments and recommends appropriate actions. Such recommendations are not binding; the governments may accept, modify or ignore them.

3) Surveillance/Coordination - At the request of the two governments, the Commission monitors or coordinates the implementation of recommendations that have been accepted by the two governments. An associated activity is monitoring compliance with the Commission's Orders of Approval for structures in waters flowing across the international boundary.

The IJC is comprised of six members. The three U.S. Commissioners are appointed by the President, with the advice and consent of the U.S. Senate. The three Canadian members are appointed by the Governor in Council of Canada. The Commission includes U.S. and Canadian co-chairmen who serve in their positions on a full-time basis.

While IJC responsibilities pertain to the entire U.S.-Canadian frontier, Great Lakes responsibilities are further specified under the Great Lakes Water Quality Agreement of 1972 (amended in 1978). The 1978 Agreement directs the two parties to the Commission to "restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem." This is undertaken via efforts "make a maximum effort to develop programs, practices and technology necessary for a better understanding of the Great Lakes Basin Ecosystem and to eliminate or reduce to the maximum extent practicable the discharge of pollutants into the Great Lakes System."

Technical studies and field work required by the Commission to carry out the three functions are performed by 28 binational

advisory boards. The boards are appointed by the IJC and include scientists, engineers and other experts. Two major boards, The Water Quality Board and Science Advisory Board, assist the Commission in meeting Agreement responsibilities. Each has committees and task forces which prepare reports to the Commission. The IJC uses the recommendations and reports of the boards to advise the Governments about the Agreement.

The Commission has no direct enforcement power in pollution matters; rather enforcement must come from the respective governments.

The Water Quality Board develops a budget identifying those activities that it does not carry out itself. Examples are: assessment of Areas of Concern; developing priority lists of chemicals; computer inventories; developing surveillance plans; developing water quality indicators; interlaboratory studies; and various workshops.

The Science Advisory Board conducts workshops and lets contracts to gather information. Examples include: research review, modeling, development of aquatic ecosystems objectives and indicators of ecosystem health, and implementing an ecosystem approach.

The IJC office provides public information services for the programs, including public hearings, undertaken by the Commission and its boards. It also provides secretariat support to the Boards by arranging for meetings, gathering data and other information, and by assisting in developing reports on Great Lakes water quality.

The IJC maintains professional staffs in Washington, D.C., Ottawa and Windsor, Ontario. The latter was established in 1973 to assist in fulfilling the provisions of the Great Lakes Water Quality Agreement. (Further detail on the International Joint Commission is provided in Appendix A.)

o <u>Great Lakes Fishery Commission</u>

The Great Lakes Fishery Commission was established pursuant to the Convention on Great Lakes Fisheries, between Canada and the United States, ratified in October 1955. The Commission has two major responsibilities. The first is to develop coordinated programs of research in the Great Lakes, and on the basis of the findings, recommend measures which will permit the maximum sustained productivity of stocks of fish of common concern. Second, the Commission is responsible for formulating and implementing a program to eradicate or minimize sea lamprey populations in the Great Lakes. The Commission is also required to publish or authorize the publication of scientific or other information obtained in the performance of its duties.

The Convention specifies that the Commission work through official agencies of the contracting parties (and the Great Lakes states and province of Ontario) in the performance of its duties. The Commis-

sion contracts with Fisheries and Oceans Canada for sea lamprey control and research, and maintains a contractual arrangement with the U.S. Fish and Wildlife Service as well. The balance of its program is pursued through a committee structure which involves the academic community and representatives of the agencies with fishery management and other natural resource mandates. The two principal advisory boards are the Board of Technical Experts and the Fish Habitat Advisory Board. The primary coordinating committees are the Lake Committees, The Council of Lake Committees and the Fish Disease Control Committee. The primary operating/advisory committee is the Sea Lamprey Committee.

A major initiative for the GLFC in recent years has been the development and implementation of a Joint Strategic Plan for Management of Great Lakes Fisheries. The Commission, along with its committees, principal cooperators and other Great Lakes agencies, works together under the plan.

The Commission is comprised of Canadian and U.S. sections, each served by four Commissioners appointed by their respective governments. An Ann Arbor, Michigan-based secretariat, appointed by the Commission, assists the Commission in carrying out its duties.

The Commission's initiatives are undertaken with its principal cooperators in several related areas of activity: 1) sea lamprey control and research; 2) coordination of lake trout and other fish stocking; 3) coordination of fish population assessment and development of strategies to control exploitation; 4) registration of lampricides; 5) investigation of the feasibility of further rehabilitation of the Great Lakes ecosystem to reattain lost values; and 6) development of an international Joint Strategic Plan for Management of the Great Lakes Fisheries, an umbrella under which operational fishery management for each lake can be developed. (Further detail is provided in Appendix A.)

- Great Lakes Environmental Administrators

  The Great Lakes Environmental Administrators is an informally constituted group of state, provincial and federal administrators with responsibility for Great Lakes environmental concerns. They have met periodically over the past several years for information-sharing, coordination and program development purposes. The Administrators have no specified staff or budget. Among others, issues focused on have included federal and state environmental legislation; Great Lakes Water Quality Agreement and related issues; air quality monitoring and hazardous waste disposal. The Administrators have also assumed the lead role in implementation of the Great Lakes Toxic Substances Control Agreement signed by the Great Lakes Governors in 1986.

While the IJC and GLFC are the principal binational institutions for Great Lakes resource management, other international (and in fact, global) institutions have a substantive, albeit less direct impact upon joint U.S.-Canadian management efforts. Specifically, we refer to the United Nations

and the International Court of Justice.

The Stockholm Declaration, a product of the 1972 United Nations Conference on the Human Environment, laid a foundation for the development of international environmental law that has, and will continue to impact U.S.-Canadian environmental relations. Principle 21 of the Declaration, fashioned by delegates from 113 countries, states:

> "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction."

Significantly, Principle 22 of the Declaration calls upon signatory parties to work toward the development of international law addressing liability and compensation for environmental damage. While the Declaration is neither binding nor focused specifically upon U.S.-Canadian Great Lakes management, it has had an influence on such. Both nations actively participated in the formulation of these principles and numerous global agreements designed to establish principles and mechanisms for the avoidance or resolution of environmental disputes. Further, Bilder (1976) notes that the "cooperative traditions and shared outlooks" of the United States and Canada - through the International Joint Commission - provide a "most effective technique" for managing international environmental problems pursuant to such principles. Thus, one can argue that the Stockholm Declaration both influenced and was influenced by the evolving binational principles for shared management of the Great Lakes.

The International Court of Justice (ICJ) at the Hague in the Netherlands is significant in that it provides a mechanism for the settlement of disputes that might arise between the U.S. and Canada over a given resource management issue. Under its rules, the Court is empowered to form chambers to hear various categories of disputes, appoint members to a technical panel to hear the case, and secure expert fact-finding and opinions. It therefore has the capability to balance interests, resolve disputes and assist in the development of emerging international law in a range of areas (Bilder 1977). It is noted, however, that the ICJ is used only reluctantly, and is not likely to play a significant role in environmental dispute management in the near future. Such a tendency parallels the reluctance of the U.S. and Canada to invoke Article X of the Boundary Waters Treaty for binding arbitration on a given issue. In any event, while the ICJ has yet to address a Great Lakes-specific issue and is unlikely to do so in the foreseeable future, its availability to do so is worthy of note.

Beyond these established institutional structures is an array of mechanisms employed to facilitate binational management of the Great Lakes. These mechanisms include the treaty; agreement; convention; memorandum of understanding (or intent); and any of various formal and informal diplomatic exchanges. All have been employed in binational relations either in conjunction with, or in lieu of, formal institutional structures.

The treaty device - dating back to the Treaty of Paris in 1783 - has long been employed to address bilateral relations between the U.S. and Canada. The device has been used on both an issue-specific basis (e.g., Treaty of Niagara Falls- 1950) and in a broader context (e.g., Boundary Waters Treaty of 1909). The latter, fully titled the "Treaty between the United States and Great Britain Relating to Boundary Waters and Questions Arising Between the United States and Canada," emerged as the culmination of early bilateral initiatives, and remains the principal guide to bilateral relations on resource management issues. As indicated earlier, the Boundary Waters Treaty of 1909 establishes the International Joint Commission and empowers it with a variety of quasi-judicial, investigative and surveillance/coordinative functions.

Like the Boundary Waters Treaty of 1909, the Convention on Great Lakes Fisheries Between the U.S. and Canada constitutes the charter document for an international management institution - in this instance, the Great Lakes Fishery Commission. In establishing the Commission and its associated responsibilities, the 1954 convention was insightful in that it was "taking note of the interrelation of fishery conservation problems" and "recognizing that joint and coordinated efforts by the United States of America and Canada are essential..." to fishery management.

The Great Lakes Water Quality Agreement of 1972 (amended in 1978) constitutes a third mechanism of paramount importance in present U.S.-Canadian Great Lakes management efforts. Signed by the two governments and administered by the International Joint Commission, the Agreement assigns to its signatory parties the responsibility for the joint cleanup and maintenance of their shared Great Lakes water resources. In its present form, the Agreement provides for the development and implementation of programs to control municipal and industrial water pollution sources; reduction of discharges of toxic substances; identification of the various nonpoint sources of pollution; improvement of water quality surveillance and monitoring; and others.

A memorandum of understanding (or intent) is, in one sense, a step down from a Treaty or Agreement in terms of formality and political consequence in bilateral relations. A vehicle available to (and among) federal, state and provincial governments, such memoranda are widely used in U.S.-Canada Great Lakes relations. At the federal level, for example, an August 5, 1980 Memorandum of Intent established a bilateral approach to investigate the transboundary air pollution issue. Similar activity is found at the state/provincial level as well. Reference, for example, Quebec-New York and Minnesota-Ontario Memoranda of Understanding on transboundary air pollution issues. While these agreements are not legally binding (they neither require nor receive ratification by the legislative branches of the respective governments), they serve as "good faith" agreements between two jurisdictions attempting to remedy a shared problem.

Finally, a variety of less formal but nonetheless significant diplomatic exchanges contribute to the array of bilateral mechanisms for Great Lakes management. The two governments frequently exchange notes or otherwise communicate on resource management issues of shared concern. Terming these exchanges "ad hockery", Carroll (1984) notes that they are as varied as the seemingly infinite array of transboundary issues that may arise. Perhaps

more appropriately termed "creative diplomacy," these exchanges can be used as a precursor to the development of a treaty, agreement or reciprocal legislation. They can also be used as a means to bypass or otherwise avoid a formal institutional structure that might not always be as responsive as it should be.

International Mechanisms in Perspective - Distinguishing Characteristics

To place these various binational institutions and institutional mechanisms in proper perspective vis-à-vis other levels of government and the Great Lakes management framework in general, we can identify five distinguishing characteristics:

a) Formal binational institutions are limited in number, long established, and programmatically well defined. Despite the number and complexity of issues along the U.S.-Canadian Great Lakes frontier, only two institutions, one seventy years old (i.e., International Joint Commission) and the other thirty-one years old (i.e., Great Lakes Fishery Commission) presently have an explicit binational management function. Over this time period, their respective rules of procedure have been refined and somewhat routinized; their "niche" in the institutional ecosystem has been well defined. For example, the International Joint Commission has long prided itself on both its longevity, low profile (in a political context) and consistency in pursuing the intent of the Boundary Waters Treaty of 1909. By virtue of its specific mandate and past performance, the Great Lakes Fishery Commission can also make a similar claim.

b) Binational institutions are creatures of their signatory parties, and as such, possess only limited autonomy. Both the International Joint Commission and the Great Lakes Fishery Commission were established (after years of negotiation) as vehicles to address transboundary issues neither government was capable of addressing unilaterally. Despite the foresight embodied in the Boundary Waters Treaty and the Convention on Great Lakes Fisheries, however, the institutions were carefully structured to limit their autonomy and ensure clear-cut accountability to the two governments.

   Beyond its quasi-judicial powers regarding levels and flows, the IJC is empowered only to proffer recommendations to its member governments - recommendations which can be accepted, revised or ignored. Furthermore, references can be accepted only upon request of both governments. The Great Lakes Fishery Commission is structured such that "Each Section shall have one vote. A decision or recommendation of the Commission shall be made only with the approval of both Sections." (Article II, Convention on Great Lakes Fisheries). Coupled with the fact that both binational commissions are comprised of appointees from the respective governments, the lines of accountability are clearly drawn.

c) Binational institutions are oriented toward "soft" management approaches; they rely largely on the signatory parties for standard setting, regulatory, enforcement and related activities. The preponderance of institutional activity at the binational level focuses upon coordination, research, planning, monitoring, surveillance, advisory and recommendatory functions. These might be termed "soft" management approaches. They generally support standard setting, regulatory, enforcement and related activities that remain the exclusive domain of the federal governments.

d) Binational institutions are largely accountable to the federal governments and tend toward limited state, provincial and local interactions. Although both the IJC and the GLFC draw commission, board and advisory committee members from other levels of government (as well as the nongovernmental sector), their lines of accountability (and hence focus) are drawn primarily to the federal governments. Hence, they tend to be somewhat "buffered" from the resource management conflicts and pressures generated at the more localized levels of government. This reality, coupled with their aforementioned, "soft" management responsibilities, largely explains the rather low profile and recognition level of these binational institutions, particularly among sub-state/provincial institutions.

e) Creative diplomacy in U.S.-Canadian bilateral relations largely occurs outside the established institutional structure. The bilateral standing and treaty/convention-based origin of the two binational institutions of concern lends them an inherent stability and resistance to anything but incremental change. Also, the continuing maturation of U.S.-Canadian relations in the area of resource management has served to highlight and define many points of difference as well as agreement. For this reason, it appears increasingly unlikely that the two governments would agree upon substantial revision of existing bilateral institutions or the creation of new ones under any circumstances short of a mutually recognized environmental/resource management crisis.

Given this reality, we see an increasing emphasis on tactics of "creative diplomacy" which accept the binational institutional structure in its present form as a "given," and employ a variety of other mechanisms to effect change. These include bilateral agreements, memoranda of understanding and a range of diplomatic exchanges - some quite informal. These tactics constitute a distinct departure from those in other levels of government, where effecting change via alteration of institutional structure, process or programs is a more realistic endeavor.

Regional Institutions/Mechanisms for Great Lakes Management

The two principal regional governmental institutions for Great Lakes management include the Great Lakes Commission and Council of Great Lakes Governors. They are distinguished from the aforementioned international institutions in that they are domestic (U.S.) institutions in a strict

sense, although both work with Canadian interests on various issues. Again, the reader is referred to Appendix A for additional detail.

- Great Lakes Commission

The Great Lakes Commission is an interstate compact commission comprised of gubernatorially appointed and legislatively mandated representatives of the eight Great Lakes states. Established by joint action of the Great Lakes Governors in 1955 and granted Congressional consent in 1968, the Great Lakes Commission seeks "to promote the orderly, integrated, and comprehensive development, use and conservation of the water resources of the Great Lakes Basin" (Article I, Great Lakes Basin Compact). Objectives associated with this overall goal, as stated in the Compact, include:

> "1. To plan for the welfare and development of the water resources of the Basin as a whole as well as for those portions of the Basin which may have problems of special concern.
>
> 2. To make it possible for the states of the Basin and their people to derive the maximum benefit from utilization of public works, in the form of navigational aids or otherwise, which may exist or which may be constructed from time to time.
>
> 3. To advise in securing and maintaining a proper balance among industrial, commercial, agricultural, water supply, residential, recreational, and other legitimate uses of the water resources of the Basin.
>
> 4. To establish and maintain an intergovernmental agency to the end that the purposes of this compact may be accomplished more effectively."

The Commission pursues this broad mandate via three principal functions: 1) information sharing among the Great Lakes states; 2) coordination of state positions on issues of regional concern; and 3) advocacy of those positions on which the states agree.

The Commission addresses a range of issues involving environmental protection, resource management, transportation and economic development. A committee and task force structure, in which Commissioners and Advisors from all states participate, is the vehicle for identifying and developing issues, and subsequently recommending the adoption of positions by the full membership. Federal and provincial observers participate, but do not vote, in all Commission activities.

The Great Lakes Commission is the only Great Lakes organization with a statutory mandate to represent the collective views of the Great Lakes states. As such, the Commission's structure, program and staff is determined by, and solely accountable to, its member states.

The current task force structure is indicative of program priorities and interests. The Economic Analysis and Policy Task Force is investigating issues such as tourism/outdoor recreation; international trade; agriculture; federal funds flow and public finance; and industrial change and technology. Other task forces include: Lake Levels, Flooding and Shoreline Erosion; Soil Erosion and Sedimentation; and Water Project Funding.

o Council of Great Lakes Governors

The Council of Great Lakes Governors is an organization comprised of the governors of the six westernmost Great Lakes states. Formalized in 1982 as a private, non-profit entity, the Council provides a forum for identifying, discussing, researching, and formulating policy and plans on various regional economic and environmental issues of common interest. Its stated objective is to "stimulate economic, community and environmental development" within its member states.

As an instrument of the states, the Council pursues a regional agenda formulated via joint consultation of the governors. Since its formation, regional economic goals have included industrial revitalization, reduced unemployment, expansion of export markets and tourism promotion. Environmental and resource management goals have focused upon both water quality and water quantity issues. The latter has been a principal focus to date, with a decided emphasis upon diversion/consumptive uses issues and attendant institutional arrangements for addressing them.

The Council's mandate is a broad one, permitting its membership substantial flexibility in the selection of issues and the manner in which they are pursued. This flexibility has facilitated representation from non-member Great Lakes states (New York, Pennsylvania) and provinces (Ontario, Quebec) on selected issues, most notably that of diversions and consumptive uses.

The Council's strength is drawn from, and therefore dependent upon, the extent of the governors' commitment toward collective action on regional issues. Supported by a small staff and modest budget, the Council has relied upon a task force approach (drawing upon governors' appointees and state agency personnel) for technical assistance and advice.

Key Great Lakes programs include:

1) The Great Lakes Regional Biomass Program, involving the administration of a $630,000 grant from the U.S. Department of Energy. The intent of the program is to increase the utilization and production of biomass fuels in the six member Great Lakes states and the State of Iowa.

2) The Task Force on Water Diversion and Great Lakes Institutions was created to evaluate the Great Lakes Basin Compact and other institutional mechanisms to determine their relative abilities to

strengthen the position of the states and provinces in resisting or regulating diversions. The outcome of this effort was the Great Lakes Charter, signed in 1985 by the Great Lakes governors and premiers. A precedent-setting document, the Charter is a non-binding, "good faith" agreement committing the governors and premiers to a coordinated water quantity management program, including a prior notice and consultation process for use in evaluating prospective large scale diversions or consumptive uses of Great Lakes water.

3) The Machine Tool Commission was responsible for developing a strategy for rebuilding the competitive position of firms in the machine tool industry. A report was prepared in mid-1984.

4) A Great Lakes Toxic Substances Control Agreement was developed under the auspices of the Council to provide for a common approach to toxics issues by Basin states and provinces. It was signed by the Great Lakes governors in May 1986, with anticipated support from the Great Lakes premiers via Memoranda of Understanding.

Regional Mechanisms in Perspective - Distinguishing Characteristics

The first section of this chapter, in presenting a rationale for the complexity of the Great Lakes institutional ecosystem, presents also a review of some of the key characteristics which distinguish regional institutions from others at the political jurisdictional level. For example, regional institutions might be characterized as:

1) institutional responses to the multi-jurisdictional, multiple-use resource management requirements of the Great Lakes Basin;

2) "creatures" of their signatory parties, possessing limited autonomy, modest budgets, and highly accountable to their membership;

3) exhibiting a strong coordinative/information sharing/advocacy orientation (i.e., "soft" management approaches);

4) subscribing to the "strength in numbers" concept: providing a unified regional front for approaching Congress and federal agencies; and

5) flexible and adaptable (at least in theory) to emerging needs and highly sensitive to the political climate in member jurisdictions.

United States and Canadian Federal Institutions/Mechanisms for Great Lakes Management

In his review of domestic and binational Great Lakes management approaches, Munton (1982) observes, "The similarities in Canadian and American institutions and legislation are hardly surprising, given the common social roots, historical experiences, and political and philosophical traditions as well as the extraordinary level of communications and exchanges across the border between the two countries." Indeed, in addition to their

mutual, co-equal participation in management institutions and related arrangements at the binational level, the two governments in many ways exhibit parallel management approaches at the domestic level.

Both federal governments have extensive roles in the Great Lakes management effort, although, as discussed elsewhere , there are marked differences given the comparatively higher stature of the province in Great Lakes management when compared to the U.S. federal-state allocation of authority. The strength of the federal presence in the region is attributable not only to the nature of the two governments' system of federalism, but by virtue of the fact that the Great Lakes region demands both an inter-jurisdictional and an international management approach. Both governments, and their respective federal agencies, are responsible for administering federal laws and programs, developing and dictating policy, providing liaison, financial and technical assistance to other levels of government, and upholding obligations under international treaty.

Despite these points of similarity, Munton correctly goes on to note that, "It is ... the differences which are the more interesting and the more revealing." For it is these differences that must be acknowledged and addressed in the pursuit of viable regional mechanisms for Great Lakes management. In the ensuing discussion, the respective roles of the two federal governments in Great Lakes management will be described, and their differences highlighted. An inventory of applicable agencies and institutional arrangements at the federal level will then be presented.

The U.S. Federal Role in Great Lakes Management

The U.S. federal government is well represented in the complex Great Lakes management framework, both in terms of institutional presence and power. Francis (1982) explains:

> "The federal government exercises considerable influence, especially through its fiscal dominance and extensive use of conditional grant funding to states. In many areas of resource and environmental policy and programs, the federal role is paramount, although wide use is made of federal-state cooperative programs which are jointly funded."

Caldwell (1982) elaborates in explaining that "the salient feature of environmental legislation in the United States is its federal inter-governmental character - federal financial assistance, standard setting and specific regulation, with state and local responsibility for implementing and enforcing environmental provisions subject to federal approval." Thus, it is clear that accountability for Great Lakes management efforts largely lies at the federal level, where policies and programs are either dictated directly or relegated to the states with the retention of some level of oversight authority.

The federal role in Great Lakes management is firmly established under the Constitution, reaffirmed in a series of major pieces of federal legislation, and reinforced operationally as the prominence of the federal role in Great Lakes management has evolved. Under the U.S. Constitution, the federal government is granted commerce, property, general welfare, war,

treaty and compact consent powers. Buttressed by statutory and case law, these various clauses provide the federal government with broad powers in resource management at the interstate and international level.

The constitutional separation of the executive, legislative and judicial branches of the U.S. federal government - and its attendant system of "checks and balances" - ensures each branch an important role in Great Lakes management. Within the executive branch, the President has the power to negotiate treaties with Canada, issue executive orders to shape the institutional and policy framework for Great Lakes management, establish directives for federal agencies involved in resource management, and influence the budgetary process upon which federal efforts rely. At the legislative level, the U.S. Congress has the power to ratify treaties with Canada, consent to interstate compacts, pass federal laws with far-reaching resource management implications and approve the federal budget. The power of the federal judiciary is the third balancing force in this tripartite system. The U.S. Supreme Court is empowered to determine the constitutionality of federal laws and actions, interpret legislative intent, and intervene and settle interstate disputes.

The federal role in Great Lakes management has historically been a predominant one, perhaps more so in comparison to other regions of the United States due to the binational element. As early as 1787, with the development of the Northwest Ordinance, the Great Lakes region was formally recognized under federal domain. Soon thereafter, with the adoption of the U.S. Constitution in 1789, the federal government was granted broad authority under the commerce, property, general welfare, war, treaty and compact consent powers. The Rush-Bagot convention of 1817 - limiting naval armaments in the Great Lakes - was perhaps the first recognition of the Great Lakes system as a regional (i.e., international) resource demanding a strong federal presence. A series of U.S.-Canadian agreements addressing mutual navigation rights followed, as did the establishment of various binational waterways commissions in the 1880's and 1890's.

A series of landmark federal laws - most of which were passed in the early decades of the 1900's - also explain the evolution of the federal role in Great Lakes management. The Rivers and Harbors Act, first enacted in 1827 and subsequently amended on numerous occasions, established the U.S. Army Corps of Engineers as the developer and protector of the nation's navigable waters (including the Great Lakes), and asserted Congressional jurisdiction over those waters.

Passage of the federal Public Health Service Act of 1912 was an initial step in formalizing a federal role in environmental management matters (Caldwell 1982). The federal Flood Control Act, first enacted in 1917, established the power of the federal government to improve navigable waterways and watersheds, including the Great Lakes' many rivers and many of their tributaries.

Any lingering doubts as to the constitutional authority of the federal government to legislate on such environmental/resource management issues were essentially negated with the signing of the National Environmental Policy Act of 1970 (NEPA). Caldwell (1982) explains that NEPA directs federal agencies to "utilize a systematic, interdisciplinary approach which

will ensure the integrated use of the natural and social sciences and environmental design arts in planning and in decision making which may have an impact on man's environment."

The "new federalism" philosophy of the present U.S. administration entails an active effort to relegate traditional federal resource management responsibilities and associated programs to state jurisdiction. While this trend has already had an impact upon the Great Lakes management effort, it is yet unclear what the long-term consequences of the erosion of the federal role will be.

To characterize the U.S. federal system in summary fashion, the work of Francis (1982) and Caldwell (1982) merits consultation. Drawing upon their investigations, the following key characteristics and attendant implications for Great Lakes management are noted:

a) The separation of powers among the executive, legislative and judicial branches of government, and the resultant system of "checks and balances." Each branch of government has a significant role in the development of resource policy, which can emerge from executive action (e.g., abolishment of the Title II River Basin Commission system); Congressional legislative process (e.g., passage of the Clean Water Act); or judicial decree (e.g., water quantity management implications of the Sporhase v. Nebraska decision of 1982). This system is a dynamic one, and the action of one branch is subjective to integration or refutation by another.

b) The tradition of bipartisanship. The political allegiance of elected officials lies first with the constituent and second with party affiliation. Thus, the Congress is sensitive to, and therefore has encouraged, consensus building among often diverse groups whose interests coalesce on a given issue. This tendency is reflected in the bipartisan support that Great Lakes issues generate on occasion.

c) The openness and accessibility of the federal policy-making process. Individuals and interest groups with designs on introducing or influencing resource management policy have a number of avenues to do so. Members of Congress have long exercised a receptivity to legislative initiatives from constituents. Political sensitivities in the executive branch render agencies susceptible to pressures for the emphasis/de-emphasis of given resource management authority. Finally, the judicial system grants citizens and interest groups standing in the courts - an arrangement which has established litigation as an often-used resource policy-making device.

d) The legislative and fiscal dominance of the federal government vis-à-vis state and regional governments. As indicated earlier, landmark federal legislation in the early decades of this century, coupled with other sweeping initiatives in more recent years, has affirmed the leadership role of the federal government in most areas of resource management. Further, federal fiscal resources - and the dependency of the states upon them - have given rise to

conditional state grants and federally supported cooperative arrangements where the federal government tends to serve as "senior member" in the "partnership" approach.

A listing of all federal institutions with some role in the Great Lakes resource management effort - at the department or independent agency level - is an extensive one. Included among these are the Departments of Agriculture, Commerce, Defense, Interior, Energy, Transportation, Health and Human Services, Housing and Urban Development, State, Justice, Labor and the Treasury, as well as the Environmental Protection Agency, Federal Emergency Management Agency, their sub-units, and a number of federal boards, councils and commissions with a role in national resource policy development.

A brief, selective review of those of particular consequence to the Great Lakes management effort is appropriate. Such a review is provided below:

o Department of Agriculture

The U.S. Department of Agriculture (USDA) mandate is a broad one, and includes programs to improve and maintain farm income, develop and expand foreign markets for agricultural products, safeguard and ensure standards of quality in food supply, and enhance the environment and production capacity through the protection of soil, water, forests and other natural resources. Three arms of the USDA with significant resource management responsibilities in the Great Lakes region include:

Soil Conservation Service. The SCS mission lies in the areas of soil and water conservation, natural resource surveys, and rural community protection and development. The SCS carries out a national conservation program through local conservation districts and cooperating landowners and operators. SCS provides cost-sharing onsite technical assistance to landowners/ operators for soil, water and plant resource inventory and assessment, and for planning and application of land use and conservation treatments.

Agricultural Stabilization and Conservation Service. The ASCS administers conservation, farm commodity, environmental protection and emergency programs. These programs provide for commodity loans, as well as price support payments to farmers; purchases from farmers and processors; acreage reduction; cropland set-aside and associated production adjustment measures; conservation cost-sharing agreements, and emergency assistance.

Cooperative Extension Service. A partnership of the USDA, state land grant colleges and universities and county governments, the CES is an educational organization responsible for disseminating and encouraging the application of agricultural research findings, technologies and leadership techniques to individuals, families and communities in both urban and rural settings.

These and other USDA agencies/programs play a key role in nonpoint source pollution control from agricultural runoff - a critical

water quality management concern. Each has a strong presence in the Great Lakes states and substate units of government - particularly at the county level. At the regional/international level, the SCS has been particularly active in working with agencies on Great Lakes water quality management efforts.

o Department of the Army

The U.S. Army Corps of Engineers, under its Civil Works Program, "encompasses a broad range of resources planning and development activities embracing navigation, flood control, hydroelectric power, flood damage reduction, flood hazard information, major drainage, urban water-related needs, wastewater management, shore and beach restoration and protection, fish and wildlife conservation and enhancement, outdoor recreation, aquatic weed control and environmental quality."

The Chicago-based North Central Division, along with its three district offices, provide the Corps' Great Lakes presence. Activities include: construction of projects to reduce flood and erosion damage; construction and maintenance of channel and harbor projects and shallow draft recreational projects; planning and construction; operation and maintenance of navigational projects; water resource planning assistance to state and local governments; and emergency operations in response to adverse weather conditions.

Through the Fish and Wildlife Coordination Act, the Corps is required to coordinate with the U.S. Fish and Wildlife Service and appropriate state agencies with regard to proposed water resource activities. Coordinative/cooperative arrangements, at some level, are maintained with the International Joint Commission and various regional federal, state and provincial agencies.

o Department of Commerce

The U.S. Department of Commerce "encourages, serves and promotes the Nation's economic development and technological advancement." In so doing, it provides a variety of services, including assistance to domestic and international business; economic and statistical analyses; development and maintenance of the merchant marine; research on the earth's physical oceanic life; and others. In the area of water resources management, responsibilities include operational services and basic data (e.g., economic, industrial, hydrologic, maritime, fisheries, environmental) as well as financing through grants or loans for water and water-related facilities and planning activities.

Within the region, two of the DOC agencies with a particularly significant role in resource management concerns include the Maritime Administration and the National Oceanic and Atmospheric Administration.

- Maritime Administration. This agency, which maintains a Great Lakes office, is responsible for promoting, encouraging and developing

ports and related transportation facilities. Research, planning and advisory activities are employed to address these responsibilities.

Oceanic and Atmospheric Administration. NOAA's charge is to "explore, map, and chart the global ocean and its living resources, to manage, use and conserve those resources and to describe, monitor and predict conditions in the atmosphere, ocean, sun and space environment, issue warnings against impending destructive natural events, develop beneficial methods of environmental modification and assess the consequences of inadvertent environmental modification over several scales of time." Within NOAA, units with operational authority in the Great Lakes region include the National Marine Fisheries Service, National Ocean Service, National Environmental Satellite Data and Information Service, National Weather Service, Sea Grant and Extramural Programs, Office of Ocean and Coastal Resource Management and the Environmental Research Laboratories. Of these, the Great Lakes Environmental Research Laboratory is of special interest and is described in detail below:

Great Lakes Environmental Research Laboratory, National Oceanic and Atmospheric Administration. The Great Lakes Environmental Research Laboratory (GLERL) "conducts research in coastal and estuarine waters with a special emphasis on the Great Lakes to improve understanding of environmental processes; to develop more precise scientific information and methods of simulation and prediction; and to assist users in solving problems of marine resource management, water related activities, and services." Current programs include Great Lakes assessment research (e.g., water movements and temperature; particle dynamics; toxic organic cycling; ecological successions and trends of biota; eutrophication and nutrient cycling; hydrologic properties; and environmental systems studies and applied modeling) and Great Lakes services research, entailing the "understanding and prediction of marine physical variables and phenomena primarily involved with marine warning and forecast services."

Linkages between GLERL and other Great Lakes research/management institutions are oriented toward information provision, as the agency has no regulatory or resource management function. These institutions include U.S. and Canadian government agencies, universities, industries and individual citizens. Further, GLERL staff serve in various capacities with such entities as diverse as the National Research Council, International Joint Commission, Great Lakes Commission and the International Association for Great Lakes Research.

- Department of Energy

A newer department which consolidated the many energy programs and offices created over the years, DOE provides the framework for comprehensive national energy planning and policy making. The Federal Energy Regulatory Commission is the principal DOE entity with a role in Great Lakes management. A regional office in

Chicago, under various federal acts, exercises responsibilities in the planning, construction and operation of water resources projects, particularly with regard to power development. The FERC has licensing authority for all phases of hydroelectric power development on lands with federal jurisdiction.

In the conduct of its responsibilities, the FERC works closely with other federal water resource agencies, as well as state, municipal and private sector interests. Like its predecessor, the Federal Power Commission, the FERC has an interest in basin planning.

o Department of Housing and Urban Development

This department administers a range of programs addressing housing needs, fair housing opportunities and improving and developing the nation's communities. Interest in water resource issues is by virtue of the interrelationship between community development and water supply, flood and runoff control, water quality and water-based quality of life issues. The department gives and receives assistance from other federal agencies with a water resource management responsibility, and also provides grants to state and local governmental units for community development-related water resource management activities.

o Department of the Interior

The Department of the Interior (DOI) has broad responsibilities in fostering the wise use and development of the nation's land and water resources; protecting fish and wildlife resources; preserving the environmental and cultural values of the national parks and historic places; and providing for the nation's outdoor recreation needs. Of the numerous agencies and bureaus of DOI with a role in Great Lakes management, two are of particular significance - the U.S. Fish and Wildlife Service and the U.S. Geological Survey. Each is described below:

Great Lakes Fishery Laboratory, U.S. Fish and Wildlife Service. The mission of the Fishery Laboratory is "to develop the technical basis for assessing, protecting, enhancing and rehabilitating the fishery resources of the Great Lakes." Functions include the study of the biology and dynamics of sport, food and forage fish populations; the measurement and projection of the impact of fishing on fishery resources; and the determination of how those resources are affected by modification of habitat. Programs are oriented in the areas of resource assessment, ecology and limnology, and physiology and contaminant chemistry.

The Fishery Laboratory maintains coordinative and cooperative linkages with numerous other agencies with a Great Lakes research/management component. Principal linkages involve the Great Lakes Fishery Commission; the International Joint Commission on water quantity/quality issues; fishery and environmental agencies in Canada (Ontario Ministry of Natural Resources, Environment Canada, Department of Fisheries and Oceans); National

Oceanic and Atmospheric Administration on fishery/limnological research; the Department of State on international treaty/agreement issues; the U.S. Environmental Protection Agency on fish contaminant monitoring; the U.S. Army Corps of Engineers; the U.S. Bureau of Indian Affairs; and numerous Great Lakes states and academic institutions.

U.S. Geological Survey. The USGS is involved in the collection, interpretation and dissemination of information on the mineral, water and physical features of the nation, and the conduct of related research. Within the Great Lakes Basin, the Survey examines the hydrology and hydraulics of the system, conducts resource inventories; operates an extensive data collection network; and prepares hydrologic/topographical maps. Due to its data collection/information dissemination orientation, the Survey works closely with state and other federal agencies in their planning and management efforts. Currently, for example, the Survey is providing technical assistance to the Water Resource Management Committee of the Council of Great Lakes Governors in its efforts to implement the water accounting provisions of the Great Lakes Charter.

o Department of Transportation

The U.S. Department of Transportation (DOT), in establishing the nation's overall transportation policy, works through a number of offices and administrations and with state and local officials to influence efforts in the area of land planning, energy conservation, scarce resource utilization and technological change. Two arms of the department with extensive involvement in Great Lakes management include the U.S. Coast Guard and the St. Lawrence Seaway Development Corporation:

- U.S. Coast Guard. The U.S. Coast Guard, through its Ninth District in Cleveland, is responsible for the enforcement of applicable federal laws pertaining to the navigable waters of the United States, including pollution abatement; promotes and enforces maritime safety; develops, establishes, maintains and operates aids to navigation, icebreaking and rescue facilities; and the conduct of oceanographic research.

The Coast Guard maintains an active interest in all Great Lakes-related investigations, proposals and projects impacting navigation. In so doing, it coordinates its activities with other state and federal agencies with water resource management responsibilities. Further, the Coast Guard has a history of cooperation with state, federal and academic research units investigating the physical properties of the resource.

St. Lawrence Seaway Development Corporation. This wholly owned government corporation is responsible for the construction, operation and maintenance of deep-water navigation works in the United States portion of the St. Lawrence Seaway. In addition, it

pursues promotional/informational programs designed to expand use of the Seaway as an aid to stimulate the regional economy.

The SLSDC coordinates its activities with its Canadian counterpart, the St. Lawrence Seaway Authority. Further, it works closely with other federal agencies in the interest of addressing its goals, as well as with port officials and other members of the maritime community.

o U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency is an independent federal agency responsible for addressing the environmental problems of air and water pollution; solid waste management; pesticides; radiation; and noise. Functions include the establishment of environmental standards, developing and issuing regulations and guidelines, providing research and technical support, awarding and administering grants, and enforcing environmental laws. The preponderance of these laws provide for an EPA-state partnership in carrying out programs.

Great Lakes Basin management is provided for via the EPA Region V office in Chicago (Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio); the Region II office in New York (New York) and the Region III office in Philadelphia (Pennsylvania). Two additional offices - the Large Lakes Research Station and the Great Lakes National Program Office - have a substantial role in management of the resource:

Large Lakes Research Station, U.S. Environmental Protection Agency. Located on Grosse Ile, Michigan, the Large Lakes Research Station (LLRS) is responsible for conducting research relating causes of Great Lakes contamination to effects, including exposure, dose and toxicity. The LLRS also maintains Great Lakes water quality models and data bases, and provides technical assistance to EPA program offices, the International Joint Commission, and the states.

The LLRS reports to an EPA Environmental Research Laboratory in Duluth, Minnesota. Linkages with other Great Lakes organizations include participation on committees of the International Joint Commission, provision of technical assistance to EPA, the EPA Great Lakes National Program Office and the IJC, and the maintenance of a Great Lakes water quality data base in cooperation with the above, as well as Canadian agencies.

Great Lakes National Program Office, U.S. Environmental Protection Agency. Located in Chicago, GLNPO has responsibility for the planning, coordination and oversight of EPA pollution control efforts as they pertain to the 1978 U.S.-Canada Great Lakes Water Quality Agreement. In this role it serves as the focal point for coordinating joint U.S. EPA and state attention to the identification of Great Lakes water quality problems and the development of remedial actions. By virtue of its oversight authority relating to the Great Lakes Water Quality Agreement,

GLNPO is an active participant in the activities of the International Joint Commission and works with its Canadian counterpart in Environment Canada.

The Canadian Federal Role in Great Lakes Management

The role of the Canadian federal government in Great Lakes management is markedly different than that of its United States counterpart. The origin of such difference is found in the British North America Act of 1867 which allocates legislative powers between the provincial and federal governments. The Act grants provincial governments jurisdiction over the management and sale of public lands, property and civil rights and "matters of merely local and private nature within the province." Section 92 is key in that it emphasizes the provincial right to the use of resources within its boundary on the basis of its ownership of them.

In a broad sense, the federal government has certain powers which can influence the use and development of water resources. These include the general power to legislate for "peace, order and good government," as well as regulation of banking, taxation, the public debt, and defense and criminal law. Munton (1982) elaborates, "Provinces have clear constitutional authority in the areas of natural resources such as land and forests, intra-provincial commerce, property and civil rights, municipal governments and matters of a local or private nature. The federal government ... has clear jurisdiction over federal lands, coastal and inland fisheries, oceans, navigation and shipping; and various matters of a national or extra-provincial nature, including transportation and international commerce." He adds that "agriculture and health are matters of concurrent jurisdiction."

The federal responsibilities for environmental protection and resource management are embodied in a series of legislative acts, cabinet directives, federal-provincial agreements, orders-in-council and international treaties and agreements. A common theme running throughout them is recognition of the stature of the provincial role in resource management and the necessity for intergovernmental devices to address multi-jurisdictional (domestic and international) issues. In an examination of such issues. MacNeil (1970) states:

> "Effective management strategies in any one of these jurisdictional situations necessarily concerns both orders of government. This appears to be an almost inescapable conclusion.... It flows not only from the fact that environmental problems are dominated by spillovers. It flows also from four characteristics that stand out in each part of the analysis: ecological interdependence; physical interdependence; problem interdependence; hence, jurisdictional interdependence. The overriding corollary of this, of course, is intergovernmental cooperation at all levels and in all possible forms. It is difficult if not impossible to visualize any political or institutional structure, or any system of powers, that would reduce the importance of such cooperation or that would work without it."

The basis for specific federal involvement in Great Lakes management is embodied in a relatively limited number of federal statutes which have been broadly interpreted over the years. Principal among them is the Fisheries Act, the first version of which was enacted in 1868. A key provision prohibiting the discharge of deleterious substances into waters "frequented by fish" has, over time and via amendments, become a potent federal device for pollution control. Since its passage, it has also provided the foundation for promulgation of an extensive series of guidelines and regulations.

There are two acts which warrant additional attention by virtue of their implications in both federal-provincial and Canada-United States relations. The first of these is the Canada Water Act, passed in 1970 following a number of years in development. The Act, in seeking explicit definition of the federal role and intergovernmental relationships in water resource management, consists of four parts. Part I provides for federal-provincial consultative arrangements and cooperative agreements in the development and implementation of water management plans. Part II provides for the establishment of federal-provincial agencies to plan and implement approved water quality management programs in those areas where the status of the resource has become "a matter of urgent national concern." Part III sets forth water quality control regulations designed to address eutrophication problems. Part IV sets forth administrative measures, authorizes public information programs and provides for inspection and enforcement.

A second federal statute of particular interest is the Canada Clean Air Act, designed to protect the human health and welfare of Canadian citizens from dangerous pollutants, while setting minimum ambient air quality standards and establishing air quality monitoring programs. Significantly, 1980 amendments to the Act included a reciprocity clause allowing U.S. representation with respect to transboundary air pollution effects. Similar to a clause in the U.S. Clean Air Act, it established a binational mechanism for dealing with shared issues.

Turning to Francis (1982) and Munton (1982) to characterize the Canadian system of government, several observations warrant emphasis. The reader will note that each contrasts, in some manner, with the characterizations of the U.S. system presented earlier.

a) <u>The concentration of power in the majority party, and more specifically the executive branch</u>. In Canadian government, party loyalty among legislators is paramount; coalition government is not a standard. Because the majority party forms the entire Cabinet, the executive branch tends to concentrate power and, in effect, controls the legislature. The opposition party is decidedly impotent. Hence, the "pressure points" for effecting change in resource policy, for example, are found not in the legislative branch, but that of the executive.

b) <u>The relative stability of the executive branch</u>. Both the federal and provincial governments tend to be more "stable" than their U.S. counterparts; majority parties have been known to retain office for decades. This form of entrenchment can be positive in the sense that longer-term programs and goals can be pursued with some

modicum of continuity. Conversely, perceived inadequacies in a given area are less likely to be addressed or policies reversed in the absence of a change in power.

c) The stature of the civil service in policy development. The characteristics identified above, coupled with a "tradition of professionalism" in the civil service, tends to concentrate policy-making power and influence in the upper echelons of departmental management as opposed to elected officials. Consequently, the civil service serves as the origin for many of the government's legislative initiatives and policy directives.

d) The emphasis on broad interpretation and application of statutes. Canada is much less prolific than the United States in legislative matters, preferring to address emerging issues with broad interpretation and application of a relatively few, established statutes. The previously discussed Fisheries Act of 1868 is a case in point. Further, such interpretation is vested in the executive branch via promulgation of rules and guidelines. This discretionary authority further strengthens that branch's role as the locus of governmental policymaking.

e) The separation of powers and attendant "checks and balances" is not observed within the federal or provincial government, but within federal-provincial relations. In resource management as well as other areas of government activity, the division of authority between the federal and provincial governments is seldom well defined, and their respective viewpoints are seldom uniform. Hence, intergovernmental relations tend to provide the "checks and balances" lacking within a single jurisdiction.

f) The power of the province relative to the federal government. The Canadian Constitution grants the provinces extensive authority and self-determination in the area of resource use and management, among others. As will be discussed at a later point, the authority is fairly well defined in intra-provincial matters but significantly less settled when transboundary issues (domestic and international) arise.

A listing of all Canadian federal agencies with a principal interest/responsibility in Great Lakes management rivals the U.S. listing in both scope and length. They include the Departments of Environment, Transport, Fisheries and Oceans; Agriculture; Indian and Northern Affairs; External Affairs; Energy, Mines and Resources; and National Health and Welfare. The first three of these have particularly extensive involvement and are therefore described below in an overview manner:

- Department of the Environment

  The Ontario Region Office serves as the principal spokesman for Environment Canada and, among others, is responsible for the coordination of all federal Great Lakes water quality management efforts. The office's Great Lakes Program manages efforts designed to meet provisions of the Great Lakes Water Quality Agreement and

coordinates federal Great Lakes monitoring and surveillance programs. As the counterpart agency to the U.S. EPA Great Lakes National Program Office, Environment Canada's Great Lakes Program has close linkages with EPA and extensive involvement in activities under the International Joint Commission umbrella.

Atmospheric Environment Service. The AES is Canada's national weather service and, in addition to forecasting activity, is involved in the applications of meteorology to agriculture, forestry, energy, air quality and environmental matters.

Environmental Protection Service. As the control (i.e., regulation and enforcement) arm for Environment Canada, EPS maintains programs in the areas of water and air pollution; waste management; contaminants; environmental emergencies and environmental impact assessment. EPS works closely with the provinces in environmental control activities, and participates in federal/ provincial efforts under the Great Lakes Water Quality Agreement.

Inland Waters Directorate. The Inland Waters Directorate has planning/coordinative/research and monitoring responsibilities for Canada's inland waters. The Ontario region office, located at the Canada Centre for Inland Waters (CCIW) in Burlington, has a principal Great Lakes focus. Among others, IWD works closely with the International Joint Commission on water quantity (levels and flows) issues as well as water quality issues under the Great Lakes Water Quality Agreement. Further, IWD provides the lead federal role in Great Lakes water quality monitoring and surveillance activity.

National Water Research Institute. Also housed at CCIW, the NWRI applies scientific, engineering and technical expertise to the study of Canada's water systems and related problems. As such, it works with and provides information to federal and provincial agencies as well as international bodies such as the IJC.

- Department of Transport

The Department of Transport is responsible for the regulation and administration of Canada's transportation policies and programs. Principal responsibilities in the area of Great Lakes management include oversight of operations in navigable waters and the enforcement of anti-pollution and oil spill regulations specified in federal acts. The National Harbours Board and the St. Lawrence Seaway Authority are responsible for administering all wharves, harbours and canals constructed under Department of Public Works authority. The Seaway Authority, the Canadian counterpart of the U.S. St. Lawrence Seaway Development Corporation, plays a prominant role in managing the Great Lakes as a transportation system. Finally, the Canadian Coast Guard, housed within the Department, has Great Lakes responsibilities similar to those of its United States counterpart, including pollution abatement; maritime safety and the maintenance and operation of aids to navigation.

- Department of Fisheries and Oceans

  Established in 1979 subsequent to being housed within Environment Canada, the Department of Fisheries and Oceans focuses on the living resources and aquatic environment of the oceans and inland waters. As the principal manager of Canada's ocean and inland fisheries, the Department conducts fishery and oceanographic research; hydrographic surveys and charting of navigable waters; market development for fishery products; administration of small craft harbors and the negotiation of fisheries agreements with other countries.

  With respect to the latter, the Department provides Canadian funding and participatory support to the Great Lakes Fishery Commission and, in so doing, serves as the principal Canadian implementing agency under the 1955 Convention. By virtue of its mandate, the Department has close coordinative ties with other resource-related departments at the federal level (e.g., Environment Canada) and their counterparts in Ontario. The Fishery Commission linkage provides a mechanism for interaction with the U.S. Fish and Wildlife Service and state fish and wildlife agencies.

- Interdepartmental Committee on Water

  The principal coordinative mechanism at the federal level for water resources management is found in the Interdepartmental Committee on Water (ICW). Established prior to the Canada Water Act, the ICW has 26 members representing 20 departments and agencies. A subcommittee system is utilized, presently addressing the topics of the Canada-U.S. Great Lakes Water Quality Agreement; water quality; flooding; and preparation of responses to reports of the International Joint Commission.

State and Provincial Institutions for Great Lakes Management

Great Lakes States

Although the riparian states exercise substantial authority in matters pertaining to the management of the Great Lakes, such authority is not intrinsic; it is largely derived from and therefore subject to a preemptive federal authority. The federal dominance is a function of the resource's political and hydrologic attributes; it is a navigable waterway; it is an interstate resource; and it has an international character. Further, the several constitutional powers vested in the federal government (i.e., commerce power, property power, general welfare power, war power, treaty power, compact consent power), coupled with the evolution of statutory and case law, have preserved and strengthened that intergovernmental relationship. The Great Lakes Basin Commission (1975) explains, "In view of the construction that the Supreme Court has given the 'commerce clause' in conjunction with the 'necessary and proper clause' and the 'supremacy clause,' it can be said that the federal government may interpret the power to manage water resources almost completely if the Congress chooses to do so."

Historically, however, it has been the policy of the Congress that water resources management should be a primary responsibility of the state under the broad rubric of federal authority. In fact, prior to the signing of the National Environmental Policy Act of 1969 (P.L. 91-190), "many legal scholars doubted the constitutional authority of the United States government to legislate on environmental issues" (Caldwell 1982). The rationale was largely that such issues were a regional or local concern, and hence not under the purview of the federal government. Indeed, this argument has been used more recently in a different context under the "new federalism" philosophy.

While water resources management responsibilities, on the whole, have shifted away from the states for decades (at least until relatively recently), the states have long maintained broad responsibility in the areas of water supply; waste disposal; water quality; fish and wildlife; recreation and scenic preservation; shoreland and floodplain management; land management; mineral, oil and gas extraction; standard setting; investigation and enforcement; planning; and others.

For purposes of our discussion, the nature of federal-state relations vis-à-vis the Great Lakes management effort is of principal concern. A review of these relations yields a series of characteristic trends and observations:

1) The grantor-grantee relationship. While superficial analyses might suggest that the states enjoy substantial autonomy in management of the Great Lakes resource, the preponderance of such activity is in fact delegated by the federal government under statute. In most cases, federal funding assistance provides an incentive for compliance. As the National Research Council/Royal Society of Canada Task Force on the Great Lakes Water Quality Agreement (1985) explains, "Although federal policy generally seeks delegation of authority to the states under the approximately dozen applicable major laws, delegation depends on state compliance with federal requirements. Each law establishes a distinct program under which a different state-federal program plan for each state is negotiated annually to specify program objectives and federal and state funding contributions."

2) The state as "second-class citizen" in binational Great Lakes management issues. Article XI of the Great Lakes Water Quality Agreement states that the "parties commit themselves to seek the cooperation of the State and Provincial governments in all matters relating to this Agreement." In practice, the progress realized under the Agreement is largely attributable to the extensive involvement and considerable investments of the states and provinces. Yet, the states had no formal role in the formulation, review and renegotiation of the 1972 Agreement. In fact, the Agreement itself has yet to receive explicit recognition in any U.S. federal environmental law, or provide the basis for a state-federal accord expressing a mutual understanding for implementation of its programs. While the states do have an active operational role in meeting binational commitments, the federal government has been historically reticent in affording them an expanded, much less

equal role at the policy-setting level. A case in point - dated yet relevant - is found in the formation of the Great Lakes Commission and active opposition to Congressional consent, by the Departments of State and Justice, until provisions for provincial membership were dropped.

3) The use of coordinative devices and institutions for federal-state relations. While the federal-state hierarchy in binational relations is jealously guarded, an historical emphasis on coordinative arrangements between the two attests to their interdependence. Many generic institutional forms for regional resource management provide some mechanism for state-federal coordination; this is most assuredly the case in the Great Lakes Basin. While the federal government has an aversion to formal binding agreements with the states with regard to binational issues (e.g., U.S. equivalent of the Canada-Ontario Accord), it has participated actively in various intergovernmental forums (e.g., member of Great Lakes Basin Commission, advisor to Great Lakes Commission).

4) The emergence of the "new federalism" philosophy. Endorsed and pursued by the present U.S. federal administration, "new federalism" calls for a reversal of the long-established trend toward an increasing federal role in state and interstate (i.e., regional) resource management via program activity and grant assistance. Federal programs - including many with Basinwide implications - are returned to the states, often with a reduction or elimination of federal funds. As it continues, this trend will re-shape the federal-state relationship in Great Lakes management and, in so doing, place increased burdens on the state governments to honor binational commitments.

5) An emerging sense of self-determinism at the state/inter-state level. Historically, the level of state activity in resource management has tended to reflect the level of federal commitment at any given time, indicative of the former's reliance upon federal programs, requirements and funding assistance. In recent years, however, the "wait and see" approach has lost credibility with the states. A statement by the Council of Great Lakes Governors' Task Force on Water Diversion and Great Lakes Institutions (1985) is indicative: "As the population and political scales tilt more toward the South and West, fragile Congressional coalitions could evaporate into factional resource battles with the Great Lakes region losing out. In short, economic and political considerations demand that the region begin to 'hedge its bets' with respect to protecting the Great Lakes." This philosophy is reflected in the Great Lakes Charter, which proclaims that the state-federal relationship is a "partnership" and that the states and provinces "have a mutual legal and political obligation to take primary responsibility for protecting the lakes...." The states as initiators in regional water management efforts has been observed in the water quantity and quality arenas; a trend which promises to continue.

Taken collectively, there exists over one hundred state agencies with some Great Lakes role, and many more state level boards, commissions, task forces and working groups. While a thorough review of each is beyond the scope of this discussion, a listing of a number of the principal agencies is provided below. The reader is referred to the Great Lakes Basin Framework Study, State Laws, Policies and Institu-tional Arrangements (Great Lakes Basin Commission 1975), or The Great Lakes Directory of Natural Resource Agencies and Organizations (The Center for the Great Lakes 1984) for additional discussion, as well as recent publications at the individual state level.

Illinois: Agencies with direct and substantial involvement in regional Great Lakes management issues include the Departments of Transportation, Conservation, Commerce and Community Affairs, Energy and Natural Resources, and the Illinois Environmental Protection Agency. Others with a less direct yet significant role include the Departments of Agriculture and Public Health.

Indiana: The Department of Natural Resources has historically served as the key state contact and participant in regional resource management issues, with the Departments of Commerce and the State Board of Health active as well. The newly formed Department of Environmental Management will assume a principal role as well, with a focus primarily on water quality concerns.

Michigan: Principal agencies include the Departments of Natural Resources, Commerce, Transportation, and Public Health. By virtue of its location within the Basin, other agencies (e.g., Department of Agriculture) have a substantial though less direct involvement.

Minnesota: The Departments of Natural Resources and Transportation, along with the State Planning and Pollution Control Agencies, are principal participants. The Departments of Economic Development, Agriculture and Health are of note as well.

New York: The Departments of Environmental Conservation, State and Transportation have extensive involvement in domestic and binational Great Lakes matters. Others with selected responsibilities for, or impacts on the resorce, include the Departments of Agriculture and Markets, Commerce, and Health, as well as the Power Authority.

Ohio: The Department of Natural Resources and the Ohio Environmental Protection Agency share the majority of the state's role in Great Lakes management, with other agencies of note being the Departments of Agriculture and Transportation.

Pennsylvania: The Department of Environmental Resources serves as principal liaison to other Basin jurisdictions in Great Lakes matters. The Departments of Agriculture, Commerce, Health and Transportation, along with the Fish and Game Commissions, have more limited yet significant roles as well.

Wisconsin: The Departments of Administration and Natural Resources have extensive Great Lakes involvement, complemented by programs in the Departments of Development, Health and Social Services, Transportation, and Agriculture.

It must be emphasized that the above listing is but a sampling of line agencies with substantial involvement in Great Lakes management. It is by no means comprehensive. Further, it does not include the literally hundreds of intrastate boards, commissions, task forces, work groups, committees, and councils organized as extensions of or linkages between these line agencies.

Great Lakes Provinces

It is apparent from earlier discussion that the British North America Act grants the two Great Lakes provincial governments (Ontario and Quebec) primary management authority over the resources within their boundaries. Section 92 of that Act places under provincial auspices the management and sale of public lands, property and civil rights, and "matters of a merely local and private nature within the province." When the resources at issue are of a regional and binational nature, however, jurisdictional questions arise.

Environment Canada (1985), in an examination of Canadian institutional arrangements for water resource management, noted "In the constitutional history of Canada, problems of jurisdiction have often plagued the achievement of an integrated definition of the renewable resources problem, and with regionalism given primary importance in Canadian federalism, a more fluid and problem oriented approach to jurisdictional matters is necessary." The analysis further noted that the definition of water itself has evolved over the last fifty years and, in so doing, has exacerbated the jurisdictional problem. Once considered a proprietary resource owned and controlled by the provinces, it came to be defined in relation to the nature of its use. "Consequently, water which flows across provincial boundaries or which takes on differing or multiple functions is subject to changing and conflicting jurisdictions with the result that a purely proprietary administration of water resource use is now regarded as inefficient by both levels of government." The Canadian Environmental Law Research Foundation (1985) adds, "The combination of indirect reference to water in the constitution and limited guidance from the courts makes it impossible to define precisely the respective roles of the federal-provincial governments in water management."

It is perhaps this shared authority and omnipresent jurisdictional uncertainty that has given rise to extensive use of federal-provincial management agreements. In Ontario, principal among these are the Canada-Ontario Environmental Accord and the Canada-Ontario Agreement Respecting Great Lakes Water Quality. The former recognizes "a federal role in developing national baseline pollution standards, the need for cooperation on implementation, and a primary provincial role in enforcement" (Munton 1982). The latter provides the federal-provincial arrangements necessary to fulfill the terms of the Canada-U.S. Great Lakes Water Quality Agreement. A third agreement - the Canada-Ontario Strategic Plan for Ontario Fisheries - provides a similar mechanism for implementing the terms

of the Joint Strategic Plan for Great Lakes Fisheries Management. Additional agreements have addressed a variety of other resource management topics.

Beyond the broad powers vested in the province by the British North America Act of 1867, a series of statutes guide Ontario's involvement in management of the resource. The earliest of these in terms of water quality is the Public Health Act of 1884 requiring approval of water supply systems by the provincial government and further, making the discharge of wastes into such an offense. Statutory authority was broadened and made more explicit by the 1957 Ontario Water Resources Commission Act which "provided substantial authority regarding ground and surface water supplies, sewage disposal, and pollution abatement, and the setting of water quality standards and effluent standards for both municipal and industrial sources" (Munton 1982). It also created the Ontario Water Resources Commission, which is discussed at a later point. An omnibus Environmental Protection Act was passed in 1971 with special emphasis on air quality and hazardous waste management. The 1975 Environmental Assessment Act is the Canadian counterpart to the U.S. National Environmental Policy Act discussed earlier.

By virtue of the dominant role of the Great Lakes in Ontario's environment and economy, a number of provincial agencies have a role in lakes management. Principal among them are the Ministries of Agriculture and Food; Environment; Health; Industry and Trade; Intergovernmental Affairs; Energy and Natural Resources; Tourism and Recreation; Transportation and Communications and Ontario Hydro. The two of more direct interest are summarized briefly below:

- <u>Ministry of the Environment</u>

  Established in 1972, the Ministry of the Environment was the result of a governmental restructuring designed to consolidate and more fully define environmental management functions under the auspices of the province. Its stated goal is to "achieve and maintain a quality of the environment, including air, water and land, that will protect human health and the ecosystem and will contribute to the well being of the people of Ontario." Major divisions include environmental planning; intergovernmental relations; and regional planning.

  The Ministry has substantial responsibility under the Canada-U.S. Water Quality Agreement, including research, monitoring and surveillance, and the enforcement and coordination of some of the federal commitments for water quality data collection and monitoring. A Great Lakes Program within the Ministry supports the Agreement via scientific research, data collection, monitoring and coordinative activities. Significantly, all six of the regional offices in the Ministry are located within the Great Lakes Basin.

- <u>Ministry of Natural Resources</u>

  This Ministry, also established in 1972, is charged with the administration, conservation and protection of the provinces'

natural resources, including water, fisheries, land, forest, mineral and related resources. Principal divisions include Resources; Lands and Waters; and Outdoor Recreation.

Like the Ministry of the Environment, MNR has active Great Lakes interests and maintains a coordinative linkage with U.S. jurisdictions primarily through the International Joint Commission, and to a lesser but significant extent through Great Lakes Fishery Commission activities and the water resource initiatives of the Council of Great Lakes Governors.

A now-defunct provincial institution that is nevertheless worthy of note is the Ontario Water Resources Commission. Established in 1956, and charged with broad regulatory/management authority over municipal water supply and pollution control, the Commission enjoyed notable success in those areas (less so in industrial pollution control) and experienced rapid growth in its mandated programs and budget prior to being incorporated into the Department of Energy and Natural Resources in 1970. The Commission's broad mandate, autonomy and regulatory authority are characteristics of particular significance.

Provincial agencies in Quebec with an interest in management of the Great Lakes/St. Lawrence River Basin include the Ministries of Energy and Resources; Environment; Trade and Tourism; International Affairs and External Trade; Recreation, Fish and Game; Science and Technology; Transport and Hydro Quebec. The Ministry of the Environment, with responsibilities roughly parallel to its Ontario counterpart, has perhaps the highest profile of Quebec agencies in the Great Lakes management arena. Its principal divisions include Air and Land Quality Improvement; Environmental Protection; Research; and Water Quality Improvement.

Also active is Le Project Saint-Laurent, a relatively new, high level agency "dedicated to the preparation and implementation of a master plan for the integrated development of the natural resources of the St. Lawrence and its shores and the promotion of the Great Lakes/St. Lawrence system as an international trade route and a major industrial investment zone." This function entails significant intra-provincial coordination among Quebec's economic development and resource management agencies.

Federal-provincial, as well as inter-provincial coordination and cooperation on Great Lakes-related concerns is largely effected through accords or some other form of agreement. The basic vehicle for coordination and joint consultation among the jurisdictions is the Canadian Council of Resource and Environment Ministers.

Sub-State/Provincial Institutions for Great Lakes Management

Resource management institutions at the sub- state/provincial level in the Great Lakes Basin consist of the collectivity of standard political jurisdictions (e.g., counties, municipalities, townships) as well as intra-state/provincial entities with a hydrologic or resource-based geographic definition. The latter would include intrastate special districts; watershed councils; conservation authorities; soil and water conservation districts and the like. In most instances, they are membership organiza-

tions comprised of and financially supported by communities within their geographic jurisdiction. The emphasis is commonly on information-sharing, coordination and resource conservation and management programs.

In the United States, an example of an intrastate arrangement is the regional planning commission - generally a multi-county organization focusing on a shared watershed through the cooperative efforts of municipal and county governments, and frequently with state financial assistance. These commissions, under the former Section 208 program of the federal Clean Water Act, played a key role in the planning and implementation of nonpoint source pollution control programs. Watershed councils, where they do exist, provide valuable coordinative services for the various jurisdictions within a given river drainage system.

In Canada, a sub-provincial resource planning effort of particular note is the system of conservation authorities which extends throughout Ontario. A provincial-municipal partnership, the authorities are local, autonomous organizations with a mandate to "further the conservation, restoration, development and management of natural resources other than gas, oil, coal and minerals." While the principal focus is on water management (erosion and flood control), the authorities are active also in water quality, recreation, and broader conservation/management concerns. Operated with policy, financial and technical assistance from the Ministry of Natural Resources, 37 authorities have jurisdiction in the Great Lakes Basin.

While the contribution of sub-state/provincial institutions to the Basinwide resource management effort will not be discussed further, the importance cannot be overstated. Localized zoning decisions, shoreline development activities, sewage treatment facilities, erosion control, floodplains and agricultural practices - to name a few - have a tremendous cumulative impact on the nature of use and quality of the Basinwide resource. Hence, the value of such institutions as the "field level" arm of a broader regional effort must be recognized in institutional analyses at the Basin level.

Nongovernmental Institutions for Great Lakes Management

To close this overview of the institutional framework for Great Lakes management, it is appropriate to make explicit reference to the significant and ever-increasing role of the nongovernmental institutions such as academia; nonprofit policy institutes; business roundtables; citizen organizations; professional societies; labor groups; property owner associations; trade groups; foundations and the like. In recent years, many such organizations have become influential participants in the policy/management process. There are three principal reasons for this:

1) <u>The "maturation" of the environmental movement</u>. Nongovernmental involvement in resource management issues has become increasingly sophisticated. Antagonistic approaches and public demonstrations have largely given way to well-informed and politically astute advocacy activities, coupled with cooperative ventures with government and less confrontational means of dispute resolution.

2) Growing appreciation of the Great Lakes as an economic as well as environmental asset. This appreciation has prompted a growing portion of the business/industrial community to recognize its vested interest in management and protection of the lakes for sustainable development. This recognition has lead to active involvement in policy/management matters.

3) Redefinition of federal and state/provincial roles in Great Lakes management. Both countries have experienced, in recent years, policy shifts and budgetary adjustments which have shifted more responsibility to the state/provincial and local governments and reduced financial resources and program activity. Nongovernmental organizations have assumed some of the vacated functions and, over time, have been increasingly relied upon by the governmental jurisdictions.

Such organizations number in the hundreds if one were to include all those at the regional or intra- state/provincial level with a Great Lakes focus. Described below are but a few of the organizations with a binational focus and policy orientation:

- The Center for the Great Lakes

  Established in 1983, The Center is a private, nonprofit binational organization which seeks, through research and outreach activities, to promote sound public policy decisions on economic development and resource management issues of critical concern to the region. Current programs and interests include Great Lakes diversion and consumptive use; water quality; Great Lakes shipping; waterfront development; and others. The Center serves as a catalyst for action and a forum for discussion and consensus-building among the region's government, industry and citizen leaders. Its programs are founded on the philosophy that environmental quality and economic development goals are not mutually exclusive and, in fact, must be pursued in concert to realize the region's full potential.

- Great Lakes United

  Formed in 1982, Great Lakes United is a binational umbrella organization representing the collective views of over 150-member citizen groups and labor organizations. Its focus is on education, issue analysis, coordination and advocacy. Current programs and interests include water quality issues; citizen hearings on the Great Lakes Water Quality Agreement; Great Lakes diversion and consumptive use; sponsorship of a "Great Lakes Week" in Washington, D.C.; and others.

- Great Lakes/St. Lawrence Maritime Forum

  A coalition of business, industry and government with binational representation, the Maritime Forum focuses on regional economic development via promotion of the Great Lakes/St. Lawrence Seaway transportation system.

- Great Lakes Tomorrow

  A nonprofit, binational organization, Great Lakes Tomorrow seeks to promote broadened public understanding of and participation in Great Lakes policy issues. A major initiative in recent years has been the design of a "Decisions for the Great Lakes" course for interested citizens throughout the Great Lakes Basin.

- International Great Lakes Coalition

  A coalition of shoreline property owners with over two dozen chapters in both the United States and Canada, this organization is focused specifically on current high water levels and structural/regulatory means to mitigate them. The coalition has developed a series of proposals and is advocating their adoption by the International Joint Commission and other pertinent governmental agencies.

Beyond these institutions with an explicit binational policy orientation are numerous others with a significant contribution to, and influence on, the overall Great Lakes management effort. In academia, examples include the several Great Lakes Sea Grant Programs and various university-based research centers with a specific Great Lakes focus. Professional associations, such as the International Association for Great Lakes Research and the American and Canadian Water Resource Associations, provide a forum to nurture and share advances in resource management. Industry associations such as the Lambton Industrial Society in Sarnia, Ontario provide a vital coordinative and educational service. Finally, the more locally oriented citizen groups - such as the Environmental Action Councils in Michigan and the Lake Michigan Federation in Illinois, have demonstrated their influence upon the policy process through citizen education, issue advocacy and direct involvement in local and broader Basin issues.

As noted earlier and reiterated in the Epilogue, nongovernmental institutions are assuming increasingly vital roles in areas where public institutions were once active. Thus, nongovernmental organizations are appropriately considered integral components of the Great Lakes institutional ecosystem.

Closing Statement

The agencies, programs and projects presented within this chapter, coupled with the description of roles and interrelationships, was intended to provide a comprehensive overview of the collective Great Lakes management effort. It is recommended, however, that the reader consult The Great Lakes Directory of Natural Resource Agencies and Organizations (The Center for the Great Lakes- 1984/85) for additional detail. It is further recommended that the reader contact the various individuals listed in that document for detailed information on a particular agency, program or project of interest.

SECTION TWO: A DETERMINATION OF THE INSTITUTIONAL NEEDS FOR GREAT LAKES MANAGEMENT

Introduction

As evidenced by discussion throughout Section One, the search for a theoretically sound and politically viable prototype of the "preferred" institutional arrangement for Great Lakes management is fraught with obstacles. We identify five principal factors which constrain or otherwise complicate the search:

1) Superficial attention to fundamental resource management goals and needs. Resource managers and decision makers in the Great Lakes Basin have historically been unwilling or unable to articulate a fundamental set of goals, principles or management needs upon which the design of management institutions, policies and programs should be based. Rather, there has been a tendency to subscribe to an incrementalist philosophy reminiscent of Wildavsky's characterization of the federal budgetary process. Minor adjustments to long-standing institutions, policies and programs are undertaken while their underlying rationale remains unquestioned or ignored.

   Kelnhofer (1972) admirably capsulizes the issue: "The question is not whether the policies and programs are doing that for which they were designed, but whether we have designed the kinds of policies and programs that we must have to do the kind of job that needs to be done." Throughout the evolution of the Great Lakes institutional ecosystem there has been a tendency to focus on what "can be done" (politically) rather than on what "needs to be done." The consequences are two-fold: 1) an increasing divergence between resource management activities and resource management needs; and 2) a growing, yet poorly articulated sense of dissatisfaction with the institutional framework for resource management.

   Consequently, we find that a reassessment of fundamental resource management goals and needs, independent of present institutional/managerial arrangements, is a critical component in any effort to reconcile institutional form and management function.

   Lyle Craine (1972) emphasizes this point, explaining that debate over institutional form in the absence of established resource management goals is an exercise in futility. The absence or inadequacy of a clearly articulated and generally accepted set of goals and statement of needs for the Basin constrains the search for the "preferred" institutional arrangement.

2) Divergent philosophies within the Great Lakes constituency. Within the community of Great Lakes interests, as in virtually any other multiple use, multi-jurisdictional region, Fesler (1965) has identified a

"competitive, special interest milieu," in which often conflicting resource uses induce stress on the physical resource and the institutional arrangements responsible for managing it. The omnipresent diversity of resource management goals and strategies advocated by the various management jurisdictions and resource users ensures ongoing debate regarding management needs and appropriate institutional responses. Such differences in philosophy tend to overshadow fundamental points of mutual agreement among sectors of the Great Lakes constituency (e.g., need to ensure access to adequate water supplies, protection of drinking water quality). It is apparent, however, that any movement toward enhanced institutional effectiveness in a multiple use and multi-jurisdictional setting must be founded upon fundamental agreements among those jurisdictions.

3) The uniqueness of the Great Lakes Basin. As indicated in earlier discussion, the physical characteristics and political jurisdictional attributes of the Great Lakes Basin grant it a "uniqueness" that discourages comparison with other hydrologically defined areas. Craine (1972) has suggested that two factors are paramount: 1) unlike most hydrologic basins, the Great Lakes Basin is dominated by "standing" as opposed to free-flowing water; and 2) the Great Lakes Basin is a shared, binational resource. The first factor has historically obscured the systemic nature (i.e., "interconnectedness") of the lakes and the need for Basinwide management. The second adds a complex political dimension and myriad additional management considerations. Together, these factors present the Basin with management problems and needs as unique as the Basin itself.

A succession of management institutions adapted to the Basin's unique characteristics has been observed over the years. For example, the Great Lakes Basin Commission, one of six "Title II" agencies with a Congressionally mandated structure, adapted its planning and coordination functions to accommodate Basin needs in a manner unlike any other Title II agency. A geographic (watershed) focus for Great Lakes Basin Plan elements was abandoned in favor of an issue-oriented approach.

As a consequence of this uniqueness, the potential applicability of generic institutional forms in other Basin management settings to the Great Lakes Basin is inherently limited. The elements of such forms must be carefully and individually examined and tailored to ensure applicability to institutional needs in the Great Lakes Basin.

4) The absence of a benchmark for institutional adequacy. Consensus findings in the case study literature indicate that, both nationally and within the Great Lakes Basin, an example of an "ideal" institutional arrangement for basin management has yet to be found or even approximated. An exhaustive study of selected regional forms nationwide lead Derthick (1974) to conclude that "None of the different approaches to coordination embodied in regional organizations is sufficiently superior to the rest to make it preferable. Nor is any particular approach so clearly successful as to contribute substantially to justification of the regional form." At the Great Lakes Basin level, a similar review prompted Dworsky and Swezey (1974) to

conclude that "...no one [institutional] form or no single readily apparent combination of them has the required scope and capability to provide integrated resource management...."

The absence of a clear benchmark against which alternate institutional arrangements can be assessed is a problem exacerbated by the fact that institutional adequacy is an inherently subjective determination. It is largely dependent upon one's personal philosophy, organizational affiliation, resource use patterns, and the extent to which each of these does or does not coincide with the management activities of the institution at issue.

5) Inadequacy of evaluative mechanisms for assessing institutional performance. The search for a "preferred" institutional arrangement is ideally conducted from an information base which includes a rigorous evaluation of existing and predecessor institutions. This information base, however, exists only in a subjective, rudimentary form for institutions in the Great Lakes Basin. A review of the literature finds that the International Joint Commission has been the primary focus of external reviews; other institutions considerably less so. Formalized, in-depth internal evaluations have been a rarity. A review of the literature yields no indication of a comprehensive evaluation of the overall "institutional ecosystem" and its attendant linkages.

The institutional evaluation issue is not endemic to the Great Lakes Basin; it is a long-standing failing throughout the United States and Canada, particularly among regional coordinating agencies. In its evaluation of U.S. water policy and political institutions, for example, the Federal Council for Science and Technology (1968) found that "It is not at all clear that we have the knowledge to implement a program for early and adequate evaluation of institutional performance. It seems abundantly clear that we should develop adequate techniques to accomplish this task." The Council further recommended that "effective means of providing a continuing assessment of institutional effectiveness" are needed. Almost two decades later, these observations are at least as relevant. The need for development of internal "measures of success" will be addressed further at a later point. Such measures are a critical component in developing an institution's "learning" capability.

Collectively, these five factors constrain, but do not prohibit the search for a "preferred" institutional arrangement for Great Lakes management. Importantly, they are tempered somewhat by recent indications of renewed interest in the past performance and future potential of principal regional institutions. For example, the politicization of the International Joint Commission has been documented by some authors as that agency takes initial steps in new areas (Schwartz and Jockel 1983). The formation of the Council of Great Lakes Governors, and subsequently, its Task Force on Great Lakes Diversions and Institutional Arrangements, has prompted a fundamental examination of the potential of interstate cooperation in regional management. This activity has been responsible, in part, for fostering the early stages of internal review at the Great Lakes Commission, including the commissioning of a study to examine its relationship to the Council of Great Lakes Governors. In addition, the U.S. General Accounting Office

recently completed a review of the U.S. section of the binational Great Lakes Fishery Commission (U.S. General Accounting Office 1985).

This relatively recent flurry of evaluative and pre-evaluative activity lends credence to Derthick's (1974) observation that, "When it comes to regional organizations, what works at all and what works best remains unsettled, but these questions are much more open to answers from observation than ever before."

To accommodate the aforementioned constraints to institutional analysis, a multi-faceted approach to the identification of essential parameters for Great Lakes management institutions has been designed. The approach is comprised of four complementary and mutually reinforcing tasks:

1) An Entry Into the Literature. A perspective on the evolution of the Great Lakes institutional ecosystem, the nature of its performance and desired changes, and the means to pursue them was garnered from a review of the literature. Sources included descriptive organizational material, institutional analyses and critiques, and recent and historical policy documents. Case studies of non-Basin institutions were undertaken to investigate the applicability of selected institutional characteristics to the Great Lakes Basin setting. The theoretical literature was consulted as well - in the areas of political science, management and organizational theory - to assist in the generation and analysis of a series of generic institutional forms vis-à-vis their applicability to Great Lakes Basin management needs. The first section of this study drew heavily from the descriptive organizational material and the theoretical literature. This second section focuses, in some detail, upon the generic institutional forms with reference to case study examinations.

2) Personal Interviews. Twenty in-depth, personal interviews were conducted with selected representatives from international, federal, state, provincial and regional agencies in the Basin, as well as those from citizen groups and academic institutions. An extensive set of prepared questions provided the basis for the interviews, which were designed to elicit personal observations and opinions on the current institutional framework for Great Lakes management; the ability of that framework to address perceived management needs; strengths and weaknesses of institutions at the individual and collective levels; and the appropriate strategy for advancing the management effort. The personal interviews drew from the literature review and provided the background information for a subsequent survey questionnaire effort.

3) Survey Questionnaire. Building upon the findings and conclusions of the personal interview effort, a lengthy and detailed survey questionnaire was designed and administered to 225 representatives of the following sectors: local, state, provincial, federal, regional and international agencies; academia, citizen groups and private business. The questionnaire consisted of five sections: 1) background information on the respondent; 2) views on existing Great Lakes institutions and institutional arrangements; 3) views on desired Great Lakes institutions and institutional arrangements; 4) views on how institutional change should take place; and 5) miscellaneous questions.

The intent was to complement the literature review and personal interview exercises in providing a sound basis for formulating recommendations on a strengthened institutional arrangement for Great Lakes management.

4) Personal Observations as a Participant in the Great Lakes Management Effort. The three aforementioned exercises are complemented by the researcher's past (and continuing) experience as a professional staff member, advisor, and participant in the activities of numerous Great Lakes institutions with a Basin management focus. This "field level" perspective is useful in the interpretation and application of the theoretical literature and organizational/management principles to the political realities of the actual management arena.

These four exercises provide the focus for discussion in Section Two. Collectively, they provide the framework for the development, refinement and application of essential institutional parameters to the existing Great Lakes institutional arrangement. In so doing, the discussion seeks to render more manageable the five aforementioned constraints in the search for the "preferred" institutional arrangement. Specifically, the discussion is oriented toward a statement in the study hypothesis calling for "the identification and analysis of management strategies and organizational characteristics that hold promise for Great Lakes management."

CHAPTER FOUR

ESSENTIAL PARAMETERS FOR GREAT LAKES INSTITUTIONS: INTERPRETATIONS FROM THE LITERATURE

Introduction

Even a cursory review of regional resource management practices and needs across the United States and Canada leads one to reject the notion that a single, detailed formula with universal applicability can be developed. This observation was confirmed in an exhaustive, nationwide analysis of the functional aspects of region water resource authorities conducted in 1970 by Booz, Allen and Hamilton. The authors observed, "The problem of choosing an institutional arrangement to manage water resources for any given river basin is complicated by the lack of commonality between river basins." Similar observations are interspersed throughout the literature. Each region, however defined, is unique in its own right - a uniqueness shaped by the dynamic interaction of physical, social, economic and political forces. The Great Lakes Basin is no exception; an expansive, binational resource characterized by intensive multiple use activity and challenged by myriad stresses unique to the region.

When regional resource management practices and needs are examined in a more generic light, however, it might be argued that we can learn from other experiences in other regions (or past and present experiences in our own region). Specific management practices can be examined in a conceptual context and subsequently re-shaped and applied to other regions without sacrificing the integrity of the concept. For example, the resource planning techniques or public participation strategies utilized in one region may prove beneficial, wholly or in part, in another region.

In this chapter, a descriptive list of concepts with broad applicability to regional resource management is presented and interpreted. The list was generated by applying techniques of social research and development (Rothman 1980) to a body of literature (both applied and theoretical) relating to regional resource management practices in the United States, the international Great Lakes region, and to a lesser extent, other multi-national regions. The literature review encompassed the numerous citations and bibliographic references documented throughout this dissertation and listed in the Bibliography. Examples of regional resource management practices were retrieved from the literature, and their conceptual bases identified and subsequently generalized to reflect the consensus findings of the literature. The product is an abstract statement, or application concept, that can be further shaped into an action guideline. The latter is a pragmatic statement recommending a specific action.

It is recommended that the parameters presented be reflected in the Great Lakes institutional ecosystem in its totality; no assumption is made that a single regional institution is preferred to a multi-institutional

arrangement. As will be discussed, the principle of "form follows function" is a critical yet often overlooked one in Great Lakes institution-building activity.

The Social Research and Development Process

The research utilization process posited by Rothman (1980) is ideally suited for analysis of Great Lakes institutional arrangements because it permits one to transcend the limits of the Great Lakes-specific literature and apply the concepts gleaned from other regions and experiences to the unique needs of the Great Lakes Basin. The process is comprised of six "material stages" and associated "operational steps" (see Figure 4).

The initial stage of the research utilization methodology is comprised of the knowledge pool of empirical social science research. The knowledge pool encompasses a variety of sources: formalized research associated with a discipline or profession; applied research appearing in agency documents; unpublished correspondence; and the personal knowledge of social science researchers and practitioners. The operational step associated with this stage entails the location of pertinent components of the knowledge pool and their retrieval, codification and generalization for the subsequent development of consensus findings and application concepts.

The second stage consists of the knowledge pool of generalized statements and consensus findings formulated in the preceding operational step. The second operational step initially entails the translation of these findings into the language of the regional resource management literature. A conversion process follows, transforming the generalized statements and consensus findings into application concepts directed at the resolution of the identified problem. A preliminary investigation of the feasibility of the alternative innovation strategies may take place on the basis of associated costs, political impacts, organizational requirements, etc.

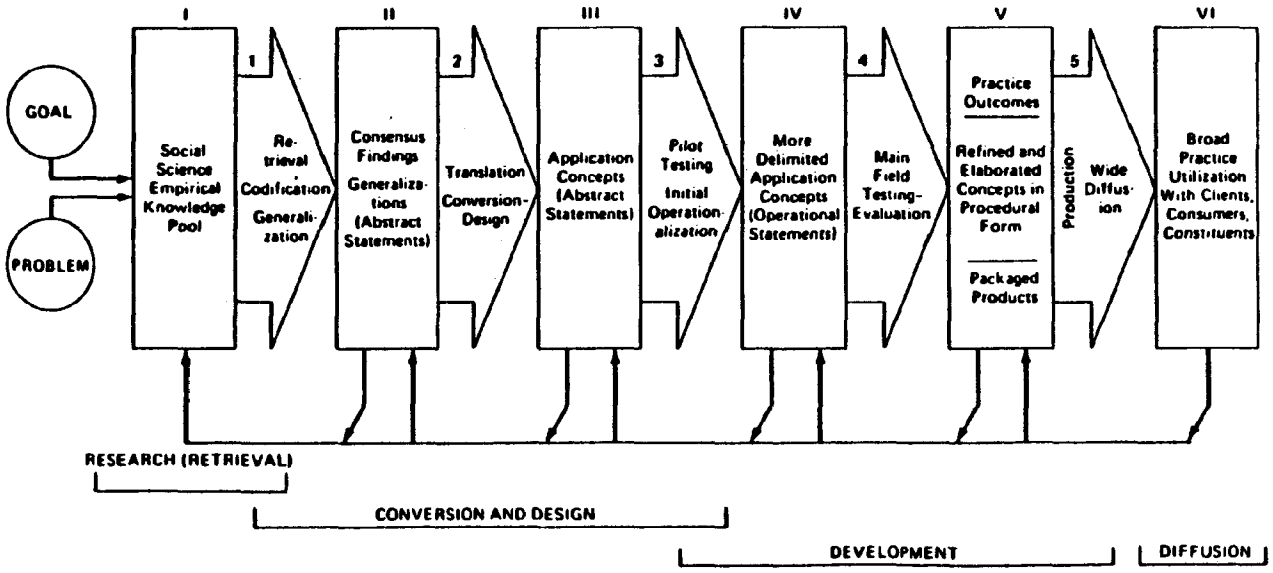
The aforementioned application concepts provide the basis for the third stage and its operational step. These concepts are refined into working strategies and are operationalized in a pilot testing format. This activity entails the development of "field level" specifications, such as determining the implementing agency, target groups, staff resources, financial requirements and time constraints.

The fourth stage draws from the pilot testing effort which facilitated the continued refinement of application concepts into operational statements. Its operational step initially entails the development of written procedural guidelines and related supplementary material to assist in a main field testing exercise. Evaluation and monitoring methodologies, staff training programs and criteria for determining the need for "fine-tuning" the strategies must also be developed prior to the main field test.

Material stage five and its associated operational step draw from the outcomes of the main field testing and evaluation efforts, and involve procedural refinements, packaging, production and diffusion. User-ready materials are prepared and distributed to a pre-selected group of target users. Attitudinal variations between users may be reflected in differing levels of receptivity to the innovation concept and motivation for

Figure 4

SCHEMATIC MODEL OF RESEARCH UTILIZATION - R&D PROCESS



Note: Reprinted from: Rothman, Jack, 1980, Social R&D: Research and Development in the Human Services. Prentice-Hall, Inc.

employing its related strategy. Consequently, packaging the strategy to promote its acceptance and vigorous application may be required on an individual basis with some of the target group users. A diffusion network is established to monitor the wide application of chosen strategies, and where necessary, to train, inform and reinforce the efforts of the user groups and individuals.

The sixth and final stage of the research utilization model is the diffusion of the refined intervention strategies to all target user groups. This stage does not terminate the process, as it permits feedback to preceding stages and contributes to the basic research (knowledge pool) from which other research efforts draw.

Essential Parameters for Regional Resource Management Institutions

The research utilization methodology was systematically applied to elicit consensus findings from the literature (see bibliography) as to regional resource management parameters considered essential for effective institutional operation. The process elicited forty-nine application concepts which were subsequently categorized into the areas of management philosophy; participatory management; management functions; role of the management entity in the institutional ecosystem; physical jurisdiction; breadth of authority; membership/constituent relations; and compatibility of form and function.

Presented below is a descriptive statement of each application concept and a brief interpretation to relate it to parameters for Great Lakes-specific institutions. This information reflects that which can be derived from the first three stages of Rothman's six-stage research utilization model. The latter stages, which entail the generation and implementation of action guidelines to bring about institutional change, were selectively applied to perceived problem areas to elicit the scenarios for institutional change presented in Chapter Nine.

In the interest of brevity, the application concept statements are not accompanied by direct references to the numerous findings in the literature supporting them. Further, it is noted that the listing does not purport to be comprehensive, as it is limited by the breadth of the literature reviewed in preparing it. However, it is presented as a theoretically and operationally sound "checklist" against which institutional design and revision can be compared.

Management Philosophy

This category presents concepts relating to the context in which regional resource management is perceived and approached.

1) Demonstration of Need. Substantive institutional response to a perceived need (i.e., revision or creation of institutional arrangements) should be predicated only upon a clear, calculated demonstration of institutional inadequacy vis-à-vis existing arrangements.

Alteration of institutional arrangements tends to be a crisis-oriented or politically motivated response to a perceived problem, and is seldom pursued with full knowledge of the capability (demonstrated or potential) of existing arrangements. "Demonstration of need" is a particularly critical parameter for Great Lakes institutional decision making in light of the complexity of institutional arrangements and relatively "untapped" potential of the mandates of its component parts.

2) Objective Institutional Analysis. A range of institutional alternatives should be fully and objectively investigated prior to selection and implementation of a preferred alternative.

   Just as the need for institutional change should be carefully weighed in light of existing institutional capabilities, the decision to implement that change should be pursued in light of alternative arrangements available. The binational characteristics of Great Lakes management present both an opportunity to investigate a wide array of arrangements and a need to select carefully among them.

3) Institutionalization. The authority under which a new management entity is created should promote longevity (i.e., encourage continuity) with sufficient flexibility to adapt to future needed changes.

   The historic "crisis-response" origin of many regional resource management institutions tends to breed either short-lived, active institutions or long-standing ones whose mandate may have limited relevance to emerging needs. In the Great Lakes Basin, political and resource management realities require institutional stability and adaptability.

4) Institutional Impact Analysis. A decision to create or otherwise alter an institutional arrangement should be preceded by an analysis of the impact of such a decision upon both the existing institutional ecosystem and the resources subject to management.

   The Great Lakes institutional ecosystem is a complex and rather delicately balanced one; entry of a new component will have resounding effects on all others. Whether such effects are advantageous or detrimental to the collective management effort over time can be determined only via an impact analysis during the conceptual stages of institutional development.

5) Management Commitment. A self-evident yet critical requirement, the management entity must exhibit a commitment to, and the aggressive pursuit of its prescribed mission.

   Regional resource management entities - particularly those in the Great Lakes Basin - generally have broad "soft-management" authority and, over time, exhibit a tendency to selectively exercise that authority. Furthermore, the extent to which authority is exercised in a given area is largely dependent upon the priorities of member

jurisdictions. Hence, an element of perseverance and commitment must be maintained if the regional institution is to do more than simply cater to the convenience of its member jurisdictions.

6) Ecosystem Management Approach. The much-discussed ecosystem management approach must be further developed to transcend the formidable gap between concept and application. Means to integrate this approach into management programs should be through the development of practical implementation procedures.

   In many respects, the Great Lakes Basin might be considered the "birthplace" of the ecosystem management concept as it is used in its present context. Yet, while many proponents claim that present institutional arrangements do not permit its application, ecosystem management is presently more a philosophy or perspective than it is a procedure or set of procedures. Further development of the approach is essential, but must precede, or at the minimum accompany, any consideration of institutional change.

7) Conservation Philosophy. The mission and attendant programs of a resource management institution should be premised on a conservation philosophy; regional resources and resource uses must be managed to permit the long term, sustainable development of the resource.

   Existing Great Lakes institutions, taken collectively, tend to de-emphasize long-term planning in favor of attention to specific issues and current problems. A conservation philosophy, which appears in virtually all institutional mandates, demands additional emphasis in practice.

8) Management Perspective. Management policies and procedures should encourage the consideration of long-term resource needs, as well as short-term problems and opportunities.

   The rather politicized and crisis-oriented nature of regional resource management in the Great Lakes Basin tends to instill in its institutions an abbreviated time frame. A realization that resource management institutions operate not for the convenience of the current "players" but for the long-term sustenance of the resource must be reaffirmed.

9) Justification of Institutional Recommendations and Actions. Full disclosure of the rationale underlying an institution's recommendations and actions should be made to member agencies, affected organizations and individuals.

   A management philosophy stressing openness tends to diffuse or constructively re-direct institutional criticism. Such an approach is particularly important in the Great Lakes Basin where decisions - even localized ones - can have significant implications for the various user groups.

10) Staff Training and Development. Institutional effectiveness is often as dependent upon staff competency as it is upon prescribed authority. Training and development programs for professional staff should be instituted in-house, or otherwise made available to 1) recognize specialized staff skills and 2) further develop those skills to the mutual benefit of the individual and the institution.

With some exceptions, regional institutions for Great Lakes management have not historically provided attractive career-track opportunities. Rather, they have tended to provide a "stepping stone" in a young professional's career or an employment opportunity for a career civil servant in the latter part of his or her career. Yet, such positions can be quite influential in setting and manipulating the regional policy agenda. Hence, sound management philosophy calls for an employment package suitable for recruiting and retaining a high-caliber staff.

Participatory Management

The literature yields a number of key concepts addressing the relationship of the management institution to other components and "players" in the institutional ecosystem.

1) Multi-Jurisdictional Participation. Affiliation with a regional institution - either formal or informal - should be open to all governmental units with some level of management responsibility in the region of interest.

   Exclusion from multi-jurisdictional policy-making or coordinative functions - either intentional or inadvertent - can breed opposition or indifference to the initiatives undertaken. This eventuality is particularly harmful in those instances where such initiatives rely upon voluntary compliance. In the Great Lakes Basin, the large number of jurisdictions and the importance of consensus building elevate this institutional parameter to one of great importance.

2) Integrating Public Participation into Management Processes. A public participation program should be an integral component of the overall management process. Providing a mechanism for substantive input into regional decision making should be considered at least as important as mechanisms for dissemination of those decisions once they have been made.

   Dissatisfaction with the access points for public involvement in regional management activities is a long established phenomenon in the Great Lakes Basin. Yet, public activism has a principal role in both setting the policy agenda and determining the means by which it is implemented. Use of such activism as a tool rather than liability will enhance institutional stature and effectiveness.

3) Equity in Management Practices. Governmental units or other organizations party to a regional management arrangement warrant equitable representation in the decision-making/management process.

A limited geographic presence in the management region should not be construed to connote a restricted voice in management decisions.

Riparian jurisdictions in the Great Lakes Basin, despite the variance in their geographic presence, all have a strong vested interest in the nature of the management principles applied to the shared resource. To ensure regional management in a positive, cooperative mode, all such jurisdictions should be afforded equitable representation. This concept is applicable also among the various levels of government with some form of management responsibility for the water and related land resources of the Great Lakes Basin.

4) Public-Private Sector Partnership. Effective Basin management demands the cooperation and coordinated efforts of both private interests and the various units of government with resource management responsibilities.

The concept of multi-jurisdictional cooperation, presented above, extends also to the private sector, which similarly has a vested interest (albeit largely parochial) in the managed resource. This institutional parameter is particularly important in the Great Lakes Basin, where the linkage between the water resource and the industrial/business community is a strong one, as indicated by the nature and extent of water-based, multiple use activity discussed in Chapter Two.

Management Functions

A wealth of information is found in the literature with respect to the types of institutional functions necessary to adequately manage resources on a regional basis. How those functions are distributed among the components of the Great Lakes institutional ecosystem is perhaps a more contentious and certainly unresolved matter.

1) Agenda-Setting and Issue Prioritization. Coordination and issue analysis functions must be sufficiently developed to permit both agenda setting and issue prioritization activities reflective of the varied perspectives present in the region of interest.

The policy agenda in the Great Lakes Basin - if in fact there is a single agenda - is not the product of a concerted inter-institutional process; it tends to emerge from the collectivity of agendas which develop largely independently of one another. However, efforts to develop such, while recognizing and accommodating a variance in priorities among multiple regional interests, demonstrates a degree of regional unity.

2) Anticipatory Capability. Effective management programs should be pro-active; capable of anticipating events and conditions and influencing their outcome, as opposed to reacting to their impacts.

An anticipatory capability for Great Lakes management institutions has long been hailed as a means to avert the historical "crisis

response" management mode. This capability is reflected in the mandates, but not the operations, of most regional institutions in the Great Lakes Basin.

3) Planning Function. Resource planning activities should be conducted by the management entity, at some level, as an aid in developing management strategies and goals.

   Although different components of a given institutional ecosystem can display distinct functional emphases, some planning function should be incorporated into each. Furthermore, some component of this institutional ecosystem should maintain a comprehensive Basin-wide planning function. This function has not been pursued in the Great Lakes Basin since the demise of the Great Lakes Basin Commission.

4) Monitoring and Surveillance Functions. Resource monitoring and surveillance activities should be conducted, at some level, to aid in evaluating the effectiveness of management programs and facilitating necessary revisions.

   In the Great Lakes Basin, these functions have been undertaken primarily by the International Joint Commission in the context of water quality management. Related activities by other regional institutions would permit expanded evaluative efforts.

5) Data Collection and Analysis Function. An in-house capability for data collection and analysis, along with a mechanism for integrating such into the management process, is a desirable institutional characteristic.

   Resource based data collection and analysis is generally undertaken on a periodic, issue-specific basis by regional management institutions in the Great Lakes Basin. The International Joint Commission has a principal role in this activity. These functions facilitate trend analyses and projections which, in turn, provide a useful planning and management tool.

6) Regulatory and Enforcement Functions. The regional institution should be vested with (or have access to) the level of regulatory and enforcement authority necessary to effectively perform its mandated management functions.

   The formation of a regional institution is generally accompanied by a pronounced reluctance to vest in that institution the regulatory or enforcement authority necessary to ensure compliance with its management functions. In most instances, a more "traditional" political jurisdiction (i.e., state, federal agency) retains the enforcement authority. Access to that authority is an important determinant of institutional success in resource management.

7) Conflict Resolution and Dispute Avoidance. A mechanism should be established to facilitate 1) the anticipation and avoidance of management disputes among the region's resource users; and 2) the

prompt and equitable resolution of conflicts that emerge despite dispute avoidance efforts. This pertains to both inter- and intra-institutional differences.

Because they generally operate with non-binding, coordinative powers, regional institutions are better adapted to pursuing initiatives following consensus agreement than they are to addressing divisive issues. Yet, intensifying levels of multiple use of the Basin's resources have elevated the importance and immediacy of conflict resolution and dispute avoidance.

8) Early Warning System. In addition to an anticipatory function oriented toward longer-term, emerging management issues, an "early warning system" is needed to identify an impending crisis. Such crises can range from physical resource issues (e.g., impending flood, drought, toxic contamination incident) to resource policy issues (e.g., ill-advised legislation, budget cutbacks, regional policy decisions).

   Regional institutions, in exercising their commitment to look at "the big picture," sometimes find themselves isolated from events at both the local and federal level with significant implications for the region. An "early warning system" can be developed by establishing a strong network of contacts which can serve as the "eyes and ears" of the institution.

9) Emergency Response Capability at Field Level. The management institution should either maintain or have access to a field level response capability for addressing emergency management needs in an expeditious manner.

   Institutional capability must extend beyond the ability to merely recognize emerging problems; it must also include direct authority or some "catalytic" function in promptly addressing those problems. Present Great Lakes institutions are largely reliant upon the traditional political jurisdictions for such responses.

10) Public Information/Communication Program. Maintaining open lines of communication with all entities party to, or affected by the actions of the management institution is a critical component of the management process. Various communication techniques (e.g., hearings, public meetings, committee structures, newsletters) should be carefully reviewed and selectively integrated into the public information/communication program.

    Present public information/communication programs sponsored by management institutions tend to be unidirectional; informing the public of decisions and actions after the fact. In the Great Lakes Basin, user group input is generally received from representatives on committees or boards or through citizen-initiated communications to the institutions.

Role of the Management Entity in the Institutional Ecosystem

The regional resource management process transcends political jurisdictions, thereby requiring a multi-institutional arrangement to satisfy management needs. The extent to which these needs are met is as much a function of inter-institutional arrangements and relations as it is a function of the individual institution's structure and operation.

1) Inter-institutional Relations. The regional resource management institution must maintain - throughout its formative and subsequent adaptive stages - an interactive relationship with other entities comprising the institutional ecosystem.

   This concept, which relates to and reinforces many others presented in this chapter, speaks to the importance of using formal and informal institutional linkages to strengthen the collective management effort.

2) Compatibility with the Federal System. As something of an "experimental" form of government, the regional institution must, in both form and function, strive for compatibility with a more established system of federalism.

   A dilemma in Basin management exists in that regional management efforts must rely on the cooperation and support of the traditional, political jurisdictional system for their success, while it is that same system that gives rise to the many issues they address and obstacles they confront. Hence, regional institutions must learn to accommodate and adapt to long-standing management approaches without sacrificing their objectives or compromising the pursuit of their mandate.

Physical Jurisdiction

Institutions for regional resource management must be sensitive to the resource base while recognizing and working within the constraints imposed by political jurisdictions. A review of the literature yield a number of consensus findings in this area. All are of paramount importance in a Great Lakes Basin context.

1) Geographic Jurisdiction. The geographic (i.e., physical) jurisdiction entrusted to the regional management institution should be a function of the latter's management authority and the characteristics of the resource(s) and resource uses subject to that authority. A clear, compelling and defensible rationale for the regional boundary should be developed.

   Regional governance systems are established in those instances where the benefits of managing a shared, multi-jurisdictional resource are believed to outweigh the costs associated with overcoming or accommodating traditional jurisdictional barriers. To be effective, the institution must not only choose its geographic jurisdiction with care, but ensure that the management

authority granted it is sufficient to effectively pursue its mandate.

2) Reconciliation of Political and Regional Jurisdictions. Regional resource management activities are most logically undertaken within a geographic region defined by the resources or resource uses present (e.g., watershed, river basin, soil and water conservation district). However, management practices must also be reconciled with the political jurisdictions wholly or partially within the confines of the regional resource jurisdiction.

   From an apolitical, resource management standpoint, Basinwide (i.e., ecosystem-oriented) management is preferred to compartmentalized, multi-jurisdictional management. Yet, the reality of long-established political jurisdictions must be acknowledged and accommodated if movement toward ecosystem management is to occur. This consideration is particularly relevant to Great Lakes management needs, as Basin management must acknowledge international as well as interstate and interprovincial political jurisdictions.

3) Flexibility in Regional Jurisdiction. Although the jurisdiction of the regional resource management institution should be defined by the resources, such definition should be sufficiently flexible to accommodate special management issues (i.e., inter-regional issues involving resource uses occurring out of, but impacting the region).

   Environmental stresses, such as airborne toxic deposition, often originate in a location far removed from the area of impact. Similarly, economic stresses exhibited in a region may be attributed to exogenous factors. The regional institution must be capable of addressing these stresses. Just as a single Great Lakes state or province recognizes itself as one component of a Basin ecosystem, the Great Lakes Basin must recognize itself as one component of a global ecosystem.

4) Integration into Existing Institutional Framework. To the extent possible, a new or revised institution must strive to conform to existing boundaries, and work with and complement existing management entities. Initial conformance, followed by subtle change, is generally a more readily accepted "change agent" role than that of a confrontational posture.

   The institutional ecosystem is, in many respects, as sensitive as a biological ecosystem. The entry of a new component (i.e., institution) will elicit a reaction from all others; a reaction which can lead to unqualified acceptance, institutional repositioning or the rejection and ultimate demise of the new component. The current proliferation of Great Lakes-oriented institutions poses particular challenges for the new entrant, although once "accepted", the opportunities for an institution to effect change are substantial.

Breadth of Authority

Reconciling institutional authority with perceived management need has historically been difficult at the regional level, where political jurisdictions are hesitant to compromise their autonomy and vest a regional entity with powers they once held. Understandably, this issue is a most challenging one in the Great Lakes Basin.

1) Multiple Use Capability. Management authority must be sufficiently broad and potent to adequately address existing and potential multiple use conflicts and opportunities within the region of concern.

   The strength of a regional institution lies in its multi-functional capabilities as well as its multi-jurisdictional characteristics. In the Great Lakes or any other region, a regional institution with a narrow management mandate cannot, in and of itself, adequately address resource problems and uses. Hence, the institution must possess or have access to broad management authority.

2) Integration of Planning and Management Functions. The institution must possess sufficient authority (and creativity) to integrate planning and management functions for a given region's resources.

   Regional institutions - in the Great Lakes Basin and elsewhere - have historically lacked the management authority to implement plans developed (i.e., Title II River Basin Commissions, Governors' Councils, regional planning authorities). This arrangement can, in some instances, compromise management potential and can discredit or otherwise neutralize the potential impact of (and support for) the regional institution's planning efforts. Some level of integration is necessary to strengthen the planning - plan implementation linkage.

3) Comprehensive Authority. The regional institution should be granted comprehensive jurisdiction over the resource base of concern. The range of functions, from data gathering to implementation of management decisions (and the multiple steps in between) should either be conducted wholly within the structure of the management entity, or readily accessible to it.

Membership/Constituent Relations

Regional institutions are, as a rule, membership organizations which are supported and empowered by two or more political jurisdictions. The ability of such an institution to effectively manage a region's resources is as much a function of its membership/constituent relations as it is of its vested authority.

1) Responsivity to Members and Constituents. As a coordinative body of (generally) limited autonomy, the regional institution must be responsive to the individual and collective needs of member agencies/organizations.

Regional institutions draw their strength from the active support and participation of member jurisdictions. Further, these jurisdictions are relied upon to implement the plans and recommendations developed by the regional institution. Thus, a responsiveness to the needs of member jurisdictions and constituents is a principal determinant of institutional effectiveness. (As will be discussed, the Great Lakes Fishery Commission and Great Lakes Commission exhibit particular strengths in this area.)

2) Visibility. Effectiveness in managing a resource base is determined, in part, by the affected public's 1) recognition of the regional institution; 2) understanding of the authority vested in that institution; and 3) perception of the institution's performance in exercising that authority. These factors build the credibility, and hence the effectiveness, of the institution.

   Public recognition and understanding of regional governance is inherently limited; a problem exacerbated when the regional governance system is a complex one. Such is the case in the Great Lakes Basin, where "low visibility" institutions tend to be viewed as inaccessible and therefore unresponsive to public needs. A sensitivity toward constituent relations, noted earlier, should be extended to the general public as well. Means to improve visibility include public information/involvement programs integrated into the range of program activities; ongoing press relations; design of publications for a diverse readership; use of a newsletter/periodical; ongoing personal contacts with constituent groups; and others.

3) Accountability. Responsiveness to membership directives is perhaps the single most critical attribute for an effective regional institution. Irrespective of the authority vested in the institution, its structure and decision-making process must be designed to ensure accountability to its member jurisdictions for actions taken.

   The absence of a system of accountability can, over time, lead to erosion of support by member jurisdictions. Conversely, a demonstrated responsiveness to member jurisdiction directives can build trust in the regional institution and permit the gradual expansion of its management authority. The issue of accountability has been a continuing concern with components of the Great Lakes institutional framework.

4) Political Linkages. It is essential that elected officials in relevant political jurisdictions are 1) kept apprised of the regional institution's management activities; 2) provided a mechanism for direct, substantive and measurable input; and 3) encouraged to demonstrate their support for the institution's mandate and decision-making authority. A sense of trust, or bond, between the political jurisdictions and the regional institution which provides a forum for their cooperation is critical to the latter's credibility, and hence, effectiveness in managing the resource.

Political linkages between the regional institution and its membership (and cooperators) provide a pathway for communication, responsiveness and accountability. Erosion of these linkages constitutes an erosion of the institution's effectiveness - particularly when that institution is vested with little autonomy. Maintaining and using formal and informal linkages as a vehicle to foster a sense of accountability and good relations should be a priority concern. In the Great Lakes region, this is particularly true at the regional/state-provincial interface.

5) Support Base. Support for the mission and functions of the management entity should be fostered throughout the range of governmental units and public/private interests participating in or affected by its activities. Broad-based support at the field or application level (e.g., township, municipality) is particularly important.

Multi-jurisdictional institutions, such as those in the Great Lakes Basin, are something of an anomaly when one considers historical approaches to resource management. Consequently, there is no inherent base of support in a regional institution's activities, such as that one might find at a local, state, provincial or federal agency level. For this reason, the institution must devote significant attention to the creation and maintenance of a support base. The extent to which that base can be broadened to include local units of governments and interest groups is an important determinant of its effectiveness in the long term.

6) Influence in Resource Management Decision Making. Irrespective of the degree of autonomy a regional institution may enjoy, its operations (and therefore effectiveness) will be subject to the decisions of a greater authority (e.g., governor's office, state legislature, U.S. Congress). Therefore, the institution must nurture a significant level of influence with such decision makers. Influence has both a structural and operational component; both of which must be pursued in concert. The former is attained by vesting the institution with a predetermined adequate level of authority; the latter by maintaining an aggressive, professional operation that fosters trust and respect within the region and among the aforementioned decision makers.

Generally speaking, influence in the regional decision-making process by the relevant Great Lakes institutions is not guaranteed via legislative provisions. It is a status which must be earned by process. Historical analysis clearly demonstrates that Great Lakes institutions with broad mandates tend to acquire credibility and influence in selected areas, while in other areas (with equal emphasis in the institution's mandate) this status is clearly lacking. An example is the Great Lakes Commission's substantial influence on maritime issues relative to environmental issues, despite the "equal" treatment they receive in the Great Lakes Basin Compact. While selective influence does advance some regional needs, it fails to effectively address the collectivity of needs.

7) Incentive System. Units of government party to a regional institution are often hesitant to relegate a degree of their resource management authority to another governmental body. Further, they also hesitate to actively participate in the activities of that body unless there is a clear and direct relationship to their own management responsibilities. An incentive system should be established to encourage full support and participation in the regional institution's activities. Alternative systems, ranging from compulsory to voluntary incentives, should be carefully reviewed and selectively integrated into the authority and functions of the regional institution.

   The nature of the incentive system needed is a function of both the institution's mandated responsibilities and the level of authority it is vested with to pursue them. Presently, incentives for participation in Great Lakes institutional activity are predominantly voluntary (e.g., a state's commitment to the regional welfare, or conversely, its desire to look out for its own interests). Compulsory incentives exist as well (e.g., compact provisions, legislative requirements) but generally do not guarantee strong support of, and participation in regional institutional activity. For example, a state can comply with the requirements of the Great Lakes Basin Compact without contributing actively and substantively to interstate deliberations.

Compatibility of Form and Function

Reconciling institutional form and management function is a topic of significant concern in the literature. It is perhaps one of the most experimental and unsettled aspects of regional governance, yet one in need of careful consideration.

1) Management Level. Management functions associated with regional resource planning and administration should be entrusted, to the extent feasible, with the level of government "closest" to the affected resource users.

   With respect to Great Lakes management needs, this statement infers the desirability of a state and provincial role in setting regional policy and a more localized role in both influencing and implementing that policy. Further, it emphasizes the importance of developing management policy on the basis of resource needs rather than political convenience. The former should be the driving force, the latter a vehicle for attaining it.

2) Functional Assignments. A clearly indicated present or future need must be firmly established prior to the assignment of specific functions to the regional institution.

   This statement, a rather straightforward and self-evident one, has nonetheless been routinely overlooked during institutional development in the Great Lakes and other regions. The literature stresses that resource management crises and political expediency

tend to be the predominant motivational factors in shaping institutional development. Insufficient attention to the range of present and future institutional needs often results in fragmented, multi-jurisdictional management, and at the individual institutional level, in functions that are present and unused, or not present yet needed.

3) Coordination of Disparate Management Functions. Distinct management support functions conducted by, or under the auspices of a regional institution (e.g., research, data collection and analysis) must be coordinated and integrated into the overall management process to ensure sound and defensible management policies and actions.

   Comprehensive regional management is a complex and multi-functional undertaking. Within a single institution, these functions can become compartmentalized. For example, the integration of research findings into management policy can be constrained, particularly when the latter is more a function of bargaining between member jurisdictions than based on scientific fact and principle. Hence, intra-institutional coordination is at least as important as inter-institutional coordination.

4) Vertical and Horizontal Integration. The structure and process of the regional institution should encourage vertical (i.e., intergovernmental) as well as horizontal (i.e., interagency) coordination.

   Effective regional management is dependent upon the institution's ability to transcend barriers between jurisdictions at the same governmental level as well as barriers between two or more levels. By virtue of their functions and authority, for example, coordination of state and federal activity within a regional framework is more problematic than coordination of activities between two states. Yet, both dimensions must be addressed.

5) Organizational Resources. The organizational resources (e.g., finances, staffing, facilities) available to the regional institution must be provided at a level adequate to permit the full implementation of management functions it is entrusted with.

   Despite the breadth of their mandated responsibilities, the organizational resources of many Great Lakes institutions are severely limited. Although their careful allocation can and has contributed to the region's benefit, a tradeoff must be made between concerted attention to selected issues and superficial attention to the range of issues.

6) Administrative Discretion. Although the regional institution is held accountable to its membership for actions taken, it should be granted a degree of discretionary authority to 1) conduct routine business without continual oversight; 2) make major policy/management decisions in crisis situations (subject to some form of executive body) and 3) fully utilize its expertise to address

issues and develop programs beyond the jurisdiction and/or capability of any individual member.

Decision making by committee, a characteristic of Great Lakes institutions, is generally a laborious and time-consuming process ill-suited or inappropriate for routinized administrative or crisis response decisions. An abbreviated decision-making process, coupled with some degree of institutional discretion should be integrated into institutional processes. Further, while recognizing the institution's accountability to its membership, it should be recognized that its role often fosters special expertise and flexibility not found in its membership.

7) Organizational Flexibility. Flexibility in interpreting and operationalizing the institution's mandate is necessary to ensure continuous adaptation to the dynamic nature of the institutional ecosystem and the changing physical, social, economic and political environment.

   Organizational form and function must be uniformly flexible to address changing institutional roles and resource management needs.

8) Operational Efficiency. Administrative operations should be funded and structured conservatively (without sacrificing effectiveness) to ensure maximum emphasis on management functions. This is particularly important given the historically modest funding levels for Great Lakes institutions.

   Even a perception of a "top-heavy" institutional structure by member jurisdictions tends to erode support and breed dissatisfaction. Every effort to focus organizational resources at "field" level management and maintain a lean administrative structure is favorably received.

The preceding application concepts, broad although not necessarily comprehensive, were drawn from consensus findings in the literature. They serve as a set of guidelines for the creation, revision or evaluation of a given regional institution and its attendant structural and operational characteristics. As such, they serve as a foundation for discussion in subsequent chapters.

CHAPTER FIVE

ALTERNATE INSTITUTIONAL ARRANGEMENTS FOR GREAT LAKES MANAGEMENT: AN ANALYSIS OF GENERIC INSTITUTIONAL FORMS

Introduction

An entry into the literature readily yields a strong consensus opinion that: 1) institutional structure and operation is the pivotal element in shaping and implementing resource policy decisions; 2) present institutional arrangements for Great Lakes management are inadequate for perceived needs; and 3) Basin characteristics, coupled with the nature of multi-jurisdictional resource management, have precluded the identification and establishment of the "ideal" prototype arrangement.

The first finding, well documented in the opening chapters, cannot be overstated. It appears indisputably clear that institutional performance - and not scientific and technological capability - is the principal limiting factor in continued progress toward enhanced environmental quality in the Great Lakes Basin. Dworsky and Swezey (1974), for example, maintain that, "The question about whether the [Great Lakes Water Quality] Agreement will be effective is going to be answered in terms of Government, not in terms of science and technology. The scientists and technologists pretty much know what they need to do." Kelnhofer (1972) adds, "Our failures ... are not failures of ignorance or technology, but of funding and administration." The Federal Council for Science and Technology (1968) correctly notes that, "scientific and technological capability to handle water management needs are almost powerless unless translated by effective and adequate institutional arrangements into significant social values." Finally, the National Academy of Sciences (1972) echoes a further consensus in arguing that institutional arrangements can not only constrain progress in resource management, but by fostering bureaucratic ineptitude, can exacerbate it.

Despite the preponderance of negativism in the literature, the intent here is not to infer rampant institutional inadequacy in regional resource management, but to demonstrate the institution's pivotal role in addressing critical resource issues. As the Federal Council for Science and Technology (1968) has observed, "understanding of policy and institutional problems is indispensable to sound water resource management by both the public and private sectors...."

The second consensus finding in the literature - that present institutional arrangements for Great Lakes management are largely inadequate - is found to be a rather subjective, yet pervasive conclusion. The diverse and extensive collectivity of explanations is well documented elsewhere and will not be repeated here. Dworsky and Swezey (1974) summarize the issue adeptly, "... the heart of the problem of managing the land, air and water

resources of the Great Lakes region lies in institutional (organizational) inadequacies on both sides of the international border...."

The third consensus finding identified above - that the "ideal" institutional prototype for Great Lakes management has yet to be found - is also discussed at length in earlier chapters. As indicated, the physical, geographic and political characteristics of the Great Lakes Basin render the search an experiential one and defy the ready application of institutional forms presently in place in other regions. Ostrom et al. (1970) state simply that there is no "permanent optimal solution." To avoid belaboring previously presented arguments to this effect, the following statement by Derthick (1974) is presented to summarize current thought: "When it comes to regional organizations, what works at all and what works best remain unsettled, but these questions are much more open to answers from observation than ever before."

While their individual analysis finds these three consensus findings to be neither surprising nor particularly contentious, their collective analysis leads one to an important yet often overlooked conclusion. The search for institutional adequacy must be a continuous and open process, free of the historic tendency toward myopic, incrementalist revisions to an established and largely unalterable institutional structure. Kelnhofer (1972) recognizes this as a "continuing requirement," and by necessity, a rather imprecise and open search: "The Lakes are so large and so diverse that it seems quite unlikely that any single agency would be able to deal adequately with all the problems that will need attention. Instead, we can expect an organization featuring a constellation of agencies of varying sizes, jurisdictions, functions and powers."

Clearly, much is to be gained by focusing the search, in part, internally. The present institutional framework for Great Lakes management is comprised of a variety of structures, including those created by treaty, compact, convention and incorporation. Yet, the diversity within the Great Lakes framework is but one small component of the "almost infinite array of institutional devices" available (Federal Council for Science and Technology, 1968). For this reason, the search must extend beyond the Basin, and include an examination of the range of institutional forms and potential applications. It is only by this process that the potential inherent in the evolution of the Great Lakes institutional ecosystem can be realized.

Recognizing this, a concerted effort was undertaken to identify, document, and investigate the range of institutional forms that have, or are being employed in a regional resource management context. Inventories such as those compiled by the Task Force on Institutional Arrangements for River Basin Management (Water Resources Council 1967); Hines and Smith (1973); and Booz, Allen and Hamilton (1970) provided a useful starting point, although none, in and of themselves, were found to be comprehensive. Institutional critiques and case studies provided by Ostrom (1970), Craine (1972), Dworsky and Swezey (1974) and the Missouri River Basin Commission (1984) and others were reviewed as well.

On the basis of this review, a total of fifteen generic institutional forms were identified. While recognizing that all forms are not distinct, and variations between them occur, the listing is believed to accurately

reflect the range of institutional forms presently available for consideration in addressing the resource management needs of the Great Lakes Basin. The preponderance of these forms are drawn from the U.S. literature; associated institutional forms in Canada for regional resource management are referenced as appropriate under these general headings. These forms include the following: 1) interstate compact; 2) federal-state compact; 3) state-foreign power compact; 4) interstate council/commission; 5) federal/state commission; 6) international treaty/convention/agreement; 7) federal regional council; 8) federal regional agency; 9) basin-interagency committee; 10) intrastate special district; 11) single federal administrator; 12) international commission; 13) international court; 14) federally chartered and private corporations; and 15) nongovernmental organizations (e.g., professional associations, non-profit organizations, private corporations).

Each of these generic forms was investigated to provide 1) a description of key structural and operational characteristics; 2) a brief history and present status of the development of the institutional form; 3) an examination of strengths and weaknesses on the basis of criteria specified in the preceding chapter; 4) an assessment of its potential applicability to Great Lakes management (singly or in combination with other forms); and 5) its likelihood of being implemented given present institutional arrangements and the political/procedural aspects of institutional change.

With respect to the aforementioned "specified criteria", the forty-nine application concepts presented in Chapter Four were reviewed to identify those addressing issues of institutional form and structure (as opposed to operations). This review elicited the checklist presented in Table 1. Each of the fourteen institutional forms was subjected to the checklist questions during the review, thereby permitting a brief assessment of strengths and weaknesses.

The objective of this exercise is to apply institutional principles and concepts to actual institutional forms, and in so doing, better define the type of institution(s) capable of addressing Great Lakes management needs. It is important to note that the effort is not an "either - or" choice among the identified forms. The selection of two or more complementary forms remains an option, as does the development of a new form from selected characteristics of established ones. This determination is left for a later chapter, following an integrative review and analysis of personal interviews and survey questionnaire results.

Finally, it is important to re-emphasize that "form follows function"; any effort to specify an institutional form prior to explicit identification of management needs is ill-advised. Craine (1972) explains that debate on institutional form is inappropriate until the institution's goals are established. This claim, found throughout the literature, echoes the earlier finding of the Water Resources Council's Task Force on Institutional Arrangements for River Basin Management (1967): "... before a new institutional arrangement is established in any basin, the needs of the basin should be determined and the major outlines of a basic comprehensive plan for the conservation, development and management of the basin should be clearly seen." With these thoughts in mind, a review and analysis of the fifteen generic institutional forms follows.

TABLE 1

PARAMETERS FOR EVALUATING GENERIC INSTITUTIONAL FORMS - A CHECKLIST OF SELECTED KEY QUESTIONS

1. Does the form provide some degree of longevity and constancy to permit ongoing attention to pertinent issues?

2. Does the structure allow for flexibility in addressing a range of emergent issues over time?

3. Is the range of desired resource management functions (and attendant authorities) adequately incorporated in the structure?

4. Is adequate financing, staffing and overall support sufficiently provided for?

5. Does the form permit equitable, multi-jurisdictional participation among affected governmental units in Canada and the United States, as well as public input?

6. Can the form ensure, or at least encourage active support and participation by member jurisdictions?

7. Does the form have the credibility and standing to serve as the region's "agenda setter?"

8. Is a positive, interactive relationship with other components of the "institutional ecosystem" a consequence of the form?

9. Does the nature of the form permit a relatively smooth entry into the existing "institutional ecosystem?"

10. Is the geographic jurisdiction sufficient to encourage "ecosystem" management?

11. Is the legal authority vested in the institutional form sufficient for the management responsibilities to which it should be entrusted?

12. Is the membership structure sufficient to ensure responsivity and accountability to members and constituents?

13. Does the form "build in" a base of support to permit its acceptance and influence in regional management?

14. Does the form provide the institution sufficient discretion to respond promptly to crises and identify and address issues before they become crises (i.e., anticipatory and response capability)?

1. *Interstate Compact*

Description. An interstate compact is a formal, legally binding instrument establishing a permanent arrangement among two or more states on an issue of shared interest. It constitutes a contract between the signatory parties; each party is thus "forbidden to impair the obligation of the contract or unilaterally renounce the interstate compact except as agreed to by the party states" (Council of State Governments, 1983). As described by Zimmerman and Wendell (1951) the interstate compact has six distinguishing characteristics: "1) It is formal and contractual; 2) It is an agreement between the states themselves, similar in content, form and wording to an international treaty, and usually embodied in state law in an identifiable and separate document called the "compact"; 3) It is enacted in substantially identical words by the legislature of each compacting state; 4) At least in certain cases, consent of Congress must be obtained; in all cases, Congress may forbid the compact by specific enactment; 5) It can be enforced by suit in the Supreme Court of the United States if necessary; and 6) It takes precedence over an ordinary state statute." Additionally, compact language generally provides for the establishment of a compact commission to carry out the terms of the compact. Within the authority granted the commission, its actions and decisions are binding upon the signatory parties. The federal government is often affiliated with the interstate compact commission as a non-voting observer.

The interstate compact mechanism is subject to Article I, Section 10 of the U.S. Constitution which states, in part, that "No State shall, without the consent of Congress ... enter into any agreement or compact, with another State, or with a foreign power." A landmark case (Virginia v. Tennessee, 1893) modified this stipulation somewhat, with the U.S. Supreme Court ruling that "only those agreements which affect the political balance within the federal system or affect a power delegated to the national government must be approved by Congress." As Naujoks (1953) has observed, however, "Because almost any compact of importance is bound to affect the power balance between the states and the federal government, and hence could be considered political in nature, the states contemplating the making of a compact would be wise to include a provision for Congressional consent."

This mechanism is a versatile one; a wide range of state powers can be subjugated to the compact and the compact commission. With respect to water resources, the National Water Commission (1973) found that its use generally falls in one of four categories: 1) water allocation compacts; 2) pollution control compacts; 3) flood control and planning compacts; or 4) comprehensive regulatory and project development compacts (Muys, 1971). The functional use of the compact (e.g. coordination, regulation, research) varies widely, although in practice, the powers exercised by the compact commission tend to be restricted.

The compacting procedure is initiated at the state level, where two or more states will agree on terms, appoint a negotiating body, pass substantially similar legislation and seek authorization from Congress to enter into a compact. Congressional approval is followed by the

conclusion of negotiations, state ratification of the compact language and finally, ratification by Congress. At that point in time, the compact holds the force of federal law and is therefore binding on signatory parties.

Historical Perspective. The compact mechanism has held a prominent role in colonial history, having been used extensively as early as the mid-seventeenth century to settle boundary disputes due to vague colonial charters and poorly surveyed lands (Naujoks, 1953). Since the adoption of the Constitution, the compact device has been used in a number of fields, including "control and improvement of navigation, fishing and water rights and uses, and conservation of natural resources, among others."

Application in the area of water resource management has been noteworthy only since the 1920's, following establishment (in 1922) of the seven-state Colorado River Basin Compact. Since that time, there have been more than 25 interstate compacts addressing some aspect of inter-jurisdictional water management. This increased activity, observed through the 1960's, paralleled an increase in the overall use of interstate compacts (i.e., 140 have been negotiated since 1920, and 100 of these since 1945).

Over the past several decades, this device has become increasingly popular in relation to bi-state and other forms of agreements. Originally established as issue-specific dispute resolution mechanisms, their flexibility is now broadly employed to provide a range of planning and management services, either on a geographic or functionally-specific basis. Over the last decade and a half, the rate of growth has slowed while increased emphasis has been placed on working within or revising existing interstate compacts.

Although the Great Lakes states have a history of involvement in a range of interstate compacts, their experience with regard to Basinwide water management is largely limited to their experience with the 1955 Great Lakes Basin Compact and the associated Great Lakes Commission. It is noted, however, that Great Lakes legislators, in 1952 and 1953, did introduce legislation calling for an interstate compact to permit construction (with Canada) of the St. Lawrence Seaway. It might be theorized that additional compact activity has been limited by 1) the magnitude of the Basin and the difficulties of garnering support from eight states; 2) the international aspect of Basin management and the attendant array of additional available institutional devices; and 3) the breadth and flexibility of the Great Lakes Basin Compact and the ease of amending it, as needed, rather than creating a new one. In a more fundamental sense, it might be argued that the states have lacked both the impetus and perceived need for additional compact activity. For example, a proposed water quality management compact developed by the Great Lakes Commission in 1968 was soundly rejected by the Attorney General offices in the various states, as they were hesitant to sacrifice a rather substantial degree of state autonomy and vest it in an interstate body.

Strengths and Weaknesses. As an institutional form with prospective application to water management needs in a Basin context, the interstate compact device is characterized by numerous positive attributes:

1) The interstate compact device is a tried, proven, legally binding and enforceable mechanism which supersedes state statutes for the common good of the collective signatory parties. As such, it provides a degree of stability and continuity to cooperative regional efforts. By virtue of its legal standing, it is an inherently powerful mechanism and therefore provides an incentive or inducement for state participation.

2) Interstate compact language characteristically provides for the establishment of a commission to oversee coordination and implementation of its provisions. The commission structure has the capability to both monitor and pursue compact goals, and facilitate the ongoing interaction of signatory parties.

3) The interstate compact can be extremely flexible and quite powerful; its orientation is limited only by the ability of its signatory parties to secure Congressional ratification. Hence, it has the capability, at least in theory, to vest an interstate compact commission with broad management authority and functional powers.

4) The device is capable of treating all signatory parties as equals, thereby permitting and encouraging positive, interactive relationships among the relevant jurisdictions. The compact device generally requires unanimous consent of these parties prior to its amendment, modification or alteration.

Weaknesses associated with the interstate compact device relate not to its characteristics, per se, but to the political and operational realities which influence its use:

1) By definition, the interstate compact excludes non-state jurisdictions (e.g. federal, provincial governments) from full voting membership. Therefore, Basinwide management is constrained; Canadian representation is inherently limited.

2) The interstate compacting process is a laborious and time consuming one, fraught with obstacles which can indeterminably delay or altogether preclude the implementation of a compact. For example, the Second Hoover Commission found that an average of eight years and nine months was required to complete the compacting process for those compact proposals which, in fact, survived all necessary steps (Martin 1960). The attendant investment of time and political energy is substantial, and in some instances, might be better expended on alternate institutional arrangements.

3) The interstate compacting process is highly dependent upon the political climate at the state, federal and Congressional levels. The resultant compromises generally yield an institutional form which is rather weak relative to its potential. For example, the

Great Lakes states were forced to make substantial concessions to the federal government and Congress to ensure ratification of the Great Lakes Basin Compact. Among others, these concessions prevented Ontario and Quebec from exercising an option as signatory parties. Further, powers of the Great Lakes Commission were limited to those of information-sharing, coordination and advocacy.

4) Although an interstate compact is enforceable by the U.S. Supreme Court in theory, in practice "little can be done about it" if a recalcitrant state renounces a compact or selected provisions thereof (Naujoks 1953). Although the "soft" management emphasis of the existing Great Lakes Basin Compact is not highly susceptible to such an eventuality, it is a consideration in any future efforts to institute a compact (or revise the current one) with a "hard" management emphasis.

Potential Applicability to Great Lakes Management. The interstate compact device, in both theory and practice, is viewed (in relative terms) as a highly desirable institutional form for resource management in the Great Lakes Basin. Its various applications - both within and outside the Great Lakes Basin - find it to be a legally sound, durable and (at least potentially) flexible mechanism for Basin management. In and of itself, however, it cannot adequately address all management needs, as a co-equal Canadian component is absent. This is viewed as the principal drawback. Of lesser, but significant concern is the limited federal role.

While the device itself is viewed favorably and present language in the Great Lakes Basin Compact is generally well received, the implementation of that language via the compact commission is a source of continuing concern and some dissatisfaction in many sectors. Hence, it is suggested that future investigations of the interstate compact device vis-à-vis the Great Lakes focus primarily on the performance of the compact commission, secondarily on compact language and, finally, on the suitability of the device itself.

Likelihood of Implementation. The present Great Lakes Basin Compact has remained intact since its development in 1955, and despite varying levels of dissatisfaction with its implementation over the years, can be expected to remain in force (in some form) well into the future. This is due to both the inherent stability of the compact device and the fact that the Great Lakes Basin Compact is the most potent (though underutilized) device presently available to the Great Lakes states.

For the reasons previously articulated, the likelihood of the states securing ratification of a new compact to supplant or augment the existing one is highly unlikely over the course of the next several years. Given the significant unrealized potential of the existing compact, it is abundantly clear that the most judicious approach would entail a thorough review of the existing compact, an assessment of its potential in meeting perceived management needs and, if necessary, the development of amending language to reconcile shortcomings. This is viewed as both the preferred and politically realistic approach.

2. *Federal-State Compact*

Description. The federal-state compact is a derivation of the more established and frequently utilized interstate compact device. The two are essentially identical in terms of characteristics, application, potential authority and operation. The former, however, as its name implies, provides for some form of formal federal membership. Such membership can range from a non-voting status (e.g., Rio Grande Compact) to an equal standing with the signatory states (e.g. Delaware River Basin Compact, Susquehanna River Basin Compact).

Although the Compact Clause in Article I of the U.S. Constitution does not explicitly provide for federal involvement in the compacting process beyond ratification, U.S. Supreme Court interpretation has recognized the legitimacy of such. The motivation for the federal government's presence as a signatory party is generally attributed to one of two factors. The first is explained by Zimmerman and Wendell (1951): "The existence of significant areas which lie outside state boundaries and are administered solely by the United States Government gives rise to the possibility that the national government may become party to a compact on behalf of one or more of the areas." The second and perhaps more pervasive motivation is the federal government's interest in a given management area addressed by the compact.

From an operational standpoint, the federal government's association with, and role in compact administration can be substantially the same as that afforded the signatory states. A departure is noted, however, in the area of judicial enforcement, where the federal government is not subject (as the states are) to the terms of the Compact Clause and the Contract Clause in the U.S. Constitution. Hence, a state could not force federal compliance if Congress chose not to cooperate. Further, unlike a state, the federal government would have the authority to terminate its membership by unilateral action.

In Canada, a greatly modified version of this device is found in federal/provincial agreements stipulating jurisdiction roles and responsibilities in the management of a given resource. Examples include the Canada-Ontario Agreement Respecting Great Lakes Water Quality; the Canada-Ontario Environmental Accord; and the Canada-Ontario Strategic Plan for Ontario Fisheries.

The reader is referred to the descriptive statement on interstate compacts for a pertinent explanation of the compact characteristics and the compacting process; both of which pertain to federal-state compacts as well.

Historical Perspective. The history of the application of the federal-state compact dates back only to the early 1960s, although the emergence of this institutional form is seen some decades earlier. Throughout this period, inter-jurisdictional water management was the drawing force. Zimmerman (1969) explains that "water resources management has occasioned more experimentation with the structuring of intergovernmental interaction than any other problem."

The establishment of the Delaware River Basin Commission in 1961 is viewed as the origin of this institutional device. As Zimmerman (1969) states, "It is the first interstate-federal commission which unites the constitutional powers of both levels of government and which constitutes an agency of all the party jurisdictions - each of the States as well as the federal government - established by a single law which is both federal and state law since it is the law of every party jurisdiction." The Delaware has four state and one Presidentially appointed federal member - all with equal power. It is a "true" federal-state compact in the sense that its existence was contingent upon Congressional ratification. Other compacts with federal membership did exist (e.g., Ohio River Valley Sanitation Compact - ORSANCO), although federal representation was not a fundamental requirement of compact ratification.

Over the period 1920-1950, the states party to the compact had attempted unsuccessfully on three occasions to establish a more "orthodox" arrangement along the lines of other established interstate compacts. An impending flood crisis was a precipitous factor in overcoming resistance and expediting the compacting powers.

The transition from the "weaker" forms of interstate compacts to the DRBC prototype is found in the establishment of the Interstate Sanitation Commission (INCOSAN - New Jersey, New York, and Connecticut) in 1935 and the Ohio River Basin states in 1948. Both involved an unprecedented delegation of powers and, as noted earlier, ORSANCO provided for federal representation on its compact commission. The efforts of the Southeastern River Basin Study Commission and the Great Lakes Fishery Commission to secure a federal-state representation arrangement is also noted (Zimmerman 1969).

Once established, the DRBC formula for federal-state arrangements influenced both the Title II River Basin Commissions established under the Water Resources Planning Act of 1967 and the Title V Economic Development Commissions established under the Public Works and Economic Development Act of 1965. Further, the Susquehanna River Basin Compact and the Potomac River Basin Compact (the latter never ratified) were based on the DRBC prototype. The DRBC and SRBC are presently the only federal-state compact institutions for water management, although the institutional form has been applied in other areas to a limited extent.

Strengths and Weaknesses. The strengths of the interstate compact device are reflected and accentuated in that of the federal-state compact. The latter is uniquely able to unite the constitutional powers of the state and federal parties to the compact, creating a co-equal, cooperative management approach in which federal and state law, in essence, become one. Thus, hydrologic boundaries emerge as the principal management area as political divisions and division of powers become secondary considerations. It is noted that "experiments" in this institutional device to date (i.e., DRBC, SRBC) are generally viewed as successful, thereby providing a prototype or means of guidance in efforts to apply the device in other settings.

The weaknesses of such a device, in light of Great Lakes Basin management needs, are again similar to those of the interstate compact, yet more tempered. While the federal-state partnership is provided for, the binational focus is not. Thus, some variation of the arrangement would be required if an "ideal" institution for Basin management was to be established.

The principal weakness is not one of structure but one of implementation, as the federal-state compacting process is potentially several orders of magnitude more complex and divisive than that of the interstate compacting process. The limited application of this device to date is indicative. The comparatively large number of state jurisdictions in the Great Lakes Basin, coupled with the binational element and the properties of the resource would undoubtedly contribute to these concerns. The historic reticence of the federal government to enter into such arrangements is a factor as well.

Potential Applicability to Great Lakes Management. Provided that Canadian participation in Basin management efforts is fully provided for, the federal-state compact can be an effective means of promoting a federal-state partnership in Basin governance and encouraging a heretofore unknown level of uniformity in standard setting and related management activity. Further, it would provide a level of recognition and equality on the part of the states that has never been fully demonstrated via activities under the Great Lakes Water Quality Agreement.

Amendment of the Great Lakes Basin Compact to provide for U.S. federal as well as provincial membership (as originally drafted) is an interesting although politically unlikely alternative to speculate upon. In any event, the application of the federal-state compact device would have a profound impact on existing arrangements (e.g., federal/state implementation of Agreement) and likely supplant (as opposed to complement or co-exist with) the Great Lakes Basin Compact.

Likelihood of Implementation. As evidenced throughout the discussion in this chapter, the difficulty in implementing a given institutional device is directly proportional to the extent to which that device departs from and impacts the status quo. In the Great Lakes Basin, as discussed, the federal-state compact would profoundly impact current arrangements. Coupled with the limited application of the device in other regions and the associated federal attitudes toward such arrangements, application to the Great Lakes in the near term is best described as operationally promising but politically unlikely.

3. ***State-Foreign Power Compact***

Description. A third derivation of the compact device entails that of a state and foreign power; for our purposes a compact between Great Lakes state(s) and province(s). Article I, Section 10 of the U.S. Constitution, while declaring that "No state shall enter into any treaty, alliance or confederation" with a foreign power, does permit a state to enter into an "agreement or compact" with a foreign power. The distinction between these various arrangements, as Zimmerman and

Wendell (1951) indicate, is left in ambiguity: "No clear line of demarcation has ever been drawn. In large part, this is probably due to the fact that during our past history little need seems to have arisen for such agreements between the states and foreign powers." Nonetheless, as explained below, precedent for such an arrangement has been established, and although fraught with legal and political obstacles, it is viewed as a legitimate institutional device.

The application of the state-foreign power compact arrangement to Canadian international relation needs is complicated by the fact that there is no counterpart to that provided for in the U.S. Constitution. However, it is noted that the British North America Act does not specifically prohibit such, provided that the provisions of the proposed compact fall within established provincial jurisdiction. As with the United States, the federal government has tended to discourage direct provincial participation with a "foreign power" via formal arrangements such as a compact.

Operationally, the state-foreign power compact device is not dissimilar to that of the other compact derivations; signatory parties are provided equal stature. The point of departure is in compact enforcement, where the binational nature of the device would pose additional complexity.

Historical Perspective. Due to the uncertain legal status of this device throughout the history of U.S.-Canadian relations, and the significant legal and political obstacles to compact ratification in both countries, this institutional arrangement is rather undeveloped. Nonetheless, there is precedent for such an arrangement; much of it focusing on the Great Lakes. For example, in 1931 the St. Lawrence Power Development Commission of New York state proposed the use of the compact device with Ontario to develop the hydropower potential of the St. Lawrence River. That same year, drastic depletion of the Lake Erie fishery and the attendant failure of a state-provincial administrative agreement prompted the consideration of a compact between Ontario and the states of Michigan, Ohio, Pennsylvania and New York. While neither compact was actually formed (largely due to substantial opposition from the Department of State), its legitimacy as a potential institutional device became increasingly recognized.

The Northeastern Forest Fire Protection Compact, organized in 1949 and joined by Quebec and New Brunswick in 1970, is recognized as the first "unequivocal example of a state-foreign compact." Of the few others established, all involve a single state and province and do not address comprehensive water resource management.

The most significant move in that direction is found in the drafting of the 1955 Great Lakes Basin Compact which, among others, created the Great Lakes Commission. Article II, Paragraph B proclaims:

> "The Province of Ontario and the Province of Quebec, or either of them, may become states party to this compact by taking

such action as their laws and the laws of the Government of Canada may prescribe for adherence thereto."

This language, however, was a focal point of contention by the U.S. Departments of State and Justice, both of whom were wary of usurpation of their authority in relations with a foreign power. In consenting to the compact via P.L. 90-419 of 1968, Congress included in Article IX a Section 2 which excluded such language from consent because it "... purport[s] to authorize recommendations to, or cooperation with, any foreign or international governments, political subdivisions, agencies or bodies."

Also of note was a 1952 bill introduced by Senator Moody of Michigan "which, if enacted into law, would have authorized the states bordering on the Great Lakes by interstate compact to construct jointly with Canada a deepwater channel connecting the Great Lakes and the Atlantic Ocean via the St. Lawrence River" (Naujoks 1953). While the bill was never enacted, it was indicative of the extent of interest in a state-foreign power compact for the purpose of developing and managing the resources of the Great Lakes Basin.

Strengths and Weaknesses. The principal strengths associated with the state-foreign power compact device are as follows:

1) The device provides a means to address region-specific, state-provincial concerns the federal governments might either fail to recognize or lack the motivation to act upon.

2) A strong, binational focus is guaranteed by virtue of the compact's treatment of signatory parties as "equals".

3) Binational compacts instill an element of stature and formality into the management process; signatory parties have an added incentive to gain compliance with shared commitments.

4) This device provides a formal and well-defined mechanism to pursue regional management needs, as compacts of this nature would provide for the establishment of an implementing entity.

Weaknesses associated with this device are largely conjectural, given its historically limited application in Canada-U.S. relations. Several of the more substantial ones are as follows:

1) For a variety of reasons, the two governments have extremely limited prior experience with this institutional form, either in Great Lakes Basin management or in other applications. Hence, its experimental nature lends it a comparative disadvantage to other forms.

2) A state-foreign power compact, and in particular one involving one or more states and provinces as signatory parties, would invariably lead to active opposition by the federal governments. The attendant difficulties in negotiation would likely preclude compact ratification, or at best, permit only a "mild" arrangement with

functions which could be accomplished (with far less political energy) through another institutional form.

3) The enforcement of such a compact would be uncertain, particularly in a state-provincial arrangement where neither signatory party would be bound by the federal laws governing the other. Further, without the federal governments as a signatory party, the states and provinces would be constrained in both developing and honoring commitments in which the federal role is a substantial one.

4) It is unlikely that this device, if instituted, would replace or otherwise supersede binational negotiations at the federal level. Rather, state-provincial arrangements under a compact may either conflict with or delay progress at that level, effectively interfering with the very cooperative management efforts the device seeks to expedite.

Potential Applicability to Great Lakes Management. The concept behind this institutional device is sound, despite the rather substantial obstacles encountered in implementing it. It offers a useful mechanism for binational resource management and program coordination, provided that it gain the support of state, provincial and federal governments and, at least initially, emphasize cooperative management and program coordination as well as centralized standard setting, regulatory and enforcement functions. The latter, while perhaps desirable, would have limited applicability in Great Lakes management until the state-foreign power compact device established itself.

Likelihood of Implementation. The negotiation of a compact with a binational element is unlikely in the foreseeable future; undoubtedly more so than the negotiation of a domestic compact of an interstate or federal-state nature. The arguments set forth by the U.S. Departments of Justice and State in opposing Ontario and Quebec as signatory parties to the 1955 Great Lakes Basin Compact remain salient ones. Both departments would be expected to oppose Congressional ratification of any institutional form threatening, either implicitly or explicitly, their established roles in diplomatic relations with a foreign power.

The negotiation of a state-provincial compact would be particularly ill-advised without the careful review of the current Great Lakes Basin Compact and an investigation of its potential to secure provincial participation in implementation of its terms.

Given the existence of the Great Lakes Basin Compact and those (unratified) provisions calling for provincial participation, it would appear that efforts to secure deletion of the exclusionary provision (Article II, Section 2) would be more productive than any effort to construct a separate state-foreign power compact. Although even this moderate approach would be expected to meet substantial and possibly overwhelming opposition, it would provide an opportunity for productive discourse on the nature of the U.S.-Canadian commitment to Great Lakes management and the roles of the states and provinces in that commitment.

4. *Interstate Council/Commission*

Description. The interstate council/commission institutional form is comprised of any multi-state arrangement formed for the cooperative and coordinated management of a shared resource. While this form technically encompasses interstate compact commissions, it is generally characteristic of less formal arrangements, established via federal legislation, consistent multi-state legislation, multi-state resolution or informal consent.

The interstate council/commission device has, and can be used, in a variety of settings ranging from an ad hoc, issue-specific, advisory role to a permanent, multi-state authority with broad powers. Its distinguishing characteristics are four-fold: 1) a formally articulated (legislative or otherwise) agreement between two or more states to address an issue of shared concern; 2) the formation of an oversight and implementation entity; 3) established procedures to secure the participation and joint decision making of member states; and 4) a level of authority which does not trigger applicability of the compact clause of the U.S. Constitution. The latter characteristic is indicative of the fact that interstate council/commission authority tends not to interfere with federal primacy in domestic and international relations.

Historical Perspective. The use of the interstate council/commission device has been extensive throughout U.S. history, generally applied in those instances where a formal multi-institutional arrangement short of a compact agency is desired. Historically, the range of authority has been pronounced, although a decided emphasis has been in the area of "soft" management, such as coordination, planning, research and similar functions.

This institutional device has long been employed in addressing Great Lakes management needs. For example, an interstate commission was formed in 1908, upon the recommendation of the Mayor of Chicago, to study and report on the Lake Michigan pollution problem. A similar group was formed that same year to address Lake Erie water quality problems. Another example, on a larger scale, is found in the Great Lakes-St. Lawrence Tidewater Association; an organization promoting Seaway development which boasted of twenty-one state members (and Canadian provincial representation) in 1932. Numerous other interstate councils/commissions, generally issue-specific and short-lived, appeared during the first several decades of this century among the various Great Lakes states.

The evolution of the present interstate councils/commissions in the Great Lakes region can be traced to the early 1950's as the development of the Great Lakes/St. Lawrence Seaway system strengthened state ties and highlighted shared interests. As previously noted, the Midwest Governors Conference of the Council of State Governments fostered the eventual establishment of the Great Lakes Commission in 1955. Ten years later, the federal Public Works and Economic Development Act of 1965 was enacted, leading to the creation of the Upper Great Lakes Regional Commission, a Michigan-Wisconsin-Minnesota entity with a

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mandate to promote economic development in disadvantaged areas of their northern reaches. This Commission, in turn, evolved into the Council of Great Lakes Governors, a coordination and advocacy body established in 1982 now comprised of six full members (the six westernmost Great Lakes states) and two associate members (New York and Pennsylvania).

Nationally, the institutional device has long been considered an effective means for interstate coordination and advocacy and, to a lesser extent, regional planning and program management. An example is the Western States Water Council, an eleven-state organization established in 1965 by collective gubernatorial action to "promote cooperation among Western states in planning for programs leading to an integrated development of western water resources." Counterparts are found in numerous other regions. Significantly, the presidentially-mandated demise of the federal-state river basin commission system in 1981 prompted the formation of many successor entities in the form of interstate councils/commissions. These include, among others, the Missouri Basin States Association and the New England Governors' Conference. These developments are indicative of a trend toward increased interest and activity in the formation and operation of interstate councils/commissions for regional resource management.

Strengths and Weaknesses. A review of this institutional form, in practice and in concept, yields several inherent strengths:

1) As an established and oft-used device, the interstate council/commission is a familiar entity to Great Lakes states officials and, as such, is perhaps more readily (and creatively) employed than alternative institutional devices.

2) The interstate council/commission device, because it is not subject to federal or international involvement or approval, is (in relative terms) readily formed. Further, it can be created by a variety of means, such as federal legislation, consistent state legislation or an expression of collective gubernatorial consent, among others.

3) This device, within certain limitations, is highly flexible, providing for collective state action in a variety of management areas. A particularly significant strength is found in its use as a coordinative and advocacy device.

Principal weaknesses relate primarily to the exclusionary nature of the institutional device in terms of both jurisdictional participation and management authority:

1) The interstate council/commission, by definition, excludes full participation at the provincial and U.S.-Canadian federal levels. Hence, it is inadequate, in and of itself, in undertaking comprehensive, Basin-wide planning and management.

2) Powers vested in the interstate council/commission tend to be limited to "soft" management functions; those that do not interfere with or compromise established state or federal roles. Hence, this

device is unlikely to facilitate dramatic departure from the "status quo."

3) Authority, autonomy and institutional resources vested in this institutional device tend to be modest; the effectiveness of the institution is a function of the membership and thereby subject to those limitations.

Potential Applicability to Great Lakes Management. The interstate council/commission device has broad and continued applicability to Great Lakes management, although inherent limitations preclude it from becoming sufficient, in and of itself, for all management functions.

A sustained and perhaps heightened interest in this institutional form is indicated in the rather recent emergence of the Council of Great Lakes Governors as a central figure in Great Lakes management. This emergence is largely explained on the basis of several trends: 1) the emergence of the "new federalism" philosophy and attendant emphasis upon state-level resource management; 2) the recent regional economic recession shared by the Great Lakes states and their desire to collectively address it; 3) a heightened awareness of the potential role of the region's resources in economic recovery and future stability; and 4) an emerging sense of dissatisfaction with other institutions for Great Lakes management and the need for prompt and concerted state-level action.

Given these developments, and in light of historical patterns in Great Lakes management, it is evident that this institutional form will have continued, long-term applicability to Great Lakes management needs. While the aforementioned weaknesses illustrate the limitations this form would pose if it were the only mechanism for Basin-wide management, it is most certainly an essential element in a more complex institutional arrangement. Further, it provides a convenient base to which provincial and U.S.-Canadian federal involvement might be added, permitting evolution toward a more representative and managerially responsible institution.

Likelihood of Implementation. The Council of Great Lakes Governors has established itself as a viable and potent force in Great Lakes management, despite early years marked by an evolving membership arrangement, only partial state financial support, staff turnover and a changing set of priorities brought on by a change in chairmanship. Active gubernatorial involvement, the successful preparation of the Great Lakes Charter and active provincial involvement are three areas of success which appear to overshadow uncertainties and suggest continued growth of the Council's stature in Great Lakes management.

Due to the Council's presence, no other interstate council/commission is expected to emerge in the foreseeable future. The Council's structure and functions, however, may evolve significantly as management needs emerge and other components of the institutional ecosystem are revised or otherwise re-positioned. This evolution is likely to include broadened participation by New York, Pennsylvania and the Canadian provinces, increased emphasis on water quality issues to augment

current work in water quantity, and further attention to regional advocacy.

5. *Federal-State Commission*

Description. The federal-state commission, commonly termed a river basin commission, has numerous distinguishing characteristics: 1) it is a legal entity comprised of state and federal members; 2) it seeks to promote parity between these members; 3) its jurisdiction is determined by hydrologic boundaries; 4) it maintains a permanent and independent staff; 5) in most instances, its functions are oriented towards planning, coordination, research and advisory services; and 6) its decision-making process is generally based on consensus.

This institutional form is a creature of the 1960's; an elaboration of the basin-interagency committee which nonetheless lacks the legal standing and potential authority embodied in the federal-state compact mechanism. The river basin commission device, as authorized in the Water Resources Planning Act of 1965, was applied with great expectations. As Derthick (1974) has observed, this institutional approach has generally failed to live up to its role as a "horizontal organization that cuts across a great many of the other organizational compartments of society and is able to assert a central authority in dealing with all of them." She adds that they are a "good but far from perfect arrangement" which have "done quite well when one applies more realistic standards of performance." Hines and Smith (1973) note that "... despite [their] shortcomings, river basin commissions are arguably the optimal water resource planning institution today."

The river basin commission structure, as set forth in Title II of the Water Resources Planning Act of 1965, provides for the co-equal membership of all states and selected federal agencies with water or related land resource management responsibilities in the basin of concern. In some instances, as with the Great Lakes Basin Commission, an interstate compact commission (i.e., Great Lakes Commission) was afforded membership status as well. An independent commission staff, headed by a presidentially-appointed chairman, provided support services to the Commissioners and "Alternates" appointed for each member state and federal agency.

Four principal activities mandated in Section 202(b) of the Water Resources Planning Act of 1965 (P.L. 89-80) call on the river basin commission to:

> "1) serve as the principal agency for coordination of Federal, State, interstate, local and nongovernmental plans for the development of water and related land resources in its area, river basin, or group of river basins;
>
> 2) prepare and keep up-to-date, to the extent practicable, a comprehensive, coordinated joint plan for Federal, State, interstate, local and nongovernmental development of water and related resources ...

3) recommend long-range schedules of priorities for the collection and analysis of basic data and for investigation, planning and construction of projects; and

4) foster and undertake such studies of water and related land resource problems in its area, river basin or group of river basins as are necessary in

the preparation of the [comprehensive, coordinated joint] plan...."

The creation of a river basin commission under P.L. 89-80 required presidential authorization upon petition of the governors of no less than half of the states located wholly or partially in the basin of concern. The intermediary in the request was the U.S. Water Resources Council, the Washington-based "parent organization" established under the legislation to oversee the functions of the nationwide system of river basin commissions. This system totaled six commissions at the time of its presidentially-mandated demise in September 1981.

Historical Perspective. As embodied in Title II of P.L. 89-80, the river basin commission as an institutional form was the outgrowth of the basin interagency committee approach which gained national favor in the 1940's. The latter, a less potent device emphasizing formal coordination, yielded to the comparatively more formal and authoritative river basin commission concept in the following decade.

The pivotal year in the evolution of the "Title II" river basin commission is generally considered to be 1955, when a Presidential Advisory Committee on Water Resource Policy (comprised of President Eisenhower's Secretaries of Agriculture, Defense and Interior) recommended a nationwide system of river basin commissions, each with similar form and function. Four years later, legislative authorization for such was first proposed in the House Committee on Interior and Insular Affairs, following recommendations by numerous expert study groups and public officials (Derthick 1974). The impetus for the authorizing language embodied in P.L. 89-80 is found in the 1961 study recommendations of the Senate Select Committee on National Water Resources (National Water Commission 1973).

Public Law 89-80 was comprised of three titles; the first establishing the U.S. Water Resources Council; the second authorizing the creation of the river basin commissions; and the third establishing "financial assistance to the states for comprehensive planning grant authorizations". The Great Lakes Basin Commission was established under Title II in 1967, becoming one of eventually six sister organizations (others included the New England, Ohio, Upper Mississippi, Missouri and Pacific Northwest river basin commissions).

Throughout its existence, the Great Lakes Basin Commission maintained an emphasis upon interagency planning and coordination functions, with a lesser involvement in special studies and research in support of

those functions. Through the mid 1970s, the planning emphasis was focused on the development of the Great Lakes Basin Framework Study, a twenty-five volume compilation of data and related information on the physical resource, resource uses, problems, institutional and legal arrangements and planning framework. Following its completion in 1977, the Commission turned toward the development of a Great Lakes Basin Plan, an ongoing, policy-oriented process which produced water quality, hazardous materials, water conservation and wetlands management elements prior to President Reagan's executive order withdrawing the two-thirds federal financial support for the commission and effectively terminating the U.S. Water Resources Council, all river basin commissions and the Title III grant program.

The rationale for termination was linked to both the Administration's desire to trim the federal budget and its perception that basin management is predominantly a state responsibility and should be addressed as such. Paralleling this perception, however, was a growing dissatisfaction with the basin planning process and the rather rigid constraints which prohibited the commissions from being much more than coordinators, facilitators and planners; the products of which were non-binding on members and frequently ignored. This sense of dissatisfaction, generally shared by the states and federal agencies operating in the Great Lakes Basin, lead to the quiet and virtually uncontested termination of the Great Lakes Basin Commission.

The institutional form provided in Title II of P.L. 89-80 has not re-emerged in the Great Lakes Basin (or elsewhere) since 1981. However, it is significant to note that successor agencies have been formed or otherwise designated in virtually every basin formerly addressed by P.L. 89-80. In the Great Lakes Basin, the Great Lakes Commission was designated as such. This development reconfirmed the need for a multi-jurisdictional resource management approach, and indicated the states' collective willingness to pursue it even in the absence of federal financial assistance and participation.

Strengths and Weaknesses. The river basin commission device is, in theory, a highly desirable one for resource management in a multi-jurisdictional setting. Its strengths are found in its potential and its weaknesses in its application. Principal strengths are as follows:

1) The river basin commission device has legal status, permitting co-equal state and federal participation in a stable, structured process.

2) Research, planning and coordination functions are extensive, in most cases well beyond the capabilities of other institutional forms.

3) The financial structure for commission support embodied in P.L. 89-80 (two-thirds federal funds, one-third state funds) provides an incentive for active state participation, as did the availability of Title III planning grants.

4) The funding levels for such commissions are substantial in comparison to other institutional forms, permitting a comparatively large staff to maintain an active planning program and work closely with member states and federal agencies.

5) The use of the hydrologic rather than political boundaries for planning purposes affords greater sensitivity to Basin-specific needs.

6) The river basin commission provides a useful institutional form in those instances where inter-jurisdictional differences/sensitivities preclude a stronger device, such as a compact.

Principal weaknesses of this institutional form include:

1) The basin orientation pertains only to U.S. domestic concerns; the Canadian portion of the Basin is inadequately addressed in planning, coordination and related activities. A provision for formal, co-equal Canadian participation is lacking.

2) The commission's authority is severely limited; it is unable to directly influence state or federal laws and programs by any means other than persuasion. Hines and Smith (1973) observe: "river basin commissions are merely another level of planning superimposed on a governmental pattern in which planning authority was already divided among a number of competing institutions."

3) The consensus decision-making approach, necessitated by the commission's absence of binding authority, tends to "lead to the avoidance of conflict resolution" (Hines and Smith 1973) and the production of "least common denominator" plans and policies.

4) The national system of river basin commissions established via P.L. 89-80 tended to "standardize" the structure and functions of individual commissions, possibly limiting their adaptability to needs and conditions in individual basins.

5) The dependency of the commissions on federal political and financial support lends an air of uncertainty to the stability of this institutional form; a shift in federal policy could have an inordinate impact on its future operation or existence.

Potential Applicability to Great Lakes Management. The river basin commission device, by virtue of its legal standing, multi-jurisdictional membership and strong planning and coordination emphasis, is highly applicable to Great Lakes management needs. This applicability, however, is contingent upon the resolution of the rather substantial weaknesses attributed to the Title II river basin commission structure. Of particular concern is the inadequate Canadian representation in the coordinative and planning processes and the overly "soft" management functions which provide participating jurisdictions little incentive to adhere to promulgated plans. As Hines and Smith (1973) explain, "By refusing to grant regulation, construction and management powers to the river basin commissions, Congress has effectively destroyed many of the

advantages to be gained from water resource planning on the river basin level." Hence, we must accede to the authors' accompanying observation that, "there is little theoretical justification for the creation of a comprehensive river basin planning commission without at least some reorganization of existing agencies and ceding of authority to the new river basin commission." Without the latter, this form is little more than a coordinating agency for existing institutions; a function which can be as easily accomplished by a less elaborate and more easily established institution.

Despite these failings, this device has sufficient potential to warrant its serious review and reconsideration for implementation at a future date. In its present form, it does not adequately address binational resource management needs; it could not stand alone. However, it does provide a fundamentally sound foundation upon which incremental revisions can be made to overcome or otherwise accommodate the various weaknesses previously outlined.

Likelihood of Implementation. The re-establishment of the Title II river basin commission system is highly unlikely in the foreseeable future and most decidedly an impossibility under the present Administration, which was responsible for its demise in 1981. The "new federalism" philosophy, with its attendant shift of regional resource management functions to the states is a continuing trend.

It is conceivable, in the near term, that applicable federal agencies might be invited to strengthen their (observer) role and level of activity in entities such as the Great Lakes Commission and Council of Great Lakes Governors to facilitate enhanced coordination. However, that initiative would almost certainly come from the states. Federally initiated regional management proposals and funding mechanisms would not be expected, nor would they likely fare well in Congress at this time. Given these realities, it is recommended that current efforts at institutional change focus more directly on interstate initiatives and those at the international level.

6. *International Treaty/Convention/Agreement*

Description. Formal binational arrangements between the United States and Canada - particularly the treaty, convention and agreement devices - have long served important roles in Great Lakes management. They compare favorably with other institutional arrangements by virtue of their binational nature, degree of formality and demonstrated contribution to the management effort.

The treaty power constitutes the most potent international legal device two foreign powers can employ to address a common issue. The treaty power is delegated expressly to the President, contingent upon the advice and consent of the Senate. The ratification process is similar in Canada, requiring approval of the Prime Minister with the advice and consent of the Parliament. On the U.S. side, this federal power is pre-emptive: "treaty power can limit, cancel or prevent state water law or its implementation on international waters, and federal authorities may act to prevent this type of state action" (Great Lakes

Basin Commission 1975). The treaty stature is significant in Canada as well, although the pre-emptive status is modified. Bilder (1972) notes that "the Canadian federal government is more limited in jurisdiction than the U.S.; provinces are constitutionally protected from federal intrusion in most aspects of water pollution".

Although the U.S. and Canada have exercised their treaty power numerous times in binational resource management, the 1909 "Treaty between the United States and Great Britain Relating to Boundary Waters and Questions between the United States and Canada" (Boundary Waters Treaty) has long served as the principal vehicle for such. As explained in Chapter Three, that treaty established the International Joint Commission and empowered it with a variety of quasi-judicial, investigative and surveillance/coordination functions.

The convention device is similar in nature, although its legal stature is somewhat less than that of a treaty. It is typically negotiated and signed by federal agency representatives (i.e., U.S. Secretary of State, Canadian Minister of External Affairs), presented to the U.S. Senate and Canadian Parliament for ratification and subsequently ratified by the respective heads of state before entering into force. The convention of note with respect to Great Lakes management is the "Convention on Great Lakes Fisheries Between the United States of America and Canada" of 1955. As also described in Chapter Three, the convention established the Great Lakes Fishery Commission and empowered it to 1) develop coordinated programs of research in the Great Lakes, and on the basis of the findings, recommend measures which will permit the maximum sustained productivity of stocks of fish of common concern; and 2) formulate and implement a program to eradicate or minimize sea lamprey populations in the Great Lakes.

The third item on this continuum of options for international resource management is the agreement. Agreements pertain to formal documents arrived at, and signed by, representatives of the two foreign powers, committing each to the provisions contained within. The U.S.-Canada Great Lakes Water Quality Agreement of 1972, amended in 1978, is of principal concern here. The Agreement, provisions of which are explained in Chapter Three and Appendix A, provides for the development and implementation of programs to control municipal and industrial water pollution sources, largely eliminate discharges of toxic substances, identify various nonpoint sources of pollution; improve surveillance and monitoring, and others.

Historical Perspective. The international treaty/convention/agreement as an institutional device has a long and rich history in U.S.-Canadian relations, both within and outside the Basin and in addressing a range of transboundary issues of which resource management is but one. Use of the treaty device, for example, dates back to the Treaty of Paris in 1783. Some of the more notable applications in Great Lakes resource management include the Boundary Waters Treaty of 1909 and the 1950 Treaty of Niagara Falls. Use of the device has been considered for a variety of purposes, including water quantity and quality management (as in the above referenced treaties) as well as fisheries management, to cite one example. In reference to the latter, note is made of a

proposed, yet never ratified 1908 "Fisheries Treaty between Great Britain and the United States" establishing an International Fishery Commission and framing a code of International Fishery Regulations and Recommendations.

Application of the convention device to U.S.-Canada relations in the Great Lakes dates back to the Rush-Bagot convention of 1817 limiting naval armaments in the Great Lakes. As previously noted, the 1954 Convention on Great Lakes Fisheries Between the U.S. and Canada constitutes at present the leading application of the convention device in a Great Lakes management setting.

The Agreement device - a less formal mechanism - has been applied to Great Lakes management in the Great Lakes Water Quality Agreement of 1972 (amended in 1978). Chapter Three and Appendix A provide additional detail. Chapter Three also touches upon the historical use of memoranda of understanding in bilateral relations between U.S. and Canadian jurisdictions.

Strengths and Weaknesses. For purposes of this analysis, the treaty, convention and agreement devices are considered in a collective sense, as they all constitute formal binational arrangements. These arrangements exhibit several fundamental strengths, each of which confirms the viability of their application to Great Lakes management needs:

1) These arrangements are formal binational statements of mutual commitment signed by ranking officials of both governments. Hence, they have a legal existence and a certain stature in the external affairs considerations of both countries.

2) Although generally lacking in enforcement powers, these arrangements, by virtue of their binational nature, establish an incentive system to encourage compliance.

3) These arrangements generally establish (or are established by) an implementing agency, thus ensuring continued oversight and pursuit of stated objectives.

4) Although vested with limited authority, present arrangements (e.g., Boundary Waters Treaty of 1909, Fisheries Convention of 1955, Great Lakes Water Quality Agreement of 1978) are, in comparative terms, amenable to ecosystemic management approaches. In many instances they have provided the legitimizing authority for innovative management ideas. A case in point is the Great Lakes Fishery Commission's Joint Strategic Plan for Management of the Great Lakes Fisheries, prepared in 1982 consistent with the provisions of the 1955 convention.

5) By virtue of their formality and binational nature - and perhaps the political ramifications of both - these arrangements tend to be stable and long-lived. As a consequence, they experience a maturation process unknown in the more dynamic and unsettled arena of interstate arrangements, for example. This explains, in part, the substantial level of sustained interest in these arrangements

and an equally substantial body of literature examining their intent, their performance and their respective strengths and weaknesses. In the Great Lakes management arena, such interest is unparalleled by any other institutional form.

In many respects, the perceived weaknesses draw from the very characteristics which reflect strengths of this arrangement. This observation correctly leads one to the observation that the arrangement itself is fundamentally sound but in need of some redirection or extended application.

1) Binational arrangements such as the treaty, convention and agreement are particularly sensitive political statements and, as such, are established only rarely and typically after rather laborious and time-consuming negotiation. Revisions are subject to the same realities, although on a lesser scale. Hence, this type of arrangement is not viable as a "quick fix" solution to a pressing regional issue.

2) As indicated earlier, these arrangements tend to usurp little authority from the two governments; their "hard" management responsibilities (e.g., regulation, enforcement) are generally quite limited. While governmental compliance with provisions is encouraged by political incentive, compliance is nonetheless voluntary under most arrangements.

3) The operation and performance of binational arrangements at any given time is a function of the two federal governments and their respective policies on resource management issues and foreign affairs. While the arrangements themselves tend to outlive administrations, the means by which those arrangements are implemented do not.

4) These arrangements constitute a "top-down" management approach, and are frequently criticized for their inability or unwillingness to secure meaningful participation at the sub-federal governmental level. State and provincial involvement has improved dramatically in the last decade, but local, citizen and private interest involvement has been minimal or non-existent.

5) The treaty, convention and agreement devices require an oversight agency to provide ongoing implementation services. In many instances, political realities prevent such agencies from exploiting the full potential of the binational device they draw their authority from. Hence, the full potential of such devices remains unrealized.

<u>Potential Applicability to Great Lakes Management</u>. The binational treaty/convention/agreement device has time-tested applicability to Great Lakes management. These devices provide several positive management characteristics conspicuously absent from most other arrangements: most notably a binational focus, stability, longevity, legal formality and adaptability to emerging management needs.

While the various devices presently in place do have their limitations, political and institutional barriers to their full implementation are the principal constraints. Zile (1974) confirms this observation in his finding that, "none of the [International Joint] Commission's constituent jurisdictional documents needs revision as a condition to pragmatic progress toward improved ... management practices." He adds that "the perceived inadequacies of the Commission are traceable to the unwillingness of the parties to utilize what they already have rather than to a lack of linguistic embellishment on the sparsely worded treaty framework."

The treaty/convention/agreement device, then, is found to be an effective management tool for establishing the legal basis for binational efforts and authorizing an implementing agency to carry them out. Those presently in use (Boundary Waters Treaty of 1909, Convention on Great Lakes Fisheries (1955) and the Great Lakes Water Quality Agreement of 1978) have, despite their oft-discussed limitations, shown remarkable foresight and flexibility in adapting to emerging needs. As such, they provide a solid basis for future refinements.

Predominant limitations with this device pertain to 1) the virtual absence of "hard" management authority and the attendant reliance upon the two governments to secure compliance; 2) the tendency of governments to selectively attend to provisions without investigating their collective potential; and 3) the operational limitations of the binational institutions charged with implementing those provisions. Attention to these limitations would strengthen an already significant role for the binational treaty/convention/agreement in Great Lakes management.

Likelihood of Implementation. As indicated earlier, the treaty, convention and agreement devices have been applied in a Great Lakes management setting for some time, with each application remaining stable and relatively unchanged for a significant period. While some level of dissatisfaction has accompanied these devices throughout their application, all can be expected to remain in force for some years to come.

The Boundary Waters Treaty of 1909 has long provided the fundamental reference point for U.S.-Canadian transboundary relations, being amended only once since its enactment (1963). It is likely that its interpretation will vary in future years, as it has in the past, but neither government has indicated that renegotiation or revision is in order. Similarly, the fundamental premise of the Convention on Great Lakes Fisheries has been accepted since its ratification in 1955. Although there has been some effort in Congress in recent years to alter the appointment process and selected procedural arrangements of The Great Lakes Fishery Commission, the intent of the convention and its mandate to the Commission have remained intact and are expected to continue to do so.

The U.S.-Canada Great Lakes Water Quality Agreement has, in relative terms, been susceptible to substantive change. The 1978 amendments, as

explained in Chapter Three, constituted a fundamental shift in emphasis in water quality programs. As mandated in the present Agreement, a review by the parties is required following the third biennial report to the International Joint Commission. This review began in earnest in 1986 and will continue well into the following year. A full renegotiation appears unlikely at present and is actually opposed by much of the Great Lakes policy community as well as environmental groups who fear that renegotiation may lead to a weakened Agreement, given the environmental philosophies espoused by the two governments. However, the substantial level of interest in the ongoing review will undoubtedly result in some programmatic modifications and new interpretations to the Agreement.

Beyond the immediate future - perhaps five to ten years from now - one might conjecture that the present Agreement will be renegotiated (or a new one signed) to address water quantity considerations as well as water quality considerations. The report of the IJC's Diversions and Consumptive Uses Study Board, the signing of the Great Lakes Charter, the actual and anticipated proposals for diversion of Great Lakes water, among others, may well provide the impetus to bring water quantity considerations under the provisions of a new or renegotiated Agreement.

7. ***Federal Regional Council***

Description. In its broadest sense, the federal regional council as an institutional device would include any federally initiated and federally controlled council, commission, board or committee charged with issue-specific authority on an interstate or national basis. Of the literally hundreds of such arrangements - past and present - some of the better known at the national level include the U.S. Water Resources Council; Council on Environmental Quality; National Water Commission; Outdoor Recreation Review Commission and the National Advisory Committee on the Oceans and Atmosphere. In Canada, the Federal Inquiry on Water Policy served a role somewhat similar to that of the National Water Commission. Further, the Interdepartmental Committee on Water has served for some time as a coordinative device for 20 federal departments and agencies with a water resource management interest. At the Great Lakes regional level, examples include the Upper Great Lakes Regional Commission and the Indiana Dunes and Pictured Rocks National Lakeshore Advisory Commissions. At the international level, numerous arrangements exist, including the boards of control for Great Lakes water levels and several transboundary air pollution boards and committees under the auspices of the International Joint Commission.

Federal legislation and the presidential Executive Order are the principal mechanisms for establishing these arrangements. A review of the spectrum of these arrangements finds that most are advisory or coordinative in nature, applied at both the national and regional level, relatively short-lived, focused upon a specific resource management or economic development objective, and as federal instruments, closely tied to the policies of the administration under which they operate.

Within this broad category, the institution with the most significant demonstrated (or at least potential) impact for the Great Lakes region was the Upper Great Lakes Regional Commission (UGLRC). Formed under the authority of Title V of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3121), the UGLRC was formally organized in April of 1967, consisting of 119 Michigan, Minnesota and Wisconsin counties. The objective of the Commission was to develop long-range, comprehensive programs for regional economic development, coordinate federal and state economic development programs and promote increased private investment in the designated counties. The governors of the three states comprised the membership, along with a federal co-chairman. A parent agency, the Federal Advisory Council on Regional Economic Development, provided policy guidance and coordination among the commissions nationwide. Constrained by budgetary limitations and perhaps an inordinately low profile nationally and regionally, the UGLRC had only a limited role in the Great Lakes management arena by 1982, when the national system of regional development commissions was disbanded by Executive Order. The remnants of UGLRC became the foundation for formation of the present Council of Great Lakes Governors soon thereafter.

Historical Perspective. The conceptual basis of the federal regional council has been well established in the United States since the late nineteenth century. The popularized use of this device might be credited to Theodore Roosevelt's administration, which was active in promoting basin-oriented water management, although with a predominant federal presence. In transmitting the 1908 report of the Inland Waterways Commission to Congress, Roosevelt stated, "Each river system from its headwaters in the forest to its mouth on the coast is a unit and should be treated as such." This philosophy was reflected in later initiatives of that administration, although adoption at the institutional level was "rather slow to gain acceptance...." (Missouri Basin States Association, 1983).

The federal regional council concept enjoyed the peak of its acceptance during the "New Deal" years of Franklin D. Roosevelt, when a variety of federally controlled regional committees and commissions were established under the auspices of agencies such as the National Resources Committee and the National Resources Planning Board. In the tradition of federalism, the federal government was reticent to delegate significant authority to the states, although regional, multi-jurisdictional management was being legitimized. Later years saw a progression to more complex regional arrangements with enhanced state involvement. As Allee et al (1975) explain "...there has been a national strategy of evolving coordinative arrangements along interagency, intergovernmental and river basin lines. Our history goes back to the 1930's with the National Resources Planning Board, to the several predecessors of the present Water Resources Council, to TVA, the basin interagency committees, to the various interstate compact commissions and the present Title II planning commissions."

In more recent years, the federal-state "partnership" approach to resource management has been widely accepted, and the federal regional

council approach is only rarely applied in the traditional "top-down," hierarchical manner.

Strengths and Weaknesses. The federal regional council approach has historically been used as a coordinative device among federal agencies to facilitate joint action on a given national issue or a particular regional concern. Generally speaking, this institutional form has neither sought (nor exhibited) the characteristics (i.e., scope, authority, management focus) necessary for comprehensive resource management needed to address Great Lakes Basin-specific concerns. Consequently, the argument against this device as a principal mechanism for Great Lakes management is a strong one. It lacks adequate state and provincial participation and policy input; it is largely limited to advisory and coordinative services as opposed to planning and management; and it tends to focus upon issue-specific rather than comprehensive resource management concerns. In those instances where this institutional form does focus on a given region, that focus is largely predetermined at the federal level and may not reflect the particular needs of the region at hand. The Title II river basin commissions and Title V regional development commissions were both subject to this latter tendency.

From a positive perspective, the federal regional council does provide a focus on regional issues and concerns which might otherwise be fragmented among multiple agencies or ignored altogether. Further, it provides a conduit for transmitting them to the federal agency and Congressional levels. While a comprehensive regional management role for the federal regional council is neither intended, desired nor politically possible, it does serve a role in investigating natural resource issues with regional implications. The Outdoor Recreation Resources Review Commission and the National Water Commission are two cases in point.

Potential Applicability to the Great Lakes Management. As discussed, the principal weaknesses of this institutional form are significant, rendering it inapplicable for a lead role in Basin management. It could, however, serve an ancillary role, such as coordinating federal agency input into a lead institutional form such as an international river basin commission. In such a scenario, the federal regional council approach would have applicability in both a U.S. and Canadian setting.

Likelihood of Implementation. The present U.S. administration is attempting a studied withdrawal of the federal presence from many facets of the Great Lakes management effort. As a consequence, it is unlikely that any new federal regional council with substantive responsibility would be established - or even advocated - in the near future. Any such arrangement would likely face strong opposition from state, provincial and citizen group interests whose long-standing skepticism for federal primacy in regional management continues. A similar set of circumstances is found with the present federal government in Canada.

While a distinct institutional form such as a new federal regional council, commission or board is unlikely to be implemented in the foreseeable future, it should be noted that other coordinative initiatives at the federal level are under way in the Great Lakes Basin. Current examples are the U.S. House and Senate amendments to the Clean Water Act which, among others, establish the U.S. Environmental Protection Agency's Great Lakes National Program Office as the lead U.S. federal agency for implementing the Canada-U.S. Great Lakes Water Quality Agreement and create a new Great Lakes Research Office within the National Oceanic and Atmospheric Administration. Both initiatives depart from the strict definition of the federal regional council form in that they recognize the importance of the role of the states and the Canadian federal government and provinces in the management effort.

8. *Federal Regional Agency*

Description. Although similar in name to the preceding institutional form, the federal regional agency is distinctly different. It pertains to a single federal agency with broad and comprehensive resource management authority over a specified geographic area. The agency is vested with pre-emptive powers over many standard state/provincial level responsibilities and enjoys a special federal status which affords it more flexibility and autonomy than other federal agencies. In brief, it is a self-sufficient agency: wielding adequate authority to pursue programs without the extensive reliance upon either the legislature or the federal bureaucracy which typifies virtually all other federal entities.

A description of this institutional form is, in essence, a description of the Tennessee Valley Authority (TVA). The TVA is generally acknowledged as the only true example of a federal regional agency (Task Force on Institutional Arrangements for River Basin Management, 1967). Given its broad authority and frequent consideration as a model for the Great Lakes Basin and other regions, a brief descriptive statement is warranted at this time.

The Tennessee Valley Authority Act of 1933 established the TVA as an autonomous federal entity with broad authority for water resource management and economic development in a seven state region. Specifically, it is mandated "to improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama." The extent of TVA's authority is summarized in a 1970 report prepared by Booz, Allen and Hamilton:

> "The TVA Act provided for the integrated use of all water resources of the Tennessee Valley Region. It also contained a comprehensive authorization for the construction of projects on the Tennessee River and outlined a fully developed power policy. The statute set the broad goal of physical,

> economic, and social development, and the improvement of the area as a whole. In connection with this goal it provided a general assignment to develop the Tennessee River, leaving the details to TVA."

These "details" involve broad planning, financing, operating, regulating or construction responsibilities in the areas of public water supply; industrial water supply; water quality control; flood control; hydroelectric power; watershed and economic development; recreation, fish and wildlife; and navigation and ports. Although coordination and cooperation with federal and state agencies is essential to the accomplishment of the TVA mandate, the TVA unequivocally has leadership authority; an authority unmatched by any other federal entity.

The TVA's federally appointed board enjoys more autonomy and flexibility than other government agency heads. The TVA Act empowers it to "direct the exercise of all powers of the Corporation." These include: establishing general policies and programs; establishing an organizational structure to carry them out; reviewing and evaluating organizational progress toward goals; and approving annually all programs and the budget. The TVA staff presently numbers approximately 15,000 employees.

Although application of the federal regional agency approach has been limited to that of the Tennessee Valley, one might speculate upon the immensity of the task in the Great Lakes Basin - an area six times as large with an international element, a more diversified resource base and a more complex institutional framework. As will be discussed, a unique and perhaps unreplicable set of circumstances permitted TVA to become a reality. However, numerous institutional characteristics do have direct applicability to the Great Lakes management effort.

Historical Perspective. The history of the federal regional agency form is a history of the Tennessee Valley Authority. Most scholars agree that the 1933 TVA Act was the culmination of a unique series of events, acting in unison, to produce perhaps the greatest "institutional experiment" in regional resource management and economic development in North American history. As identified by Derthick (1974) and others, the more significant circumstances included:

1) the severity of a national economic depression which prompted unprecedented measures for recovery;

2) the pronounced poverty of the region and the incapability of the affected states to develop an abundant resource base;

3) the existence of substantial federal properties at Muscle Shoals, including a munitions plant and dam no longer needed for their original purpose;

4) a federal administration which actively supported large-scale public works;

5) the personal interest of President Franklin Roosevelt;

6) a "bureaucratic vacuum" which found no federal agencies with active, high priority programs in the region; and

7) the confusion of the "Hundred Days" in Congress which shielded the full ramifications of the TVA Act's provisions from full review and debate.

In acknowledging this unique set of parallel events, Derthick (1974) observed that "the creation of TVA appears as a singular event in American political process."

Nonetheless, the TVA has been regarded as a model for regional resource management and development, and efforts to duplicate it have been persistent although unsuccessful. Every year for almost twenty years after passage of the TVA Act, bills were introduced in Congress for similar institutional arrangements in other regions. On only three occasions (1937, 1945, 1949) was a bill granted a hearing; only once (1945) was such a bill reported out of committee and, on that occasion, received an unfavorable recommendation.

The application of this institutional form to the Great Lakes Basin has often been discussed and even advocated by various interests. It has not, however, received serious consideration at the Congressional level, where more modified proposals have had more political salience.

Strengths and Weaknesses. The Tennessee Valley Authority is one of the most extensively analyzed regional institutions in the United States and perhaps North America. From the various reviews and performance evaluations it has received, it is possible to highlight the more significant strengths and weaknesses relevant to the federal regional agency as an institutional form.

The preponderance of institutional strengths are a consequence of the broad authority vested in the federal regional agency:

1) a strong centralized authority and comprehensive authorization tends to avoid problems of interagency cooperation, as the agency itself assumes most federal functions;

2) a liberal federal authorization grants the agency sufficient autonomy and flexibility to establish and pursue specific goals and respond quickly and authoritatively to emergent needs;

3) a favored relationship with the federal government and the Congress permits the agency (at least in the case of TVA) to bypass much of the laborious authorization and appropriations process and proceed instead with established, long-term plans;

4) the broad management authority for resource management reduces reliance upon cooperative arrangements with other agencies and internalizes (to a degree) coordinative functions. A strong role

for the agency's board of directors is capable of ensuring intra-agency program coordination. Lillienthal (1944) explains, with reference to TVA:

> "There was ... nothing particularly novel about the individual tasks entrusted for execution to this new agency. There were long-established precedents for government activity in flood control and navigation, in forestry and agriculture, and in research. Public power systems were not an innovation. The new thing about TVA was that one agency was entrusted with responsibility for them all, and that no one activity could be considered as an end in itself."

5) the agency's broad powers permit it to follow a given initiative from the conceptual to implementation stage, thereby reducing the tendency toward delay, redesign or variant interpretation commonly observed in cooperative, multi-jurisdictional efforts;

6) as in the case of TVA, the agency has access to, or the ability to generate adequate organizational resources to pursue its mandate. Rather than rely solely upon federal appropriations, authority exists to direct revenue from sales (such as hydroelectric power) into organizational funds for operation and construction.

As with its strengths, weaknesses associated with this institutional form are a consequence of the breadth and authority vested in a single federal agency:

1) the irreplicable nature of a TVA-like institution is a principal weakness of this institutional form. It is apparent that careful organizational planning is a necessary but insufficient condition; a variety of circumstances occurring in an amenable political climate must occur;

2) centralized authority such as that embodied in a federal regional agency may lead to one or both of the following undesirable events: 1) a strained relationship with subordinate political jurisdictions; and/or 2) an exaggerated reliance upon the federal regional agency by those subordinate jurisdictions. Both events can reduce management efficiency through failure to fully utilize all available organizational resources;

3) consolidation of broad management functions within a single agency does not unequivocally eliminate inter-agency coordination problems; many of them become intra-agency problems. Further, the agency's actions are less subject to a system of checks and balances afforded by shared management authority. Care must be taken, for example, to ensure that resource planning activities are pursued in earnest rather than to justify some predetermined development measure the agency had long subscribed to from an intuitive or political standpoint;

4) it is unlikely that this institutional form could adequately embrace Canadian interests to make it an acceptable mechanism for binational Great Lakes management. Although a parallel agency on the Canadian side would be one option, it is unlikely that the nature of federal-provincial relationships would permit it. A more viable option would be an international institutional form in which both federal governments vest authority in a third, relatively independent entity.

Potential Applicability to Great Lakes Management. As described, the federal regional agency device has at least two rather fundamental characteristics which would appear to limit its applicability to Great Lakes management. These include the "top-down" management approach which limits the role of governmental jurisdictions at the sub-federal level and constraints in application in a binational setting. Beyond these, however, it is apparent that the selective application of identified strengths could benefit the Great Lakes institutional framework. The federal regional agency form provides a means of overcoming (or at least addressing) long standing problems in Great Lakes management such as inter-jurisdictional coordination; an unsettled and poorly financed federal role; regional institutions with coordinative and advisory, but no implementation authority; and ill-defined and occasionally overlapping institutional mandates.

It is unrealistic to believe that this, or some related form of "superagency," might solve all the ills of the present Great Lakes management effort. Yet, the Great Lakes policy community would do well to study this form, identify desirable characteristics and explore the means to their incorporation into the existing management framework.

Likelihood of Implementation. As emphasized in earlier discussion, the application of a TVA-like institution in the Great Lakes Basin - barring extenuating circumstances of unprecedented magnitude - is perhaps the least likely of any of the institutional options discussed. Yet, some elements of this device are likely to be implemented under more moderating circumstances. Recent years have witnessed increased concern - at all levels of government - with the fragmented nature of Great Lakes management. In 1985, amendments to the U.S. Clean Water Act were offered providing codification of federal agency responsibilities. In that same year, the Great Lakes Charter was signed and the Council of Great Lakes Governors emerged as a lead regional agency on key issues. Several states established Great Lakes-specific offices or otherwise re-structured the nature of their participation in interstate management efforts. This trend can be expected to continue, and perhaps culminate in a single lead agency with broad planning and coordination functions. The federal regional agency form is most assuredly not a logical outcome of such a trend, but its positive attributes can serve as something of a model upon which this trend can focus.

9. ***Basin Interagency Committee***

Description. The Basin Interagency Committee is an institutional form established in the 1940's as "the first real attempt at comprehensive

river basin planning" (Hines and Smith, 1973). It is an extraordinarily informal arrangement among federal and state agencies with an interest in a given basin. It typically has no statutory mandate, permanent independent staff or authority to implement basin plans. It serves exclusively as a communication and coordination device, or forum, for convening the various governmental units, coordinating the plans of those units into an overall basin development plan, and monitoring its implementation. Member state and federal agencies designate representatives to the basin-interagency committees, and due to the lack of a budget or staff, share responsibility for technical support.

Historical Perspective. The emergence of this institutional form is attributed to 1943 with the establishment of the Federal Interagency River Basin Committee (FIARBC). The FIARBC came into being via an agreement among the Departments of Agriculture, Interior and War, the Federal Power Commission, and later the Departments of Commerce, Labor and the Federal Security Agency. The objective was to "serve as centers for communication among federal agencies concerning their respective plans" for various river basins (Hines and Smith, 1973). The FIARBC was the successor institutional form to the National Resources Planning Board when the latter was abolished in 1943.

During the period 1945-1950, six inter-agency river basin committees were created nationwide. Comprised of federal and state agency representatives, the informality and flexibility of this arrangement permitted each committee great latitude in addressing its mandated objectives. The record of accomplishment and level of state and federal participation varied significantly from one committee to the next. The Missouri River Inter-Agency Committee has been singled out as a particularly active and comparatively successful arrangement (Hines and Smith, 1973, Missouri Basin States Association, 1983). The FIARBC gave way to the Inter-Agency Committee on Water Resources during the 1950s; an agency which was subsequently replaced by the U.S. Water Resources Council in 1965. Nonetheless, several of the Basin Inter-Agency Committees have persisted, remaining in operation today in the Arkansas-Red-White River basins and in the southwest and southeast United States.

Strengths and Weaknesses. The Basin Interagency Committee, as the first large-scale attempt at federal river basin management, is the predecessor of the river basin commission movement initiated in earnest two decades later with the passage of the Water Resources Planning Act of 1965. While the Basin Interagency Committee approach might be considered primitive by present standards, it did possess several strengths that warrant serious consideration:

1) This institutional form is informal and flexible and, due to the absence of a staff or budget, avoids the complications endemic to even the smallest of bureaucracies. It is a forum that can be used as needed and, in periods of non-use, generate no expenses or political liabilities for its participants.

2) The informal, non-binding nature of the Basin Interagency Committee permitted a federal-state dialogue of a more equitable nature than previously permitted in other institutional forms. Thus, it helped promote the "partnership" approach to river basin management and laid the groundwork for the system of river basin commissions.

3) The states found the Basin Interagency Committee approach preferable to the more structured river basin commission arrangement because federal involvement was less threatening and greater opportunities existed for states to exercise their collective influence. Hines and Smith (1973) elaborate: "It is very possible that the states ... prefer the Interagency Committees simply because their power in these institutions, however slight, is a known entity, whereas the consensus-making mechanism of the river basin commissions is feared due to the unknown nature and extent of the federal power involved."

While the simplistic and non-binding nature of this institutional form does have its attraction, the informality and relative impotence suggests serious drawbacks when one examines its potential for comprehensive basin management:

1) Structurally and operationally, the Basin Interagency Committee can do little more than provide a forum for coordination and communication among jurisdictions and monitor their individual and collective efforts in basin management.

2) This form lacks an incentive system for active participation and therefore is easily disregarded when inter-jurisdictional conflicts arise or when its actions or recommendations inconvenience its members.

3) Lacking a budget and staff, as well as recognition as an "official" regional agency, the Basin Interagency Committee tends to monitor plans and management trends rather than initiate them. Thus, the much needed "leadership factor" is absent.

Potential Applicability to Great Lakes Management. In the Great Lakes Basin, the functions performed under the Basin Interagency mechanism have long been assumed by other institutional forms and, by most accounts, are adequately addressed today. Note, for example, the federal role in the (former) Great Lakes Basin Commission and the present coordinative arrangements through the Great Lakes Commission. Indeed, the coordinative aspect of the current institutional framework in the Great Lakes - at least in theory if not in practice - is considered a strength. Thus, the Basin Interagency Committee as an institutional form does not have direct applicability.

Likelihood of Implementation. Since the functions of this institutional form are presently provided for, the institution of a new coordinative mechanism is not likely to be advocated. There is a decided interest in recent years to better clarify and coordinate federal agency roles in Great Lakes management, but it is likely that this will be accomplished through legislative revision and established

coordinative approaches rather than by an institutional form approximating the Basin Interagency Committee.

10. *Intrastate Special District*

Description. This institutional form pertains to any unit of local government authorized under state law to perform some type of water and land resource management on a watershed basis. The variance within the institutional form is pronounced, ranging from large river basin authorities with comprehensive powers to smaller, issue-specific authorities, such as conservancy districts, flood control districts, sewer districts or planning commissions. Functionally, authority can range from coordinative and advisory services to those with project construction and financing powers. The common theme is state (provincial) authorization and resource management on a hydrologic basis. In certain instances, adjacent districts have established formal linkages, by interstate compact or otherwise, to coordinate efforts within a given basin.

The Miami Conservancy District, located in southwest Ohio, is commonly referenced as one of the earliest and most successful of intrastate special districts. Established in 1914 under the provisions of the Ohio Conservancy Act of that same year, the District constituted an institutional response to a devastating flood occurring the previous year. Originally granted only flood control powers, its activity was expanded in 1953, permitting the creation of subdistricts to address streamflow, water supply, water conservation and water quality matters, among others. The District, over the years, has developed a reputation for its watershed planning and management capabilities.

Other examples of intrastate special districts include the Grand River Dam Authority in Oklahoma, the Sabine River Authority in Louisiana and a series of districts in Texas, including the Upper, Central and Lower Colorado River Authorities, the Colorado River Municipal Water District and the Sabine River Authority. In Texas, a complex set of statutes govern institutional arrangements for intrastate water management (Booz, Allen and Hamilton 1970). In fact, eleven types of water districts are permitted, each addressing one or more of the following: water improvement; levee improvement; navigation; water power control; water supply; water control and preservation; underground water conservation; water control and improvement; fresh water supply; conservation and reclamation; and drainage.

As noted in Chapter Three, a comprehensive system of conservation authorities exists in Ontario's portion of the Great Lakes Basin; provincial/municipal partnerships mandated to conserve, restore, develop, and manage the natural resource base.

An additional variation on this institutional form - and one with particular relevance to the Great Lakes region - is the linked intrastate special district. In such an arrangement, two or more distinct districts join forces via contractual arrangement or interstate compact, to jointly pursue management of a shared river basin.

Such is the arrangement with the Sabine River Authorities of Louisiana and Texas.

Historical Perspective. As a localized arrangement, this institutional form did not have a distinct origin, but appears to have emerged in numerous states during the early decades of the twentieth century. As previously noted, the Miami Conservancy District, established in 1914, is considered one of the earliest examples. The 1920s and 1930s saw pronounced institutional activity as well, much of it in southern and southwestern states.

Intrastate institutions for watershed management have become well established, in a variety of forms, in the Great Lakes Basin. Watershed councils, regional planning agencies and (in Ontario) regional conservation authorities are pervasive. Although their authority tends to be much less pronounced than that generally available in the southern/southwestern state special districts, their influence at both the state/provincial and regional levels is substantial.

An extensive system of formal linkages is not observed in the Great Lakes Basin. Within a given state or province, there is some level of coordination among districts, but due to their limited management authority an "official" sharing of powers over a given watershed or sub-basin is not the norm. The geographic coverage and level of coordination among conservation authorities in Ontario is the most extensive linkage arrangement in the Basin. Further, there are no instances of interstate compacts between two or more contiguous districts within the Basin.

Strengths and Weaknesses. At the basin or watershed level within a given state, the intrastate special district has numerous positive characteristics which establish it as a preferred mechanism for resource management on a hydrologic basis. When extended to a larger basin, such as that of the Great Lakes, these positive characteristics are tempered by the realities of a complex, multi-jurisdictional (and international) management framework. Yet, the intrastate special district does boast several strengths well worth considering in the Great Lakes Basin setting:

1) This institutional form provides substantive local input and control over watershed management and, by virtue of its mandate, exhibits the flexibility necessary to adapt to evolving needs. The "top-down" management approach which typifies most other institutional arrangements is avoided.

2) State authorization provides the district with a statutory basis, and the authority granted can be quite broad, including project planning, construction and financing, among others. Thus, the intrastate special district appears to promote a more comprehensive resource management approach than that observed in more geographically expansive institutions.

3) The linkage of two or more districts, by contractual arrangement or interstate compact, effectively increases institutional resources and authority without sacrificing sensitivity to localized needs. If such linkages could be extended Basin-wide in a workable fashion, a regional institutional arrangement far superior to any now in operation would be the observed outcome.

When application of this institutional form to the Great Lakes Basin setting is considered, several significant weaknesses emerge:

1) To provide Basin-wide management, a linked intrastate special district arrangement would have to extend throughout the Basin. This would undoubtedly require formalized arrangements and co-ordination mechanisms among hundreds of districts in both the U.S. and Canada. Further, new districts would need to be established in areas presently lacking them. The administrative complexity would be exceeded only by the political/legal difficulties in securing the innumerable contractual agreements between the districts.

2) Although the special district does provide a desirable "bottom-up" management approach, it is unlikely that the "big picture" (i.e., Basin-wide perspective) can be maintained, even with extensive linkages between them. Some type of "parent" agency similar to the U.S. Water Resources Council/Title II river basin commission arrangement would be needed. This, however, would add to institutional complexity and, by creating an additional coordinative layer, compromise the localized orientation of this institutional form.

3) As noted throughout earlier discussion, "traditional" political jurisdictions (i.e., state, provincial, federal agencies) are reluctant to vest any significant portion of their authority in a regional body. Hence, it is unrealistic to envision a Basinwide arrangement of linked special districts with comprehensive resource management authority. Such an arrangement would undoubtedly enjoy more authority than present regional institutions in the Basin, but close coordination with, and reliance upon political jurisdictions would continue. The operational demands in maintaining an extensive system of linked special districts might very well outweigh the benefits.

Potential Applicability to Great Lakes Management. The aforementioned problems with the establishment and operation of an extensive system of linked special districts severely limits the applicability of this institutional form to Great Lakes management needs. Conceptually, however, the arrangement has merit, and selected features should be considered for incorporation into the current Great Lakes institutional framework. These include: sensitivity to localized concerns in Basin planning and management; joint institutional ventures as a means to extend limited organizational resources; and acquisition of state or provincial authorization for comprehensive management authority at the watershed/sub-basin level.

A good portion of the institutional framework for applying these concepts is presently in existence in the form of the various conservation districts and authorities scattered throughout the Great Lakes states and provinces. An effort to document their individual authority and collective potential under various Basinwide arrangement scenarios is warranted.

Likelihood of Implementation. The political incentives and motivation for establishing a Basin-wide system of linked special districts are not present. As history indicates, the localized management approach may emerge as a "grass roots" philosophy, but political and financial support from the upper levels of government is generally required to translate this philosophy into action.

Two scenarios within the realm of possibility emerge. The first would entail some type of loose coalition of watershed and other intra-state/intra-provincial special districts; perhaps a regional counterpart to the National Association of Conservation Districts. Information exchange, education, voluntary cooperative efforts and state/provincial/federal grants might provide the incentives or inducement for collective attention to Basin-wide management needs. The second scenario might find a re-emergence of the Section 208 planning approach embodied in the U.S. Clean Water Act and vigorously pursued in Basin states in the 1970s. Section 208 provided for a Basin-wide system of planning agencies (often regional planning commissions) and provided federal financial support for the development and implementation of resource management plans with specified guidelines.

Of these two scenarios, the former is more likely given the prevailing political climate. In any event, the "new federalism" philosophy will result in a renewed focus on localized resource management, whether the necessary incentives and resources are available for responding to it or not.

11. ***Single Federal Administrator***

Description. As its name implies, this institutional form pertains to any arrangement in which a single, federally appointed administrator is vested with decision-making authority over the use and management of a given resource or set of resources within a specified geographic area.

The only current example of such an arrangement on a broad scale is considered to be the administration of the Colorado River by the Secretary of the Interior. This arrangement is admittedly a unique circumstance arising out of a 1963 decision of the U.S. Supreme Court which legitimized the use of the Congressional apportionment method to allocate the waters of a given water body among and within states during periods of shortage. In the case of the Colorado, the Secretary of the Interior has been delegated this authority. The Secretary exercises broad discretionary authority under the provisions of enabling legislation and the Colorado Compact.

Extending the parameters of this arrangement somewhat, we can point to administration of the Lake Michigan diversion at Chicago as a possible example. From the 1920s to present, the U.S. Supreme Court has used a "Special Master" arrangement to oversee the operation of the diversion (Naujoks, 1953). While the extent of the Special Master's autonomy is not as extensive as that afforded the Secretary of Interior in the example cited earlier, it does provide one with a sense of this institutional arrangement.

Historical Perspective. As the aforementioned Colorado River arrangement is generally considered the only true example of the single federal administrator form, the history of this institutional form dates back only to 1963. The circumstances leading to its establishment were unique (i.e., issue specific). Prior to the 1963 Supreme Court decision, the only two mechanisms for apportionment of shared water resources between multiple states were by interstate compact or litigation (Booz, Allen and Hamilton 1970). The third arrangement - Congressional apportionment - was devised as a solution to a problem other arrangements could not adequately address. A similar argument might be made for the "Special Master" arrangement for the Lake Michigan diversion at Chicago.

Strengths and Weaknesses. This institutional form presents the extreme example of centralized, authoritative, "top-down" management, constituting a radical departure for past and present Basin management practices. In a Great Lakes Basin management setting, the positive attributes would be the reduction in institutional complexity, definitive decision making and the provision of an undisputed "leader" for policy direction. The weaknesses, however, are overwhelming and, for the most part, intuitively obvious. The various political jurisdictions - in both the U.S. and Canada, would have a limited or nonexistent role in the management effort. The effort would be overtly political, as the administrator would be an appointee of the federal administration. U.S.-Canadian arrangements would be problematic under a single administration arrangement. The fact that this institutional form has little history and few advocates for wide application is indicative of its inherent limitations.

Potential Applicability to Great Lakes Management. As established previously and repeatedly, the political and geographic characteristics of the Great Lakes Basin demand an institutional form which reflects its multi-jurisdictional characteristics. While this institutional form, in one sense, might solve some of the organizational and coordinative failings present, it would create many more. Therefore, the single federal administrator form has no applicability from a Basin-wide management perspective. Its only potential merit might be on an ad hoc, issue-specific basis where centralized oversight might provide the quick response capability that multi-jurisdictional management could not.

Likelihood of Implementation. The appointment of a single administrator (federal or international) with decision-making oversight in the Basin is unlikely in virtually any political climate. While the states and provinces do welcome most forms of federal investment in Great

Lakes management and subscribe to the "partnership" approach, support for a single federal administrator is difficult to envision under any circumstance. The Great Lakes Congressional Delegation, despite a rather modest record in collectively and enthusiastically addressing Great Lakes issues, would undoubtedly mobilize for active opposition to any such proposal. Further, there is no active support for such an arrangement at this time, and the present U.S. federal administration itself would be unalterably opposed to the idea.

12. *International Commission*

Description. This institutional form pertains to any formally constituted governmental body authorized to address resource management issues arising along a common frontier or otherwise impacting two or more countries. While a variety of commission-type arrangements are in place around the world, particularly in western Europe, those specific to the North American continent are rather limited. Principal among them are the U.S.-Mexico Boundary Waters Commission, the International Joint Commission (IJC) and the Great Lakes Fishery Commission (GLFC). The International Joint Commission addresses the entire "common frontier" between the United States and Canada, although it has specific and rather extensive Great Lakes responsibilities. The Great Lakes Fishery Commission is specific to the region. A background report of the Committee to Review the Great Lakes Water Quality Agreement (National Research Council/Royal Society of Canada, 1985) identifies a total of twenty-four committees, conventions, commissions and other Great Lakes binational governance arrangements in the areas of hazardous substances; levels and flows; air pollution; migratory birds; fisheries; St. Lawrence Seaway; and Seaway promotion. Although none have the stature, institutional characteristics and resource management focus of the IJC or GLFC, their existence is noteworthy and their consideration in examination of institutional arrangements important.

Historical Perspective. The reader is again referred to Chapter Three and Appendix A for a concise history of the two institutions of principal concern.

Strengths and Weaknesses. The strengths and weaknesses of this institutional form are similar to those discussed under the international treaty/convention/agreement arrangement. This is due to their symbiotic nature. To a large extent, the effectiveness of an international treaty, convention or agreement is determined by the institution created or otherwise designated to implement it. Similarly, the strength and effectiveness of such an institution will depend, in part, upon the nature of its implementing authority. Given that the international commission form is an extension of that authority, the reader is referred to the "strengths and weaknesses" discussion presented earlier in this chapter.

Applicability to Great Lakes Management. As discussed earlier in this chapter, this institutional form has time-tested applicability to Great Lakes management. Its binational focus, stability, longevity, legal formality and adaptability to emerging management needs are positive

characteristics seldom seen in other institutional forms. Constraints which temper this applicability are of an institutional and political nature. The two governments are characteristically hesitant to vest significant management authority in such institutions, and implementation of their findings and recommendations is largely dependent upon their reception by the governments. Creation of a new international commission (or revision of an existing one) is a formidable task. Thus, lack of comprehensive authority and a pronounced dependency upon the governments for policy direction limit the potential of this institutional form. Nonetheless, its constraints are not insurmountable and the international commission as an institutional form is viewed as a leading candidate for Basin management.

Likelihood of Implementation. As also discussed earlier in this chapter, the two existing international commissions for Great Lakes management (i.e., IJC, GLFC) are long established, have favorably weathered changing political and physical environments, and can be expected to remain in force for some time to come. It is much more likely that these two institutions will be revised in structure or in focus to address unmet needs than it is to expect the emergence of a new international commission with separate authority. Given this expectation, efforts to effect desired change might best be directed at present institutional arrangements rather than devoted to the creation of new ones.

13. *International Court*

Description. The international court is a formally constituted legal institution vested with the authority to adjudicate differences arising along the common frontier or otherwise impacting two or more countries. It is not a management agency in the conventional sense, but a device to settle differences which might arise as two or more parties engage in joint or separable management activity focused on or impacting a given resource.

While the United States and Canada have no recourse to an international court established specifically to address Basin issues, numerous options are available. Federal legislation addressing various resources and resource uses with binational implications occasionally includes reciprocity clauses that permit transboundary litigation. Further, both countries can (and have) been granted intervener or "friend of the court" status to ensure that the binational implications of a given resource management issue are fully considered.

Importantly, the international Boundary Waters Treaty does grant the International Joint Commission limited quasi-judicial powers. The two governments are required to secure the Commission's approval for "all cases involving the use or obstruction or diversion of boundary waters," as well as "waters flowing from boundary waters or in waters at a lower level than the boundary in rivers flowing across the boundary, the effect of which is to raise the natural level of waters on the other side...." Further, Article X of the Treaty provides the Commission with an arbitral function: the two governments can agree to refer to the Commission "any questions or matters of difference"

arising between them for a binding decision. Significantly, this provision has never been invoked as both countries and, in particular the United States, have studiously avoided the use of international law, preferring non-adjudicative means to settle disputes (Dworsky 1974).

From a global standpoint, numerous arrangements serving an international court function are well established. Bilder (1976) explains, "At the global level, the United Nations, United Nations Environmental Program, and the various United Nations Specialized Agencies.... provide forums, facilities and procedures which can assist in dispute avoidance and settlement. Finally, states may submit their disputes to the International Court of Justice." The latter is a "true" embodiment of this institutional form and has long been available on a global basis to resolve resource management and environmental disputes. This institution has also been avoided in efforts to resolve U.S.-Canadian environmental disputes. Zile (1974) states, "If the American attitude towards binding tribunals of international law, as exemplified by U.S. antipathy to the International Court of Justice is maintained, it is unlikely that Article X [of the Boundary Waters Treaty] will ever be used."

Historical Perspective. While the historical development of international dispute management and adjudication mechanisms on a global basis is a rich and fascinating one, its history in Canada-U.S. relations in the Great Lakes Basin is infinitely more modest. Mechanisms have been available for some time, principally Article X of the Boundary Waters Treaty (1909) and the International Court of Justice. Neither have been utilized for Basin-specific disputes to date. Transboundary litigation on various issues - particularly water and air pollution - has taken place under legislative reciprocity clauses, but such activity is fairly infrequent and generally used as a last resort.

In the Great Lakes Basin, binational disputes have historically been addressed via non-adjudicative institutional and diplomatic means. Bilder (1976) explains:

> "...the two states have rarely resorted to liability-based approaches or formal agencies of dispute settlement. Instead, almost all of these problems have been dealt with through the technique of advisory references to the [International Joint] Commission for study and recommendations under Article IX of the Treaty. This reflects the judgment of the two countries that the most sensible way of dealing with such technically complex and politically sensitive problems is through flexible and ongoing programs and institutions. Their value is that they take account of a multiplicity of factors, are founded on the necessity for compromise and a balancing of interests, and permit the governments to retain control over the most significant decisions and policy."

This statement rather adeptly summarizes the historical (and continuing) attitude toward the viability of the international court mechanism in Great Lakes management.

Strengths and Weaknesses. Clearly, the fact that the U.S. and Canada have a history of shunning formal adjudicative mechanisms in resolving Great Lakes management disputes poses a virtually immutable constraint that highlights weaknesses and tempers strengths of this institutional form. Its characteristics, nonetheless, warrant careful consideration.

The use of an international court for the resolution of binational Basin disputes has the following positive consequences:

1) It provides an ongoing and assumedly prompt response mechanism to address issues as they arise.

2) It provides a clear and unquestioned authority to which disputes can be presented and a decision rendered.

3) As a Basin-specific authority, the international court would develop expertise in Great Lakes management issues, and in its decisions provide the insights and sensitivities which might not otherwise be available in other adjudicative arrangements.

4) This institutional form epitomizes equitable treatment of the U.S. and Canada, avoiding the "big brother-little brother" perspective so firmly entrenched in other institutional arrangements.

Principal weaknesses associated with the international court as a mechanism for Great Lakes management include:

1) An international court addresses issues after the fact: after a problem has arisen. It is not sufficiently capable of anticipatory planning and non-litigative dispute resolution to serve as anything but a "last resort" in the solution of binational issues.

2) The range of necessary resource management functions (e.g., planning, research, coordination) is not consistent with the mandate of an international court. Hence, the court could serve only one role in an institutional framework, and a rather ancillary one at that.

3) In a litigative rather than diplomatic solution, the "winners" and "losers" are readily identified. This outcome can lead to strained international relations and actually compromise cooperative resource management efforts.

4) The present institutional arrangements and mechanisms (e.g., treaties, conventions, agreements) for binational Great Lakes management have long been the preferred means of dispute resolution. It is unlikely that a new international court (or a similar existing mechanism) will contribute substantively to the options presently available.

Applicability to Great Lakes Management. This institutional form, despite its inherently limited scope and ancillary role, is indeed applicable in a Great Lakes management setting. Even though Article X of the Boundary Waters Treaty has never been invoked, few would argue that it should be negated. Similarly, some form of international court should be available as needed, but should not be forced to assume a lead role in Basin management.

By all indications, existing mechanisms for dispute resolution in Great Lakes issues appear to suffice; the long standing decision to avoid their use is not due to an inherent institutional flaw, but a preference to pursue other means. Before any effort to investigate a new, Great Lakes-specific international court is even considered, the adequacy of the existing but seldom used (or unused) options should be thoroughly examined.

Likelihood of Implementation. Unless a pronounced shift in U.S.-Canadian policy places increased emphasis on adjudicative measures, and existing mechanisms are found inadequate, the likelihood of institutional activity in this area is virtually nonexistent. Recent years have witnessed an increase in confrontational activity between the U.S. and Canada on resource issues, primarily acid rain and toxic pollution of shared water resources (e.g., Niagara River). Existing institutions, ad hoc arrangements and diplomatic channels remain as the preferred governmental devices for addressing the issues. Environmental groups have exhibited a greater proclivity for the courts in seeking their resolution. Nonetheless, the international court mechanism is yet to be widely identified as a preferred means to solution of binational issues.

14. ***Federally Chartered and Private Corporations***

Description. This institutional form is comprised of corporate entities involved in resource development; either quasi-public arrangements under a federal (or state/provincial) charter or entirely private corporations. In the former, the corporation is an arm of the government, but has a unique and rather independent status. The latter includes any privately owned operation that undertakes resource development of its own volition.

Characteristics associated with both arrangements are similar, although the federally chartered corporation does not enjoy the operational latitude available to the private corporation. Both are seldom used institutional arrangements for regional management; are developmentally oriented; are focused on a specific resource use and geographic area; generally have a well defined mandate; and operate in close coordination with governmental agencies which provide close oversight and regulatory requirements. The profit-making orientation is a critical consideration for the private corporation.
Revenue generation is important for the federally chartered corporation, as its budgetary arrangements vary from those of line agencies.

At the U.S. federal level, examples of federally chartered corporations include Amtrak, Comsat and the Public Broadcasting Corporation, among

many others. In Canada, this institutional device is more prevalent: the provincially chartered Ontario Waste Management Corporation is one of many examples. Within the Great Lakes Basin, the St. Lawrence Seaway Development Corporation (U.S.) and the St. Lawrence Seaway Authority (Canada) serve as examples of federally chartered corporations. The former, created by Executive Order in 1958, is authorized to construct deepwater navigation works in the International Rapids Section of the St. Lawrence River and to operate and maintain those works in cooperation with its Canadian counterpart. Recent years have seen a broadening of roles as both entities have become involved in Seaway marketing and promotion efforts.

The private corporation has seldom been used in a regional resource management setting, although precedent for such has been established. Booz, Allen and Hamilton (1970), in a study for the U.S. federal Office of Water Resources Research, looks back in history to 1907 and the establishment of the Wisconsin Valley Improvement Company. This arrangement came about for two reasons: 1) a provision in the State Constitution prohibiting the State from undertaking projects of internal improvement; and 2) a pressing need to control the river flow to accommodate the needs of an expanding pulp and paper industry and developing hydropower facilities. The company, which remains in existence today, is owned by six paper mills and four hydropower utilities. It owns and operates almost two dozen reservoirs in the river system. Under close state regulation, it is authorized to operate the reservoir system; lease reservoir rights: charge tolls for reservoir use; finance projects via issuance of bonds and company stock; and exercise the power of eminent domain.

Historical Perspective. Although the federally chartered and private corporation mechanisms have been utilized over the years in both the U.S. and Canada for a variety of purposes, there is little history of their application in the broader resource management setting. While the private sector does have a substantial impact on the resource base, on only a few occasions has the management of an otherwise public resource been delegated to a private corporation. The examples provided above are the principal ones found in the Basin today.

Strengths and Weaknesses. Although this institutional form has seen limited application in a Great Lakes Basin management setting, the strengths and weaknesses associated with it are enlightening; they are in several ways quite different than those identified under other arrangements.

The following strengths are identified:

1) The private corporation (and to some extent the federally chartered corporation) has a profit motive which tends to maximize efficiency

   by ensuring cost-effective resource development and management activity.

2) A private corporation arrangement tends to respond more quickly than the governmental bureaucracy to emerging problems and is

comparatively less subject to the political machinations of other "players" in the resource management arena.

3) It is likely that a corporation would elicit more cooperation with the business/industrial community than a governmental agency, as the "regulator/regulated" tension is not present.

4) This institutional form is sufficiently flexible to permit a given corporation to receive a broad charter to undertake a range of resource management activities. For example, consolidating development planning, design, financing, construction and operation in a single institution would avoid the problems of institutional complexity and uncoordinated action presently observed.

Weaknesses associated with this institutional form, when applied in a Great Lakes Basin setting, include:

1) The profit motive can have an adverse impact on Basin management; extensive governmental oversight of corporation activities would be essential.

2) The corporate arrangement does not provide an acceptable vehicle for substantial involvement of all affected units of government and interested citizens in the resource management effort; accountability is an issue.

3) Although this form lends itself to the watershed/sub-basin level, it is not suitable for Basin-wide management and would be difficult to establish given the various political jurisdictions which would have to charter it. Even a network of numerous corporations would be administratively complex.

4) Some resource management functions and resource uses simply do not lend themselves to profit-oriented arrangements (e.g., coordination, public involvement, aesthetics, preservation). Therefore, other institutional forms must be established to augment the activity of the corporation.

Applicability to Great Lakes Management. Comprehensive, Basin-wide management via a federally chartered or private corporation is not considered a viable alternative in the Great Lakes setting. This institutional form has never been applied on such a grand scale. Historically, it has been limited to either broad management on a localized, watershed basis or issue-specific management on a Basin-wide basis. The multiple use properties of the Great Lakes and the multiple political jurisdictions within the Basin make this institutional form both unwieldy and politically unworkable.

The approach, however, may have merit on a limited basis. Examples might include private management of the upper Basin's public forest reserves; harbor and channel dredging needs; or some similar arrangement where governmental involvement is oriented toward administration and oversight rather than "field level" management.

Broader responsibilities on an intrastate watershed basis may be feasible as well.

Likelihood of Implementation. The application of this institutional form to comprehensive Basin-wide management, due to its unwieldy nature and political infeasibility, precludes it from serious consideration. Even on an intrastate, watershed basis - particularly those with some level of multiple use resource development - acceptance of this type of arrangement would be received only with difficulty.

It is likely, however, that federally chartered and private corporations will be increasingly involved in limited, issue-specific resource management activity. This trend is presently observed in both Canada and the United States. In Ontario, for example, the Waste Management Corporation and the Toronto Harborfront Commission are but two of the many public corporations granted a relative degree of autonomy to pursue a specific resource management/development function. In the U.S., the present federal administration is actively exploring means of privatizing a range of Great Lakes services once provided by federal agencies. Among others, these include operation of dredging services and search and rescue operations. While it is likely that this trend will continue - at least for the next few years - it is equally likely that corporate activity will be limited to operational services while policy decisions, administration and oversight will be retained by the various government agencies.

15. ***Nongovernmental Organizations***

Description. In addition to the various governmental institutions with a role in the Great Lakes management arena, there is a growing cadre of academic institutions, foundations, professional associations, nonprofit organizations, citizen groups, business and industry coalitions and other nongovernmental entities with a substantial (and growing) influence in the formulation and direction of Great Lakes management policy. These groups vary dramatically in terms of funding base, orientation, goals and objectives, methods, governmental relations and policy impact. On occasion, this variance breeds conflict; both among nongovernmental organizations and between one or more of them and the governmental bureaucracy. Conversely, many of them provide a ready source of expert advice and assistance on the range of resource management issues of interest. In any event, the nongovernmental sector is a force to be reckoned with; an omnipresent influence on Great Lakes policy at all levels of government.

Examples of such institutional forms are literally too numerous to mention. They include the many Great Lakes institutes within the region's colleges and universities, nonprofit organizations like The Center for the Great Lakes, the Lake Michigan Federation, and Great Lakes Tomorrow; citizen groups such as Great Lakes United, Michigan United Conservation Clubs, Michigan's Environmental Action Councils and Pollution Probe; professional associations such as the International Association for Great Lakes Research; business/industry coalitions such as the International Association of Great Lakes Ports and the Great Lakes Shipping Association; and a a host of other local, state,

provincial and region-wide entities with an influence on the Great Lakes policy/management process.

Historical Perspective. In many respects, the development of non-governmental organizations with an interest in Great Lakes policy paralleled the development of public institutions responsible for formulating and implementing that policy. In many cases - particularly in the early years of Basin-wide management and development initiatives - it was the activity in the nongovernmental sector which actually induced an institutional response. An early case in point was the International Deep Waterways Association (IDWA), a coalition of development interests formed at the turn of the century to promote expansion and improvement of the St. Lawrence-Great Lakes waterway. As Dreisziger (1983) explains, "While the efforts of the IDWA did not lead to concrete results, plans for a more limited navigation improvement project, the damming of Lake Erie, helped to put the American legislative machinery in motion." This "motion" later contributed to the creation of the International Joint Commission. It is precisely this type of role which has historically characterized much of the effort of nongovernmental organizations in the Great Lakes Basin.

Due to the extensive history of nongovernmental activity in Great Lakes management, a chronology of its development and inventory of relevant institutions is well beyond the scope of this discussion. Rather, it is appropriate to identify the principle functions of such institutions, provide examples and relate those functions to the operational activity of the public institutions with mandated Great Lakes management responsibility.

A historical analysis of nongovernmental activity in Great Lakes management suggests that such activity might be categorized as follows:

1) Catalytic. Institutions which seek to advance sound regional policy decisions by encouraging action by relevant public sector officials. Examples include The Center for the Great Lakes and the Northeast-Midwest Institute.

2) Educative/Informational. Institutions such as academic research centers and foundations and non-profit organizations which undertake or sponsor the development and transmittal of Great Lakes management related information to relevant public sector officials and other interested individuals. Examples include Great Lakes-based Sea Grant programs, Great Lakes Tomorrow and the Great Lakes offices of national organizations such as Sierra the Club and the National Wildlife Federation.

3) Advocacy. Special interest groups which seek to influence the public policy process by focusing upon a discrete set of issues and associated policy positions. Examples include the International Association of Great Lakes Ports, Pollution Probe, and Great Lakes United.

4) Professional Development. Institutions such as the International Association for Great Lakes Research, which promote interaction and

information exchange among the various disciplines associated with the Great Lakes management effort.

5) Research Support. The range of academic institutes, non-profit organizations and consulting firms which undertake government sponsored or independent research focusing upon Great Lakes-related issues. Examples include the Sea Grant programs and water research institutes at major universities throughout the region.

6) Resource Development and Use. Private sector concerns, such as utilities, forestry operations and shipping firms, which by virtue of their business activity, have a profound impact on the use and development of Basin resources.

This listing of functions and representative institutions is by no means exhaustive and in few cases can firm distinctions be drawn; the categories do overlap and most institutions pursue more than one function. However, it does illustrate, albeit in cursory fashion, the nature and extent of nongovernmental activity in shaping the resource management effort.

Strengths and Weaknesses. Because they lack the public standing and direct management authority vested in governmental institutions, the nongovernmental sector clearly cannot stand on its own in coordinating and directing the sustainable use and development of the Basin's resources. Despite this most obvious of limitations, however, these institutional forms possess a number of characteristics which contribute to Basin governance:

1) Nongovernmental organizations are not subject to the often extensive jurisdictional constraints which limit public institutional activity in the regional resource management arena. Rather, their mandates tend to be flexible, and therefore comparatively more responsive to emerging issues.

2) Nongovernmental organizations in the Great Lakes region have substantial followings and a proven effectiveness in swaying public opinion and influencing the direction of policy action.

3) These organizations - particularly those with a research, policy analysis or educational function - can complement and support the governmental sector. In so doing, they assume or strengthen roles left vacant or virtually unattended due to staffing and financial limitations which have long plagued public resource management institutions.

4) Nongovernmental organizations are, in some respects, immune from the bureaucratic procedures and diplomatic protocol ruling the actions of a public institution in the domestic and binational resource policy arena. The nongovernmental "third party" - unless it possesses a watchdog/advocacy function - is generally viewed in a non-threatening light. As such, it often enjoys a high level of access to, and cooperation from governmental institutions in pursuing its mandate.

5) Such organizations - because they have no governmental affiliation - can serve as an effective intermediary between and among the governmental and business/industry sectors. Those that establish a reputation as impartial and independent advocates for sound regional policy are sought out as a forum for constructive interaction among relevant government institutions and interest groups.

6) Academic and non-profit research and policy analysis institutes provide a respected and readily available source of expertise to governmental institutions.

These various institutional strengths reflect only one segment of the nongovernmental sector; those organizations with broad resource management interests which are capable of furthering the policy process via impartial and independent catalytic coordinative and consultative functions. In reality, however, the nongovernmental sector is characterized and, in fact, dominated by special interest activity and a narrow, issue-oriented focus. The following weaknesses are noted when evaluating the applicability of this institutional management:

1) As previously noted, nongovernmental organizations lack direct resource management authority and, hence, are not suitable for assuming the management roles presently pursued by government institutions.

2) The broadly focused, objective, nongovernmental organization is the exception rather than the rule. Most have narrow, special-interest orientation better designed for reacting to and influencing policy direction than assisting in its formulation.

3) A nongovernmental organization is accountable to its board of directors, members and constituents, as opposed to the broader general public. Thus, it lacks the degree of accountability that governmental institutions are (or should be) subject to.

4) Due to the dynamic nature of the nongovernmental institutional ecosystem, many such organizations tend not to have the stability, longevity and resources necessary for a sustained commitment to Basin management.

5) The nongovernmental institutional ecosystem tends to be a very crowded and competitive one in Great Lakes Basin management - perhaps even more so than that observed among governmental institutions with resource management functions. There is no legislative or joint policy mechanism - beyond rudimentary co-ordinative efforts - available to structure and allocate functions among often competing institutions.

<u>Potential Applicability to Great Lakes Management</u>. The array of nongovernmental institutions referenced above has, and will continue to play an important role in Great Lakes management. Their proliferation over time is a testament to the value of their catalytic; educative/informational; advocacy; professional development; research

support and resource development and use functions. They have assumed a certain stature in the system of "checks and balances" which dictates regional resource policy making.

The collective contribution of nongovernmental organizations to Great Lakes management, however, can be enhanced substantially if efforts are undertaken to: strengthen coordinative and cooperative efforts among those with similar interests; transcend parochial interests in favor of broader Basin-wide issues; emphasize opportunities to complement governmental activity rather than operate solely in a reactive, antagonistic mode; and increase emphasis on the catalytic role in furthering public interest and governmental attention to critical issue areas.

Likelihood of Implementation. The nongovernmental role in the Great Lakes management effort promises to become increasingly influential in the years ahead. Four principal causal factors include: 1) the "new federalism" philosophy which, among others, calls for privatization of selected resource management functions once pursued by government; 2) dwindling state, provincial and federal budgets which limit governmental involvement in the resource management arena; 3) the maturation of the "ecosystem approach" and the attendant role for nongovernmental organizations capable of maneuvering among multiple political jurisdictions; and 4) a growing recognition of the interdependency of economic development and environmental issues in Basin management and the need for institutions capable of operating at the government/private sector interface.

The dynamic nature and complexity of the nongovernmental institutional ecosystem can be expected to increase in parallel to its role and influence in Great Lakes management. This complexity can have a detrimental impact in the sense that special interest groups can neutralize each other's efforts and duplication of effort can occur as research/policy institutes compete to establish and assert their roles. In fact, structuring and focusing the collective nongovernmental effort is likely to be a leading challenge in the Great Lakes management effort.

Concluding Observations

When examined in its totality, this "universe" of generic institutional forms yields a series of observations pertinent to the Great Lakes management effort. Those of particular significance include:

1) It is clear, as many authors have concluded, that there is no single institutional form indisputably capable of accommodating all Great Lakes management needs in and of itself. Rather, a collectivity of forms must be utilized, or a variation of existing forms developed which incorporates the positive attributes of many into one.

2) Despite the omnipresent dissatisfaction which has accompanied the evolution of institutional forms in the Great Lakes region, such forms are actually quite advanced when compared to those developed

in other regions. In many respects, the Great Lakes region has been an innovator in experimenting with some of the stronger institutional forms (e.g., compact, international commission, treaty/convention/agreement). Hence, the value of an introspective examination of institutional evolution should not be discounted; it is at least as enlightening as an analysis of institutional arrangements in other regions.

3) Despite their structural rigidity and often limited mandates, most institutional forms do exhibit substantial operational flexibility. For example, the structure of a given institution may forbid formal binational membership, yet informal arrangements might be developed to the point that structural limitations are but an inconvenience (as opposed to an insurmountable obstacle) to Basin-wide management activity.

4) The generic institutional forms reviewed can be assembled on a continuum ranging from the formal and highly structured mechanisms (e.g., compacts, international commissions, treaties/conventions/agreements) to those of a more informal and loosely structured nature (e.g., federal regional council, basin-interagency committee, nongovernmental organization). From a comparative standpoint, the former tend to be long-standing, well-established, somewhat routinized and comfortably settled into a "niche" in the institutional ecosystem which dictates their operation and areas of emphasis. The latter tend to be shorter-lived; flexible (and sometimes uncertain) in assuming their institutional niche; adaptive to emerging needs; and more reliant upon the motivation of their members than established reputation in advancing the regional resource management effort. While both "extremes" on this continuum are found to have characteristics applicable to the Great Lakes management effort, the likelihood of implementation (for political reasons) is heavily skewed toward the latter.

5) Despite their distinct traits, certain strengths and weaknesses tend to emerge repeatedly when the various institutional forms are analyzed. For example, most lack: co-equal, U.S.-Canadian representation; autonomy in carrying out resource management functions; broad, inter-jurisdictional representation (domestic or binational); public participation mechanisms; incentive systems for active membership involvement; binding authority; and a comprehensive planning function. Conversely, most provide: a forum for information exchange; a sensitivity to transboundary, Basin-wide or regional concerns; consensus building mechanisms; a degree of flexibility in addressing emerging needs; and advisory, research and coordinative services to member jurisdictions. While no single institutional form embodies all the positive attributes, it appears that an "institution building" exercise drawing from the various forms available would be a significant contribution to the Basin management effort.

6) When the various generic institutional forms are examined in light of the parameters outlined in Table 1, their prospective contributions to the Basin management effort are varied. For example, based on the strengths/weaknesses cited:

- the federal regional agency, intrastate special district, and single federal administrator forms are found to be entirely inappropriate as lead institutions in a binational basin management setting, and of questionable value as supporting ones.

- the interstate compact, interstate council/commission, federal-state compact, federal/state commission, federal regional council and basin interagency committee forms do exhibit desirable characteristics for Basin management, but their domestic emphasis makes them more appropriate as a supporting, rather than lead institutions.

- the state-foreign power compact and international treaty/convention/agreement devices do hold promise as a framework for binational Basin management, provided, of course, that they authorize the establishment of an appropriate institutional form.

- the international court concept has no applicability as a lead management device, but may be of value as a "last resort" mechanism should other institutional mediation efforts fail.

- nongovernmental institutions provide essential support services and monitoring and catalytic functions, but due to their nature, are not candidates for a leading role in Basin management.

- the international commission form may be the preferred candidate for a lead institutional role, provided that it reflects the various institutional strengths interspersed throughout the other institutional forms identified.

These observations, coupled with the inventory/analysis of generic institutional forms, provide an appropriate baseline reference source for subsequent analysis of those forms presently employed in Great Lakes Basin management.

CHAPTER SIX

PERSPECTIVES ON GREAT LAKES INSTITUTIONAL ARRANGEMENTS: THE PERSONAL INTERVIEW APPROACH

Introduction

Three key findings from preceding chapters provide the justification for a "personal interview approach" to the investigation of institutional needs for resource management in the Great Lakes Basin:

- In Chapter One, it was noted that perceptions of institutional adequacy are "characterized by polarized opinions and laden with subjectivity." In practice, adequacy is determined not by consulting some universally accepted benchmark or standard, but as a function of who undertakes the evaluation and how the institution at issue addresses their expectations.

- In Chapter Three, a comparative analysis of existing Great Lakes institutions concluded that "...not one Great Lakes regional institution is presently exercising full authority under its existing mandate."

- In Chapter Four one is struck by the preponderance of institutional parameters with nonstructural, programmatic/operational attributes. That discussion leads one to conclude that institution success - however it might be defined - cannot be guaranteed via legislation, institutional mandate or budget appropriation. Non-structural considerations (e.g., process, perceptions, political support) are of importance as well. A personal interview approach is required to explore them.

- In Chapter Five, the array of institutional forms and processes available for Basin management are presented - many of which have never been applied in a Great Lakes setting. Personal interviews provide an opportunity, in the absence of historical analysis and case studies, to examine their potential applicability.

Although perhaps not readily apparent, a common thread runs throughout these findings; a thread which points to the "human factor" in institutional design. An authoritative mandate, large staff and generous budget are for naught if an institution lacks - at the individual level - the commitment, motivation, trust and credibility necessary in transforming institutional resources into management products. Further, in the politicized arena of resource management, it is clear that performance alone does not guarantee acceptance of a given institution; it is the <u>perception</u> of institutional performance that is of note. The difference is subtle, yet of great consequence. To summarize, it is clear that human

factors (e.g., personalities, attitudes, biases, perceptions) are at least as important as structural factors (e.g., legislative mandate, programs, staffing) in institutional design.

Methodology

In the interest of capturing a sense of this "human factor," a series of twenty, in-depth personal interviews were conducted with leading Great Lakes policy makers and opinion leaders. Specifically, the effort was undertaken to: 1) assist in focusing the overall study effort; 2) elicit a range of attitudes and ideas associated with present institutional arrangements and potential alternatives; and 3) provide the basis for the subsequent design/administration of an extensive survey questionnaire.

Subjects for the personal interviews were selected on the basis of the following criteria: 1) active involvement and stature in regional Great Lakes management as a policy maker or opinion leader; 2) possession of a working knowledge of current Great Lakes institutions and institutional issues; and 3) affiliation with a government agency, academic institution or citizen group in the region. An effort was made to interview at least three representatives from each of the following affiliations: international/regional government; federal government; state/provincial government; academia; and citizen groups.

Each prospective interview subject was provided in advance with study background information and a listing of twelve questions for guidance during the interview (Table 2). The questions might be grouped in five distinct, yet interrelated areas: 1) professional background of interview subjects; 2) articulation of the appropriate goal for Great Lakes Basin management; 3) the adequacy of existing regional Great Lakes management institutions and institutional arrangements; 4) the desired characteristics for incorporation into Great Lakes management institutions; and 5) means to implement desired revisions to existing institutional arrangements. As will be evident in the following chapter, these questions were formulated and presented, in part, as a scoping device for survey questionnaire design. The four regional institutions of concern and their linkages with the broader array of public management entities with Great Lakes responsibilities provided the focus.

Interviews ranged from one and a half to well over two hours in length. All were open-ended and (beyond the suggested questions) informal and loosely structured. To ensure an uninhibited dialogue, interview subjects were asked to respond to questions from a personal rather than "official representative" capacity. Further, it was agreed that all remarks would be taken in a spirit of anonymity. Each interview was recorded to facilitate further analysis and highlight differences and consensus agreement among all interview subjects. A summary of responses is presented as follows, organized along the five subject areas alluded to earlier:

1) ***Professional Background of Interview Subjects***. Although anonymity was provided in presenting responses, a background statement from each interview subject was requested to provide an understanding of the various experiences and perspectives from which their observations emerged. It is important to note the diversity of experiences within

the realm of Great Lakes management exhibited by most interview subjects. For example, all interview subjects from academia indicated previous or current involvement as consultants to Great Lakes-related governmental units, appointments to international agency advisory boards or Great Lakes citizen groups. State, provincial and federal agency representatives were found to be involved in a variety of international and interstate organizations as representa-tives of their respective jurisdictions. International/regional and citizen group representatives indicated a similar degree of mobility and/or working familiarity with other sectors of the Great Lakes management "community." Importantly, all were well acquainted with the four institutions of concern in the study. Further, at least one staff member or commissioner from each institution was interviewed. The diversity of interview subjects contributed to the productivity of the interviews and tended to discourage parochial responses that might be expected from those less familiar with the range of institutions involved in Great Lakes management.

TABLE 2

QUESTIONS TO GUIDE PERSONAL INTERVIEWS

The interview segment of the study is designed to: 1) assist in focusing the overall study effort; and 2) elicit valuable insights from knowledgeable individuals involved in Great Lakes management. The sample questions provided below are intended to stimulate thought. These, and other related questions will comprise the general thrust of the interviews.

1. What has been the nature of your role in Great Lakes management? With which agencies/organizations have you been involved?

2. What do you perceive to be the goal of Great Lakes management? Do you believe this goal has been clearly articulated by relevant agencies/organizations?

3. The Great Lakes management effort is a collective one, involving multiple units of government pursuing both independent functions and, on occasion, cooperative programs. What are your overall impressions of this "institutional ecosystem"? Do you believe it functions efficiently and effectively?

4. In your opinion, is this "institutional ecosystem" presently capable of addressing existing and emerging regional resource management needs?

5. What are your impressions of the interrelationships (i.e., linkages) between the various agencies/organizations with Great Lakes management responsibilities? To what degree do you believe their efforts are coordinated, complementary, conflicting, etc.?

6. The term "management" implies a range of functions that can include (among others) planning, research, coordination, regulation and enforcement. Do you believe the Great Lakes "institutional ecosystem"

adequately provides for these various functions? Which require additional emphasis/de-emphasis?

7. In your opinion, what are the relative strengths and weaknesses associated with the structure and function of existing agencies/organizations with Great Lakes management responsibilities (e.g., International Joint Commission, Council of Great Lakes Governors, Great Lakes Commission)?

8. What are the "key" characteristics a regional Great Lakes management agency/organization should possess to ensure proper management of the resource (e.g., membership, jurisdiction, program authorities)?

9. Are you aware of any agency or organization (past or present, in or out of the Basin) that best approximates the type of structure and function needed to meet Great Lakes management requirements?

10. Do you believe present Great Lakes management efforts can be strengthened via revision of existing institutions, or would the creation of new ones be required?

11. Assume, for a moment, that you have the opportunity to design a new institution responsible for comprehensive management of the Great Lakes system. Describe, to the extent possible, the purpose, structure, authority, geographic jurisdiction, and programmatic functions you would want to attribute to it.

12. Similarly, assume you have the opportunity to revise existing regional institutions to permit enhanced Great Lakes management. Describe the types of revisions you would institute and their intended effects.

2) ***Articulation of the Appropriate Goal for Great Lakes Management.*** A content analysis of the goal statements offered by interview subjects was conducted to identify points of difference and commonality. Two distinct orientations were observed: 1) statements of a pragmatic nature identifying types of management functions appropriate for a Great Lakes institution; and 2) statements identifying the types of desired impacts those management functions should have. The latter statements were oriented primarily toward the resource base. Based upon the responses, it is generally agreed that a regional Great Lakes institution should have the authority to undertake some form of resource-based managerial function. In order of relative frequency, management functions identified include: interjurisdictional cooperation and coordination; policy development and planning; conflict resolution/multiple use management; regional advocacy; and research/data collection. The preponderance of these functions were identified by the interview subjects from governmental agencies. The interjurisdictional cooperation and coordination function was the most articulately presented and widely identified.

Interview subjects from academia and citizen groups tended to structure their goal statements around the resource itself, exhibiting less concern over institutional/managerial considerations. In order of relative frequency, these resource-based goals for Great Lakes management

include: promoting public welfare; providing for environmental protection and rehabilitation; promoting sustainable use of the Basin's resources; fostering an ecosystem approach to resource management; and fostering the development of a regional identity.

The goal statements tended to be somewhat generalized, and as such, no blatant incompatibilities were detected among them. The principal difference, identifiable by inference only, concerns the perceived role of a regional institution in the overall Basin management effort. The statements by academic and citizen group representatives identified desired resource-based outcomes and charged the institution with undertaking the management functions necessary to effect those outcomes. The statements from governmental representatives tended to be more reserved. The regional institution was not characterized principally as an entity at the forefront of the management effort, but as a forum in which management needs could be discussed and a vehicle by which collective, multi-jurisdictional management decisions could be supported and implemented. In brief, the issue of accountability of the regional institution to the political jurisdictions among which it operates was a salient one among governmental agency representatives. Academic and citizen group representatives tended to structure the accountability issue in terms of institutional responsiveness to the perceived needs of the general public.

3) ***Adequacy of Existing Institutions.*** Five questions addressing the adequacy of existing Great Lakes management institutions - both singly and collectively - were directed to the interview subjects. The questions, as presented in Table 2, solicited observations on 1) the efficiency and effectiveness of the Great Lakes "institutional ecosystem"; 2) the ability of those institutions to address existing and emerging resource management needs; 3) the nature of interrelationships (i.e. linkages) among Great Lakes institutions; 4) the range of management functions undertaken; and 5) the relative strengths and weaknesses associated with individual Great Lakes management institutions. Responses to these questions are reviewed sequentially below.

a) <u>The efficiency and effectiveness of the "institutional ecosystem</u>." Responses to an open-ended question relating to the efficiency and effectiveness of the "institutional ecosystem" were converted to a four point scale comprised of: 1) acceptable without revision; 2) acceptable with revision; 3) mixed performance; and 4) fundamentally deficient.

None of the interview subjects found existing institutional arrangements to be unconditionally acceptable in their present form. Two subjects (one federal, one state representative) did describe the existing arrangements as "acceptable with revision," but noted that a focal point (i.e. lead agency or mechanism) for Great Lakes management/coordination was in need of development. The preponderance of responses fall within the "mixed performance" category. These individuals identified significant deficiencies in the existing institutional arrangements, but indicated that the institutions - both singly and collectively - exhibited strengths

as well. Responses in this category were fairly evenly distributed among the various response sectors. A total of eighteen deficiencies in the operation of the institutional ecosystem were identified, relating both to structural and procedural characteristics. Eight responses alluded to coordination/communication deficiencies among the various political jurisdictions and regional institutions in the Great Lakes Basin. Six responses identified the "compartmentalization" of Great Lakes-related issues among the various institutions and the overall absence of an ecosystem perspective within and among those institutions. The remaining responses (4) were split: two identifying institutional "turf protection" problems and two indicating that Great Lakes institutions failed to provide the region with adequate representation at the federal/Congressional level.

The majority of "strengths" identified in the "mixed performance" category pertain to individual institutions and will be identified in later discussion. Four system-wide strengths were identified. Six responses explicitly stated that the various management institutions generally appeared to perform their individual functions well, although those functions were limited. Three responses indicated that the various institutions appeared to share similar goals for the region. (It is also important to note that no responses indicated that incompatible or conflicting missions were a problem among Great Lakes institutions.) Two responses noted that the various institutions appeared to be responsive to the needs of their member jurisdictions, when such needs were clearly articulated.

Four interview subjects (three academic, one citizen group representative) identified fundamental deficiencies. Unlike those identified earlier, it was suggested that they could be remedied only via extensive structural and/or philosophical change in the present institutional approach to Great Lakes management.

Of principal concern was the perceived absence of an ecosystem orientation within the operation of individual institutions, and more generally, within the collective management system. The interview subjects observed that individual institutions were largely products of historical crises, and as such, were neither designed for, nor capable of system-wide management. Coupled with "turf protection" tendencies, this reality has produced a void; the lack of a central management authority and coherent management program was perceived. Several of the interview subjects were of the opinion that remedial action would require fundamental institutional restructuring following clear articulation and acceptance of an ecosystemic management philosophy.

b) <u>Ability of Great Lakes institutions to address existing and emerging resource management needs</u>. A second question relating to the adequacy of institutional arrangements was posited as follows, "In your opinion, is [the] 'institutional ecosystem' presently capable of addressing existing and emerging resource management needs?"

The question elicited a qualified response from the overwhelming majority of interview subjects. The consensus opinion was that the present "institutional ecosystem" was marginally responsive to existing management needs, and less so to emerging ones. As with the preceding question, several responses constituted a resounding, unqualified "no," and no interview subjects found present institutional arrangements entirely suitable to address existing and emerging resource management needs.

Deficiencies cited earlier provided substantive support to responses. Of those, the institutions' tendencies toward "turf protection," a crisis response mode, and the absence of an ecosystem perspective were viewed as principal constraints. It is significant to note that these constraints, and in fact the preponderance of institutional deficiencies identified during the interview process, were attitudinal as opposed to structural. Such a finding is of particular consequence in the latter stages of the study.

c) The nature of the interrelationships (i.e., linkages) within the "institutional ecosystem." Fifteen of the twenty interview subjects maintained that coordination among the various Great Lakes management institutions was inadequate. Of the balance, two respondents found present levels of coordination to be satisfactory without condition, while three respondents found current coordination mechanisms adequate but underutilized. The mere existence of a "forum" for interjurisdictional discussion was generally found to be a necessary yet insufficient linkage mechanism; the need for a more formal, institutionalized mechanism was inferred. Significantly, four interview subjects explicitly referenced inadequate binational linkages. The need for a strengthening of federal/state relationships was alluded to as well, but somewhat less frequently.

It is almost universally agreed (by interview subjects) that the various Great Lakes institutions share compatible goals, and although their mandates tend to differ, they are generally "headed in the same direction." Four respondents did note that adversarial relationships were present within the institutional ecosystem. However, they are observed at least as frequently within individual institutions as among the various institu tions. For example, it was noted that the Great Lakes Commission's efforts to address both economic development and environmental protection issues had a tendency to engender conflict among member jurisdictions and their representatives.

Interestingly, while institutional goals were generally found to be compatible and inter-institutional conflicts of little consequence, the "turf protection" issue was a dominant one. Nine of the eighteen interview subjects (most non-governmental) maintained that the various institutions tended to promote and protect their own interests, thereby preferring a piecemeal management approach to an ecosystemic one.

Finally, all three interview subjects from federal agencies found the Great Lakes institutional ecosystem to lack a focal point for inter-institutional coordination. It is apparent from the discussions that the Great Lakes Basin Commission structure for federal agency coordination has not been adequately accommodated by other institutions since the Commission's demise. In contrast, state agency respondents found present coordination mechanisms generally adequate, although underutilized.

d) The extent to which Great Lakes institutions collectively provide the range of necessary management functions. Interview subjects were asked to compare and contrast perceived Great Lakes management needs with management functions presently undertaken by the various Great Lakes management institutions. The term "management" has been liberally interpreted to address a range of functions, including (among others), planning, research, coordination, advocacy, regulation and enforcement. The interview format did not permit respondents to review in detail individual and collective management functions of the various institutions. However, observations derived from the interviews do provide a preliminary indication of where present institutional arrangements are, and where they need to be.

The interview subjects agree that the various Great Lakes institutions have distinct roles in the overall management framework. Duplication of effort is therefore not perceived to be a problem, and individual goal statements/mandates are largely compatible. Of principal concern is the perception of a piecemeal management approach and the resultant gap in management functions when the various institutions are reviewed collectively. One federal agency interview subject offered a statement representative of most respondents: "No single institution has its arms around the total program, nor is the sum total of [Great Lakes] institutional activity representative of a complete management scenario."

In examining the continuum of management functions (i.e., from advisory services/coordination to regulation/enforcement), it is clear that Great Lakes institutional arrangements are heavily (and historically) skewed toward the former. From a structural standpoint, interview subjects indicate that only the coordination function is adequately provided for under current arrangements. In fact, a number of individuals indicated that the proliferation of coordinative institutions tended to have an adverse effect upon the overall management effort by 1) drawing resources away from other needed functions; and 2) creating further coordination needs (i.e. coordinating the coordinators).

In analyzing perceptions of the coordination function, however, one must distinguish between structural and operational adequacy. While the former is believed to be adequate, all but two interview subjects found coordinative activity to be operationally deficient within the existing institutional arrangements. The rationale behind the perceived deficiency was not clearly articulated, reflecting perhaps the rather ambiguous nature of "coordination" and its

unfortunate yet popular status as an antidote for a variety of institutional failings.

Other management functions perceived to be important yet inadequately provided for in present institutional arrangements include, in priority order: Basin-wide research and planning; some form of regulation and enforcement; data gathering and analysis, and regional advocacy.

Support for regulatory and enforcement activity, called for by almost one-half of the interview subjects, must be carefully qualified. As previously noted, interview subjects generally agreed that Great Lakes institutional activity is predominantly oriented toward "soft" management (e.g. coordination, information sharing, advisory services). While the interview subjects clearly indicated that the level of regulatory and enforcement action was a principal constraint in the overall management effort, a hesitancy to assign those functions to a regional institution was perceived. Of the ten interview subjects identifying the need for additional regulation and enforcement in the Basin, none explicitly recommended granting such powers to an existing or proposed regional institution. Most indicated that a reasonably adequate regulatory/enforcement structure was presently in place through federal, state and provincial agencies, as was an implementation mechanism. It is the extent to which such mechanisms are actually employed that was the basis for concern.

Although support for vesting regional institutions with direct regulatory/enforcement authority was not forthcoming, interview subjects were favorably disposed toward "softer" management functions. Regional institution involvement in coordinating or otherwise facilitating Basin-wide standard setting, rule-making and/or the development of uniform principles was supported by virtually all interview subjects. It appears that some form of institution-administered consistency statement - binding or otherwise - is an acceptable means of progressing on the aforementioned continuum of management functions.

The issue of "structural vs. operational adequacy" with regard to management functions emerged as a critical one at this point in the interview process. Interview subjects agreed that present institutions undertake only a subset of the management functions provided for under their respective charters/enabling legislation. Staffing and related resource constraints, historical precedent, institutional priorities and political will are all factors which determine the nature and extent of variation between what an institution can do and what it actually does. Thus, operational concerns are by no means secondary to structural ones, and therefore warrant equitable attention.

e) The relative strengths and weaknesses of individual Great Lakes institutions. Interview subjects were asked to briefly identify perceived strengths and weaknesses in the structural and operational characteristics of the International Joint Commission; the

Great Lakes Commission; the Council of Great Lakes Governors; the Great Lakes Fishery Commission; and the Great Lakes Basin Commission. The latter was included by virtue of its recent (although former) standing as a principal regional institution familiar to most of the interview subjects.

This component of the interview process was intended only to elicit general impressions for use in developing a subsequent survey questionnaire and further focusing the study approach. No judgments were made as to the legitimacy of the observations or the extent to which they represent the larger community of Great Lakes interests.

o <u>International Joint Commission</u>

Of the fifteen comments pertaining to structural and/or operational strengths of the International Joint Commission, the majority (eight) alluded to the Commission's unrealized but available potential as a potent force in Great Lakes management. Five of these comments indicated that the Boundary Waters Treaty of 1909, and more recently the Great Lakes Water Quality Agreement of 1978, provided sufficiently broad powers - should the Commission choose to fully employ them. The remaining three comments referenced the newly organized Council of Great Lakes Research Managers (two comments) and the anticipated future opportunities for state involvement in the review and possible renegotiation of the Great Lakes Water Quality Agreement.

With respect to "realized" strengths, three interview subjects identified the Commission's approach to representation on boards and committees. Members of such - generally drawn from the governmental and academic sectors of both countries - are asked to serve as individuals rather than official representatives of their respective employers. This arrangement is seen to encourage a professional and objective approach to resource management deliberations.

Other identified strengths included the Commission's long-standing reputation as an established and reasonably effective institution; its independent stature; and its emerging efforts to encourage a social science presence in its operations.

A total of forty-five comments addressing perceived weaknesses were elicited during the interview process. Interestingly, over one-half of the comments (25) referenced operational (as opposed to structural) weaknesses. Twelve of these comments alluded rather poignantly to personality issues; Commissioners who were viewed as obstructionists, out-of-Basin board appointees with questionable professional credentials for the position; Commission/committee/board indecisiveness on critical issues, etc. Three additional comments specifically questioned the "patronage" system for appointments to the Commission.

Seven comments questioned the U.S. commitment to the terms of the Great Lakes Water Quality Agreement and, in general, the use of the IJC as a mechanism for binational resource management. The consequence, observed some, was Canadian over-representation in the Commission's operations.

Six comments were directed at the Commission's management functions, noting that they were disjointed in nature and therefore inconsistent with an ecosystem management approach. Improved means to integrate quality-quantity considerations were called for (e.g. integrating diversion/consumptive uses work with pollution control work under the Great Lakes Water Quality Agreement.)

Five comments identified as a weakness the Commission's reactive orientation to pertinent issues. It was noted that Commission actions tend to be prompted by crises rather than anticipatory planning, and recommendations or decisive action unduly delayed. This perceived weakness has both structural and operational origins. The absence of implementation authority for IJC recommendations/decisions was identified in three comments as a serious structural weakness.

Other perceived weaknesses in IJC structure and/or operations included limited IJC authority under the Great Lakes Water Quality Agreement; the IJC's reluctance to invoke its binding arbitration powers under the Boundary Waters Treaty; inadequate state representation in Commission deliberations; and the low stature of the Great Lakes Regional Office vis-à-vis other Great Lakes management institutions.

o <u>Great Lakes Commission</u>

Although comments directed at the structure and operation of the Great Lakes Commission were fewer and less detailed than those addressing the IJC, a consensus on perceived strengths was garnered from the thirteen comments received. The GLC is viewed as a useful entity for convening the states to address diverse issues (4 comments), as well as providing the states with a collective presence at the federal/Congressional level (2 comments). Two comments indicated that the Commission has become, in recent years, increasingly able to balance environmental and economic concerns. Other identified strengths include the Commission's untapped potential as a major planning/coordination body (3 comments); its value as an information clearinghouse (1 comment); and its staff response capability on technical issues (1 comment).

A clear consensus on perceived weaknesses was not elicited; 15 comments pertaining to 11 different areas were received. Structural weaknesses identified include: non-uniformity in state appointment procedures for Commissioners; the lack of binding authority to act on matters such as diversions; an inadequate international presence; a "states-only" membership

arrangement; and staff and resource constraints. Operational weaknesses identified included: an inadequate presence at the federal/Congressional level; a need for greater research and planning activity; inadequate linkage with state and federal environmental agencies; a dependency on political will to work; a lack of clarity in goals; and a tendency to engender inter-state disagreements on controversial issues.

o Great Lakes Fishery Commission

The two predominant strengths associated with the Great Lakes Fishery Commission - as perceived by the interview subjects - are precisely those found to be weaknesses with the two aforementioned institutions. Four of ten comments identified the well-developed working relationship among cooperating agencies as a strength of the Commission. Three others praised the Commission's planning process and, specifically, its success in developing a Joint Strategic Plan for Management of Great Lakes Fisheries. Others saw strength in the Commission's basic philosophical approach to its mandate (2 comments) and its efforts to apply an ecosystem management approach to its work (1 comment).

While the Fishery Commission is generally perceived to be effective within its mandate, it is not regarded (in its present form) as a viable institution for broad resource management responsibilities. Five of eight comments relating to perceived weaknesses found the Commission's "single species" orientation (i.e. lake trout) to be indicative of a rather narrow management perspective. Other identified weaknesses include: limited management authority; inadequate mechanisms for public involvement; and an appointment process insensitive to state needs (1 comment each).

The relative dearth of comments directed at the Fishery Commission precludes the generation of consensus findings of great significance. However, the Commission's planning process (i.e. Joint Strategic Plan for Management of Great Lakes Fisheries) and its coordinative mechanisms did emerge as particular strengths and therefore warrant careful review and possible application (in modified form) to other institutions.

o Council of Great Lakes Governors

The interview process elicited relatively few comments (12) regarding the Council of Great Lakes Governors, reflecting perhaps the relatively new and untested status of that organization. Predominant among the identified strengths is the Council's ability to instill, in the states' leading political officials, a Great Lakes consciousness (3 comments). Four comments referenced the Council's potential for encouraging closer cooperation among the political jurisdictions and regional agencies in the Basin.

Five diverse yet potentially significant weaknesses are identified: the tenuous status of the Council due to its politicized nature; absence of a technically/scientifically oriented management approach; limited membership (six as opposed to eight states); an inadequate Canadian presence; and reliance upon states for implementation.

A number of interview subjects indicated a lack of familiarity with the Council and/or its resource management initiatives. For this reason, several decided to withhold observations on perceived strengths and weaknesses.

o Great Lakes Basin Commission

Although it ceased operation in September of 1981, the Great Lakes Basin Commission proved to be an important discussion item during the interview process. It played a lead role in Great Lakes management for fourteen years and was well known to most of the interview subjects. As such, it served as a point of comparison vis-à-vis existing institutions.

Of the thirty-one comments elicited during the interview process, approximately two-thirds (21) identified weaknesses associated with the structure and/or operation of the Great Lakes Basin Commission. Interestingly, however, the Basin Commission (or some variation thereof) was the most frequently identified entity when interview subjects were asked to describe their conception of the "ideal" Great Lakes institution. Upon careful review, these somewhat contradictory findings actually indicate that the Basin Commission possessed rather fundamental institutional strengths that overshadow a series of operational weaknesses.

Four of ten comments relating to Basin Commission strengths applauded its value as a federal-state forum for coordination and discussion of common issues. The value of its planning process was the subject of three comments. Many interview subjects observed that the Basin Commission had "evolved" over its years of existence; two comments noted that operations were terminated just prior to a point at which its planning efforts were entering the implementation stage. A final comment applauded the Basin Commission's ability to address critical regional issues.

The preponderance (17) of the twenty-one comments alluding to weaknesses of the Great Lakes Basin Commission are operational in nature. Six comments indicated that the Basin Commission - over a period of years - grew apart from its constituency, attaining a relative degree of autonomy that tended to alienate its state and federal members. This fact, it is believed, explains why the Basin Commission died a relatively quiet and uncontested death. Related to this were three comments observing that the Basin Commission was too "greedy";

attempting to take credit for resource management accomplishments more appropriately attributed to its member states and federal agencies. Other perceived operational weaknesses (identified in one or two comments) include: an inability to address controversial issues; resistance to change; insensitivity to outside ideas, both from members and the Public Information Work Group (PIWG); the lack of a tangible product; turf protection problems; and an inordinately low profile, both within the region and with Congress. Four perceived structural weaknesses (each receiving a single comment) include: limited state input into decisions; lack of implementation authority; inadequate Canadian participation; and a lack of conformity to regional needs. The latter weakness is attributed to the fact that the Basin Commission structure was mandated by federal law and was therefore required to conform to such at the expense of Basin-specific needs..

4) ***Desired Characteristics of a Great Lakes-Management Institution.*** The interview subjects were asked to assume, for the moment, a hypothetical role in which they were afforded the opportunity to design a new institution for comprehensive management of the Great Lakes system. For purposes of the exercise, political realities, present institutional arrangements and related organizational constraints were set aside. The objective was to construct, albeit in rudimentary form, an "ideal" or "benchmark" institutional form against which existing and prospective forms might be compared. The question was open-ended.

The twenty interview subjects generated over 200 ideas that were subsequently grouped into 32 categories of "desired" institutional characteristics. Further categorization permits us to review these characteristics in terms of those pertaining to: 1) desired management functions; 2) desired structural characteristics; and 3) desired operational characteristics.

a) Desired management functions - A broad range of management functions was identified, including planning (16 comments); analytical/technical capability (10 comments); monitoring and surveillance - policy and scientific (10 comments); regional coordination (9 comments); promoting regional consistency (8 comments); research (8 comments); regulation/standard setting (8 comments); enforcement (8 comments); regional advocacy (7 comments); data collection/processing (6 comments); communication/education (6 comments); conflict resolution/consensus building (7 comments); policy making (4 comments); and binding arbitration (1 comment).

Several of the more frequently referenced functions, however, were viewed from very different perspectives. For example, several interview subjects viewed planning in a comprehensive, basin-wide mode (i.e., Great Lakes Basin Commission approach) while others envisioned it to be a less ambitious, issue-specific activity. Similarly, several found the "ideal" institution to be a suitable home for broad regulatory and enforcement powers, although the overwhelming majority deferred such powers to established political

jurisdictions. Significantly, the concept of an institution-administered regional consistency provision for Basin management was embraced by many and, in particular, by those from state and federal governments. Such a provision would grant the regional institution the authority to develop minimum standards for water and related land management activities of the various jurisdictions. These jurisdictions would assist in developing the standards and would be responsible for enforcing them. This option, it would appear, warrants serious consideration as an acceptable "compromise" management function for a regional institution.

As might be expected, the more "traditional" functions of a regional institution - planning/coordination/research - were well represented in comments across all response sectors. Somewhat surprising, however, was the frequency with which Basin-wide monitoring, surveillance, data collection and analysis functions were identified. Historically a federal agency responsibility (for both water quantity and quality), support for vesting this type of function in a regional institution signifies a shift toward more fundamental resource-based concerns.

b) Desired structural characteristics - Structural characteristics pertain to elements of the formally constituted institutional framework within which management functions are carried out (e.g., membership, geographic jurisdiction, authority, budget). In order of frequency, interview subjects identified the following desired characteristics: binational participation (15 comments); membership of state, provincial and federal governments (7 comments); a strong federal presence (7 comments); presence of a formal (binding or non-binding) agreement among members (5 comments); a public participation component (6 comments); integrated planning/implementation authority (5 comments); some degree of institutional autonomy vis-à-vis political jurisdictions in the region (4 comments); the need for centralized authority (4 comments); staffing/budgetary arrangements adequate for management needs (4 comments); participation by upper level managers/decision makers (4 comments); a governing body of elected and appointed officials (2 comments); a strong linkage to regional political powers (1 comment); and a quasi-judicial function (1 comment).

As indicated above, membership arrangements constituted a principal structural concern. While a broad, binational and intergovernmental arrangement received widespread support, membership details were more divisive. State officials tend to view the regional institution as an interstate vehicle and, as such, were hesitant to advocate equal federal and/or provincial membership beyond the information-sharing/planning/coordination functions. It was agreed that some degree of accountability to the states was necessary to ensure the institution's effectiveness as a regional advocate.

All response sectors voiced concern over the waning federal presence in Great Lakes research and management. This presence,

particularly in terms of administering federal laws and research programs, has historically promoted a degree of management consistency throughout the various political jurisdictions in the Basin. Withdrawal of this presence induces a compensatory reaction by regional institutions, but the former level of consistency is often sacrificed.

Formal agreements (binding or non-binding) among the various political jurisdictions were supported by numerous interview subjects. Respondents highlighted the benefits of agreements such as the Great Lakes Water Quality Agreement (1972 and 1978); the Canada-Ontario Agreement and the Great Lakes Charter. Some form of agreement effected within the framework of a regional institution is believed to provide the focus and direction necessary to accomplish specific management tasks.

The integration of planning and implementation functions within the structure of a single institution was viewed by a number of interview subjects as a means to avoid the perceived impotency of entities limited to an advisory/recommendatory role. These comments were directed at all five of the Great Lakes institutions discussed earlier.

Several interview subjects also depart from "traditional" perceptions of the "desired" regional institution as they call for centralized management authority, a degree of institutional autonomy, and strong linkages to regional political powers. The "traditional" perception calls for regional institutions with "soft" management functions and a structural design ensuring accountability to its member political jurisdictions. Interview subjects further perceived the absence of a focal point for Great Lakes management; noting that the present institutional arrangements lack leadership qualities. This observation may explain, in part, the significant interest in granting the "ideal" institution broad management authority.

c) Desired operational characteristics - Operational characteristics refer to institutional attitudes, procedures or programs that constitute neither management functions nor structural components. The operational aspects of a management institution, as evidenced by earlier discussion, are critical determinants of perceived institutional effectiveness.

Four desired operational characteristics were identified during the interviews: the ability to integrate a socio-economic perspective into management activities (3 comments); the ability to work in relative harmony with other components of the overall management framework (3 comments); accessibility to (and by) the general public as well as regional political powers (2 comments); and the use of "measures of success" to permit institutional evaluation and refinement (2 comments).

All four of these desired characteristics are presently perceived to be deficient relative to existing institutional arrangements.

There is general agreement that Great Lakes management has historically been approached from a scientific/technical standpoint, while socio-economic concerns have been ancillary considerations at best.

The individual institution's role and relationship vis-a-vis other institutions within the Great Lakes management framework has been a vital yet inadequately articulated consideration as well. Craine (1972), Dworsky and Swezey (1974), Ostrom et al. (1970), and Hines and Smith (1973), among others, have documented a long-standing failure to review institutional performance from a system-wide rather than compartmentalized approach.

The "accessibility" issue relates to an institution's ability to maintain communication and a degree of responsiveness to critical constituents, including the general public as well as member political jurisdictions. Means to operationalize this were not discussed in detail during the interview process. However, the extent to which public involvement should be formally integrated into the management effort did engender differences of opinion. Some believed that citizen representation (elected or otherwise) on a management institution's board or executive council was imperative, while others believed an external "watchdog" function was more appropriate.

The need for internal "measures of success" to facilitate institutional evaluation and refinement was a particularly relevant concern. It was believed that such measures would provide a benchmark or reference point against which institutional performance could be measured at any given time.

In concluding the discussion of desired institutional characteristics for a Great Lakes management institution, interview subjects were asked to identify any organization that best approximates the type of structure and function needed to meet Great Lakes management requirements. Significantly, none of the interview subjects could recommend, without qualification, an existing institutional form adaptable to Great Lakes management needs. However, a number of organizations, programs and intergovernmental agreements perceived to have partial applicability were identified, as diverse as the Tennessee Valley Authority, the United Nations Environmental Program, the Delaware/Susquehanna River Basin Commissions, the European Economic Community, and others. Few were mentioned more than once.

5) ***Means to Implement Desired Revisions to Great Lakes Institutional Arrangements.*** The fifth and final component of the interview process sought answers to the following questions:

a) Can present Great Lakes management efforts be strengthened via revision of existing institutions, or would the creation of new ones be required?

b) How might desired institutional changes be implemented?

These questions are transitional ones, designed to identify the constraints and opportunities associated with the application of theoretically "sound" institutional concepts to the existing system.

As indicated earlier, none of the interview subjects found existing institutional arrangements to be unconditionally acceptable in their present form. Interestingly, however, there is a general reluctance to effect change via radical alteration of the existing arrangements or the creation of a new Great Lakes "super agency." Three individuals did note the need for a "radical rethinking" of existing arrangements but hesitated to advocate implementing such. In fact, the interview subjects were unanimous in agreeing that incremental modification to the existing institutional base was the preferred approach.

The perceived level of satisfaction with the existing management framework is heavily influenced by two factors. First, the interview subjects were highly sensitive to political realities. Nine individuals explicitly stated that their support for an incremental approach to institutional change was prompted by the political infeasibility of effecting comprehensive reform. Allusions to an "institutional inertia" problem surfaced implicitly in many of the other interviews. Hence, acceptance of the existing institutional framework as a basis for change was perceived as a realistic, although not ideal approach.

Second, interview subjects did exhibit a reasonably strong belief in the fundamental missions of existing institutions. Even in the absence of political constraints to substantive change, there was no indication that any or all existing institutions should be unilaterally discarded.

These observations notwithstanding, there remains a variance between existing and desired institutional arrangements. Unfortunately, interview subjects were less articulate when asked to suggest means by which institutional revisions might be implemented. There is consensus agreement that 1) institutional revisions should be made incrementally; 2) existing institutional arrangements should provide the basis for change; 3) refining, merging or replacing existing institutions is preferred to the creation of new ones; 4) required changes are largely operational in nature, as opposed to structural; and 5) nurturing and directing political will is a precondition for (and critical element in) effecting desired institutional change. Integrating the previously identified "desired" institutional characteristics into the present management system in a manner reflective of these consensus findings is suggested.

Concluding Observations

The personal interview approach - by virtue of its limited sample size, open-ended questions and subjective responses - did not lend itself to the generation of detailed consensus findings with broad applicability in the Great Lakes management arena. For this reason, the preceding discussion did not dwell on analysis and applications. Rather, it highlighted similarities in observation and opinion shared by a well-informed yet

diverse collectivity of Great Lakes policy makers and opinion leaders. Among others, shared observations were directed at:

- the "mixed performance" of the collectivity of Great Lakes management institutions and predominant strengths and weaknesses determining that performance;
- the marginal responsiveness of these institutions to present and emerging management needs;
- the complementary nature of goals across institutions but the attendant absence of the linkages required to realize them;
- the inadequacy of institutional activity in the areas of Basinwide research and planning, some form of regulation and enforcement; data gathering and analysis, and regional advocacy;
- the relative strengths and weaknesses of the various regional Great Lakes institutions;
- the management functions and structural/operational characteristics warranting integration into the institutional framework; and
- the relative satisfaction with fundamental institutional missions, but with a view toward extensive yet incremental refinement of the present institutional framework.

Findings associated with these and other topics of interest provide a "broad brush" overview of key Great Lakes institutional issues. In so doing, they provide the information base and orientation for the design of a survey questionnaire focused at a more extensive audience. The following chapter discusses that effort in detail.

CHAPTER SEVEN

PERSPECTIVES ON GREAT LAKES INSTITUTIONAL ARRANGEMENTS: THE SURVEY QUESTIONNAIRE APPROACH

Introduction

The previous chapter documented a series of factors which tend to constrain or complicate the search for the "preferred" institutional arrangement for Great Lakes management. These included: an historic superficial attention to fundamental resource management goals and needs; divergent philosophies within the Great Lakes constituency; the uniqueness of the Great Lakes Basin; the absence of a benchmark for institutional adequacy; and the inadequacy of evaluative mechanisms for assessing institutional performance. The "soft" management orientation of the institutions of concern, coupled with their rather open ended or ill-defined mandates, were found to be contributing factors. It was further indicated that an assessment of institutional adequacy cannot be based solely on structural characteristics, but must take into consideration operational (i.e., process) characteristics as well. Despite these constraints, however, a firm understanding of institutional performance is a necessary precursor to any effort to assess needs and suggest directions for change.

A useful means to secure this understanding - in detail beyond the personal interviews described earlier - is the employment of a survey questionnaire targeted at the range of individuals and jurisdictions involved in, or affected by, the operation of those institutions. To a large extent, their attitudes toward, and perceptions of a given institution determine that institution's ability to retain constituent support and function effectively. Thus, these attitudes and perceptions serve as a barometer for institutional adequacy and, in a more general sense, an indicator of the nature and direction of desired change.

Methodology

A survey questionnaire was administered to a cross-section of individuals associated with the regional/international Great Lakes management effort. The objective was to augment the previously conducted series of personal interviews to obtain a sense of perception of: the adequacy of the overall Great Lakes management effort; an assessment of the mandates and functions of individual institutions; thoughts on "ideal" institutions and institutional arrangements; and the means by which they might be incorporated into the present institutional framework.

To ensure the validity of the survey instrument as a means to elicit representative and informed perceptions from targeted recipients; survey design and distribution sought to secure studied responses:

1) from a representative cross section of the community of Great Lakes managers; policy makers; resource users; interest groups and opinion leaders in the region;

2) based upon personal expertise and opinion rather than formal or implied positions of their affiliations; and

3) which emphasized both present institutional performance, future needs and the means to attain them.

These objectives were pursued to ensure that a substantial portion of the "pool" of Great Lakes management expertise was accessed.

A total of 215 individuals with recognized expertise and/or leadership responsibility in some aspect of Great Lakes management were selected as survey recipients. These individuals, which included members, advisors, cooperators and informed observers of the institutions of concern, were selected also on the basis of geographic distribution within the region and distribution among the following affiliations: academia, local/state/provincial/regional/federal agencies, citizen groups and the private sector. Survey recipients were requested to draw from personal expertise and perceptions in responding to questions, and were provided ample opportunity to indicate those areas where they had no opinion or an insufficient basis for response. Further, and most importantly, recipients were given the option of anonymous response to encourage the uninhibited expression of personal opinion.

After pre-testing, the survey questionnaire was distributed with a personalized cover letter, a handwritten postscript, and a stamped and addressed return envelope. A letter thanking respondents (or encouraging nonrespondents to complete and return the form) was mailed two weeks into the three-week response period. This approach, coupled with the current salience of the topic, was instrumental in offsetting the lengthy format of the questionnaire (eight pages) which otherwise would likely have discouraged many prospective respondents. The response rate was above a prior expectation of 40-50 percent. A total of 118, or 54.9%, of all recipients responded to the questionnaire. Further, six additional recipients noted that their responses had been incorporated into a single survey form constituting a uniform agency or departmental response. A total of 109, or 50.7%, were sufficiently complete to permit analysis.

Responses to the survey form, amounting to 96 variables, were coded for computer analysis. Histograms and means were derived for each quantifiable variable, as well as cross-tabulations examining responses on the basis on nationality (U.S./Canadian) and principal association of the respondent (e.g., state agency, academia, citizen group). A cross-tabulation of principal association by role (e.g., research, advocacy, regulation) was run to determine the range of respondents. Open-ended responses were tabulated manually and categorized on the basis of principal association and role as well.

All histograms were analyzed and are summarized later in this chapter. Analysis of means by principal association of the respondent proved less interesting due to limited numbers in some response categories and the

nature of the wording of the response options. Cross-tabulations by nationality and principal association were reviewed to address some of the more interesting questions (e.g., variation in perceptions or institutional effectiveness between U.S. and Canadian respondents, or between state and federal agency representatives).

Due to the relatively limited number of respondents in light of the number of principal association categories, cell sizes in many cases were small, generally precluding the formulation of conclusions on the basis of statistical significance. Therefore, as initially intended, the survey device was used as one of several descriptive tools in the study effort, the others being case study review, personal interviews and observation of the institutions of concern.

A series of tables presenting survey results are provided throughout this discussion. In those instances where cross-tabulation by nationality or affiliation yielded notable variance, an expanded breakout is presented. When that variance is not exhibited, cumulative totals alone are presented.

Questionnaire Design

The questionnaire form itself was comprised of eight pages of closed and open ended questions under five categories: background on respondent; views on existing Great Lakes institutions and institutional arrangements; views on desired Great Lakes institutions and institutional arrangements; means to implement change; and miscellaneous questions.

In the first of these sections, respondents were asked to identify their principal affiliation (e.g., academia, federal agency); their specific responsibilities (e.g., research, administration); their familiarity with the four regional institutions of concern; and the nature of any association they may have with those institutions (e.g., member, adviser). The intent was two-fold: first to ensure that survey responses provided a representative cross-section of Great Lakes interests; and second, to provide a stratified data base to permit response analyses across professions, affiliations and familiarity levels.

Eleven questions (some with numerous tiers) were presented to elicit views on existing Great Lakes institutions and institutional arrangements. The first six were oriented toward impressions of the overall Great Lakes management effort, comprised of the collective activity of the numerous institutions at all levels of government (and their interactions). The balance were directed at the four regional institutions of concern and included, among others, open ended questions as to the perceived strengths and weaknesses of each.

The third section focused on the respondent's creative thought processes in eliciting views on desired Great Lakes institutions and institutional arrangements. The attendant questions were prefaced with two assumptions the respondent was required to make: 1) that all existing regional Great Lakes institutions are to be replaced by a single institution; and 2) the respondent has the opportunity to design this regional institution in the absence of any political/institutional constraints. These assumptions were incorporated into the questions not to presuppose the desirability of a

single management institution, but to transcend the myriad constraints that have traditionally limited attention to what politically can be done rather than what should be done. The exercise, in essence an "institution-building" activity, sought to construct the "benchmark for institutional adequacy" so conspicuously absent in the area of institutional analysis.

Section four, "Means to Implement Change," is an effort to reconcile the differences between the "ideal" institutional arrangement and that which is politically feasible. Key questions include those which identify primary obstacles to institutional change, as well as an open-ended solicitation of structural/operational changes deemed necessary for the four institutions of principal concern.

A closing section of miscellaneous questions requested: 1) the names of agencies/organizations with desirable institutional characteristics warranting investigation; 2) a listing of major Great Lakes management problems and needs warranting multi-jurisdictional attention; and 3) any comments/observations not otherwise provided for in the questionnaire.

A detailed review of survey results is presented below, followed by a "Summary of Findings" discussion providing interpretation and analysis.

Background on Respondents

The survey questionnaire form was distributed to a broad range of recipients, in the interest of obtaining a cross section of views from representatives of academia, local/state/federal/provincial/regional government agencies, citizen groups and the private sector. As indicated in Table 3, response rates were roughly comparable in most cases, the exceptions being academia and state agency representation, where the response rates were particularly pronounced. Table 4 presents the breakout by role and reflects the fact that respondents were allowed to identify multiple roles, as appropriate. Research and administrative roles were best represented, followed by planning, coordination and advocacy. As noted in Table 5, U.S. respondents predominated, comprising 81.7% of the total responses. This is due in part to the fact that the pre-selected universe of survey recipients (215) was skewed toward U.S. citizens on the order of 3 to 1 by virtue of the disproportionate number of U.S. jurisdictions and "principal players" in Great Lakes management. Response rates by principal affiliation in general were similar and in the area of 50%.

Survey analysis indicated that respondents were generally well aware of the purpose, structure and function of the four regional institutions of concern. On a scale of 1 to 6 (1=very familiar; 6=no knowledge), familiarity averages were as follows: International Joint Commission - 1.6; Great Lakes Commission - 1.8; Council of Great Lakes Governors - 2.1; and Great Lakes Fishery Commission - 2.6. Canadian respondents were comparatively more familiar with the binational institutions (i.e., IJC, GLBC) than their U.S. counterparts, while less familiar with the U.S. regional institutions (i.e., GLC, Council) with a limited binational focus. Most striking was the IJC response, where a full 70.0% of Canadian respondents were "very familiar", as opposed 44.9% of the U.S. respondents. Total responses varied across agencies to some degree. For example, virtually all respondents (92.7%) were "very" or "somewhat" familiar with

the International Joint Commission; no respondents claimed to be unfamiliar. In contrast, 21.3% indicated no or limited knowledge of the GLFC, approximately the same number who indicated they were "very familiar" with the institution.

TABLE 3

SURVEY RESPONDENTS BY PRINCIPAL AFFILIATION

Affiliation	Number	Percent
Academia	22	20.0%
Local Agency	9	8.4
State Agency	35	32.1
Provincial Agency	4	3.7
Federal Agency	11	10.1
Citizen/Cit. Group	12	11.0
Reg./Inter. Agency	6	5.5
Private Sector	10	9.2
	109	100.0%

TABLE 4

*SURVEY RESPONDENTS BY ROLE OF RESPONDENT**

Role	Number	Percent of Total Respondents (109)
Research	44	40.4%
Planning	40	36.7
Regulation	15	13.8
Administration	50	45.9
Teaching	18	16.5
Advocacy	36	33.0
Coodination	38	34.9
Other	21	19.3

* Note: multiple responses allowed

TABLE 5

SURVEY RESPONDENTS BY NATIONALITY

Nationality	Number	Percent
U.S.	89	81.7%
Canadian	20	19.3
	109	100.0%

A substantial number of respondents were found to have some form of direct involvement with one or more of these four institutions (Table 6). Approximately 10-25% of all respondents were a member or committee member of each institution; a similar percentage is found for the advisor/cooperator category. On a percentage basis, U. S. and Canadian respondent affiliation were roughly equivalent for the IJC; slightly higher for Canadians with respect to the GLFC; and much higher for U.S. citizens with respect to the GLC and council, given their predominantly U.S. orientation.

TABLE 6

*RESPONDENT AFFILIATION WITH REGIONAL INSTITUTIONS**

	IJC	GLC	GLFC	Council
Member/Comm. Member	20 (18.3%)	29 (26.6%)	12 (11.0%)	10 (9.2%)
Advisor/Coop.	19 (17.4)	27 (24.8)	14 (12.8)	14 (12.8)
Staff	3 (2.8)	0 (0.0)	1 (.9)	1 (.9)
None	66 (60.6)	52 (47.7)	81 (74.3)	82 (76.1)

* Note: multiple responses allowed.

To summarize, several key findings were elicited from this component of the study; each with important implications in the interpretation of survey data:

1) While a broad cross section of representation was obtained, limited response levels in some sectors (e.g., provincial, private sector, regional/international agency-staff) require any generalizations by institutional affiliation to be carefully qualified. Thus, descriptive as opposed to statistically significant analysis is appropriate.

2) The cross section by profession generated a more balanced representation, ensuring that the various professional perspectives were well represented.

3) Respondents were predominantly U.S. citizens (81.7%) although Canadian responses were sufficient in numbers for meaningful descriptive analysis in most instances.

Respondents, in most cases, appeared to be well aware of the existing regional institutions for Great Lakes management and their respective functions. Further, many indicated a direct affiliation with one or more of them. These considerations strengthen the significance of the opinions and observations elicited in latter components of the survey. On the basis of the number and distribution of respondents, analysis of responses was determined to be a meaningful and, in fact, an invaluable descriptive tool in examining the present and desired status of institutional arrangements for Great Lakes management.

Views on Existing Institutions and Institutional Arrangements

Responses to questions directed at the overall Great Lakes management effort (i.e., all levels of government and their interactions) revealed what might best be described as a "marginal" level of satisfac-tion with performance to date (Table 7). Forty five percent of the respondents assessed the current management effort as "marginal," with the balance virtually split between those who viewed it as more (24.8%) or less (28.5%) than marginal. Opinions at the extreme were minimal; only one respondent found the collective management effort to be "very satisfactory," while five found it "very inadequate." While perceptions of Canadian and U.S. respondents were similar, variations across affiliation were noted. Local agency and academic respondents were skewed toward "marginal;" and "inadequate", while state respondents were skewed toward "marginal" and "satisfactory". This, one can speculate is due to the formers limited access to, and participation level in, the multi-jurisdictional Great Lakes institutional ecosystem.

TABLE 7

ASSESSMENT OF THE COLLECTIVE GREAT LAKES MANAGEMENT EFFORT

	Acad.	Local	St./Pr.	Fed.	Cit.	Reg.	Priv.	Oth.	Total
Very Sat.	0 (0%)	0 (0)	1 (.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (.9)
Satisfac.	5 (4.6)	1 (.9)	15 (13.8)	2 (1.8)	1 (.9)	1 (.9)	1 (.9)	0 (0)	26 (23.9)
Marginal	9 (8.3)	3 (2.8)	14 (12.8)	8 (7.3)	6 (5.5)	3 (2.8)	6 (5.5)	0 (0)	49 (45.0)
Inadequate	7 (6.4)	2 (1.8)	7 (6.4)	0 (0)	5 (4.6)	2 (1.8)	2 (1.8)	1 (.9)	26 (23.9)
Very Inad.	1 (.9)	2 (1.8)	1 (.9)	1 (.9)	0 (0)	0 (0)	0 (0)	0 (0)	5 (4.6)
No Basis	0 (0)	1 (.9)	0 (0)	0 (0)	0 (0)	0 (0)	1 (.9)	0 (0)	2 (1.8)
	22	9	38	11	12	6	10	1	109

Significantly, incompatibility of goals and functions among the various agencies did not emerge as a major contributing factor to this assessment of "marginal" performance (Table 8). While almost 60% of respondents considered such incompatibility to be of some concern, less than 9.0% found it to be a significant problem, while almost 34% found the goals and objectives of the various institutions to be "primarily" or "very" compatible. Responses were relatively uniform across nationality and affiliation, although citizen group respondents did convey a more guarded assessment.

TABLE 8

PERCEPTIONS ON COMPATIBILITY OF GREAT LAKES INSTITUTIONS

	Number	Percent
Very Compatible	2	1.8%
Primarily Compatible	33	30.3
Mixed	64	58.7
Primarily Conflicting	5	4.6
Very Conflicting	4	3.7
No Basis for Response	1	.9
	109	100.0%

Present levels of coordination and cooperation among the various levels of government through their institutions were of significant concern (Table 9). Just over 45% of all respondents found these levels to be "marginal", with 30.3% finding them "inadequate". In contrast, fewer than 15% found them "satisfactory". Respondents from academia and local government expressed particularly pronounced dissatisfaction, while state and federal responses were notably more positive. Again, this variation may be a function of the extent to which these interests are presently represented in the institutional arrangements now in operation; those with limited access are likely to express greater dissatisfaction. Substantial differences between U.S. and Canadian respondents were not observed.

TABLE 9

PERCEPTIONS ON COORDINATION AND COOPERATION LEVELS

	Acad.	Local	St./Pr.	Fed.	Cit.	Reg.	Priv.	Oth.	Total
Very Sat.	0 (0%)	0 (0)	1 (.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (.9)
Satisfac.	2 (1.8)	0 (0)	8 (7.3)	3 (2.8)	0 (0)	0 (0)	2 (1.8)	0 (0)	15 (13.8)
Marginal	5 (4.6)	4 (3.7)	17 (15.6)	7 (6.4)	8 (7.3)	5 (4.6)	4 (3.7)	0 (0)	50 (45.9)
Inadequate	12 (11.0)	3 (2.8)	11 (10.1)	0 (0)	2 (1.8)	1 (.9)	3 (2.8)	1 (.9)	44 (30.3)
Very Inad.	2 (1.8)	1 (.9)	1 (.9)	1 (.9)	1 (.9)	0 (0)	0 (0)	0 (0)	6 (5.5)
No Basis	1 (.9)	1 (.9)	0 (0)	0 (0)	1 (.9)	0 (0)	1 (.9)	0 (0)	4 (3.7)
	22	9	38	11	12	6	10	1	109 (100%)

Respondents again had mixed views as to whether the collectivity of institutions provide the full range of functions needed to adequately manage the resource (Table 10). Over half (56.5%) had mixed views, with just under a third generally satisfied and about 13% concerned that most or all management needs are unmet. Interestingly, no respondents subscribed to either of the extreme views (i.e., all functions met, none met). Responses by affiliation showed no marked variation, with the exception that local agency and citizen group respondents skewed slightly more toward "mixed" and "most management needs unmet" categories.

TABLE 10

PERCEPTIONS ON FUNCTIONS PROVIDED

	Number	Percent
All Mgmt. Needs Met	0	0%
Most Mgmt. Needs Met	32	29.6
Mixed	61	56.5
Most Mgmt. Needs Unmet	14	13.0
All Mgmt. Needs Unmet	0	0
	109	100.0%

A determination of whether institutional inadequacies are perceived as structural or operational is a critical one, as revision to the former - with some exceptions - entail a more painstaking process than operational adjustments. The majority of respondents (56.5%) held that both areas are of concern, although almost twice as many found deficiencies to be predominantly structural in relation to those pointing to predominantly operational problems (Table 11). U.S. respondents tended more toward the "structural" end of the continuum while Canadian respondents largely found a mix of structural and operational deficiencies. Examined by affiliation, local and private sector respondents pointed substantially more toward structural problems; regional/international respondents pointed toward operational problems and the state/provincial and federal respondents were firmly entrenched in the "mixed" category.

TABLE 11

PERCEPTIONS ON THE NATURE OF INSTITUTIONAL DEFICIENCIES

	Acad.	Local	St./Pr.	Fed.	Citiz.	Regul.	Priv.	Oth.	Total
Structural Only	0 (0%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Pred. Structural	7 (6.5)	1 (.9)	13 (12.0)	2 (1.9)	1 (.9)	3 (2.8)	5 (4.6)	0 (0)	32 (29.6)
Mixed	12 (11.1)	5 (4.6)	21 (19.4)	8 (7.4)	9 (8.3)	3 (2.8)	3 (2.8)	0 (0)	61 (56.5)
Pred. Operational	3 (2.8)	2 (1.9)	3 (2.8)	1 (.9)	2 (1.9)	0 (0)	2 (1.9)	1 (.9)	14 (13.0)
Operational Only	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
No Basis	0 (0)	1 (.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (.9)
	22	9	37	11	12	6	10	1	108 (100%)

Following this broad assessment, respondents were afforded an opportunity to assess the adequacy of specific functional areas provided for collectively by Great Lakes institutions (Table 12).

Responses in the "marginal" category predominated, with comparatively fewer assessments in the "adequate" as opposed to "inadequate" category. Significantly, for each function at least half of the respondents found

present activity to be marginal at best. While this assessment reflects respondent bias (i.e., adequacy is determined in part by the importance one places on a given function), it is indicative of a general perception of marginal performance. Responses were remarkably uniform across nationality; the small cell sizes made conclusions on the basis of affiliation inappropriate.

TABLE 12

PERCEPTIONS ON THE PURSUIT OF MANAGEMENT FUNCTIONS

Function	Response of "Adequate" or "Very Adequate"
Policy Development	51.4%
Impact Assessment	50.5
Coordination	45.3
Basin Planning	37.0
Arbitration/Conflict Res.	34.6
Data Collection/Analysis	33.0
Advisory Services	32.4
Regulation	31.1
Research/Issue Analy.	29.6
Advocacy	22.9
Enforcement	21.1
Public Particip./Educ.	18.3
Monitoring/Surveillance	17.8

To identify the causal factors in a long-standing but poorly articulated sense of dissatisfaction with Great Lakes institutional arrangements, respondents were asked to react to a number of statements elicited during the series of personal interviews discussed earlier (Table 13). As noted, widespread agreement was found with most of these points, particularly with those relating to coordination, fragmentation and authority limitations. Only three statements were questioned by 25% or more of the respondents. These included, in order of disagreement level: insensitivity at the local/citizen level; unresponsiveness to emerging needs; and too many institutions. State/provincial respondents exhibited the greatest tendency to disagree or only marginally accept these explanations, joined to a lesser extent by federal and academic respondents.

TABLE 13

SOURCES OF DISSATISFACTION WITH PRESENT INSTITUTIONAL ARRANGEMENTS

	Response of "Agree" or "Strongly Agree"
Poor Coordination Among Institutions	76.1%
Fragmentation: No One in Charge	71.6
Too Limited in Management Authority	70.4
Poor Representation at Federal Level	63.9
"Turf Protection" Inhibits Cooperation	61.1
Too Many Institutions	55.6
Lack of "Ecosystem Approach"	54.6
Understaffed Institutions	52.8
Poor U.S.-Canadian Coordination	49.5
Unresponsive to Management Needs	46.3
Insensitivity to Local and Citizen Needs	31.2

U.S. respondents were substantially more concerned about the number of Great Lakes institutions, fragmentation and "turf protection" issues. Canadians indicated a proportionately greater concern for unresponsiveness to current/emerging needs and the lack of an "ecosystem approach" to Great Lakes management.

Having established an overview perception of the collectivity of institutions in the federal system for Great Lakes management, the second component of this section of the survey questionnaire focused exclusively on the four regional institutions of concern.

Table 14 summarizes perceptions of institutional performance. Of respondents with an opinion (i.e., factoring out the "no basis" responses), 43.7% found the performance of the International Joint Commission to be satisfactory. Other figures were: Great Lakes Commission - 30.1%; Great Lakes Fishery Commission - 71.2%; and Council of Great Lakes Governors - 30.5%. It is important to note that a substantial number of respondents claimed "no basis for response" with regard to this question. For example, 44.9% of all respondents were unable to, or otherwise chose not to assess the Great Lakes Fishery Commission. Figures for other institutions included the Council of Great Lakes Governors - 24.1%; Great Lakes Commission - 20.6%; and the International Joint Commission - 4.6%. The ordering of these figures is consistent with the findings discussed earlier regarding the degree of respondent familiarity with the various institutions. It is therefore reassuring to find that those without an adequate basis for response were factored out of the assessment of their own volition.

TABLE 14

PERCEPTIONS ON REGIONAL INSTITUTION PERFORMANCE

	IJC	GLC	GLFC	Council
Very Satis.	5 (4.6%)	3 (2.8)	7 (6.5)	3 (2.8)
Satis.	40 (37.0)	22 (20.6)	35 (32.7)	22 (20.4)
Marginal	45 (41.7)	37 (34.6)	16 (15.0)	45 (41.7)
Inadequate	13 (12.0)	18 (16.8)	1 (.9)	10 (9.3)
Very Inad.	0 (0)	5 (4.7)	0 (0)	2 (1.9)
No Basis	5 (4.6)	22 (20.6)	48 (44.9)	26 (24.1)
	108 (100.0%)	107 (100.0%)	107 (100.0%)	108 (100.0%)

Of those with an opinion, Canadian respondents were substantially more favorably disposed toward the IJC performance, on the order of 52.6% to 39.1% for U.S. respondents in the "satisfactory" categories. Interestingly, state/provincial respondents found the functioning of the GLC and the Council predominantly marginal or inadequate (GLC-60.5%; Council-52.6%).

On the whole, respondents indicated that concerns over conflicting or duplicative efforts among these institutions were moderate at best (Table 15). Almost 40% had "mixed" views on this concern, while more (33.3%) found the efforts complementary than duplicative (20.3%). Not a single Canadian found this to be an issue of concern beyond a "mixed view", while 24.7% of U.S. respondents did. In terms of affiliation, only local agency and private sector respondents tended toward these concerns in any number.

TABLE 15

PERCEPTIONS ON COMPLEMENTARITY/DUPLICATION OF INSTITUTIONAL EFFORT

	Number	Percent
Complementary	5	4.6%
Primarily Comp.	31	28.7
Mixed	42	38.9
Primarily Duplic.	9	8.3
Duplicate	13	12.0
No Basis	8	7.4
	108	100.0%

Concerns over levels of coordination and cooperation were much more pronounced, as over 70% found them to be less than satisfactory (Table 16). This view was shared similarly by U.S. and Canadian respondents, although a number of the latter claimed "no basis for response". It was shared also within each affiliation, though most strongly by academic, state and private sector respondents.

TABLE 16

PERCEPTIONS ON LEVELS OF COORDINATION AND COOPERATION AMONG REGIONAL INSTITUTIONS

	Number	Percent
Very Satis.	1	.9%
Satisfac.	13	11.9
Marginal	39	35.8
Inadequate	34	31.2
Very Inad.	6	5.5
No Basis	16	14.7
	109	100.0%

Respondents were requested, in light of these impressions, to identify what they believed to be the principal strengths and weaknesses of these four institutions. The question was an open ended one, with respondents encouraged to identify structural or operational characteristics. The objective was two-fold: to elicit consensus on the relative importance of various characteristics in institutional design for Great Lakes management; and secondly, to highlight, on an institution-specific basis, areas of strength and weakness for further attention. The responses, which tended to be brief, were placed in broad categories following review to facilitate analysis. A number of consensus observations emerged, as well as areas of disagreement among and between the various response sectors.

o International Joint Commission

A total of 194 observations regarding institutional strengths were elicited, scattered over ten principal categories and twice as many smaller ones. The ten principal areas of strength include both structural and operational characteristics. The Commission's bi-national membership was noted in approximately 25% of all comments as an important strength. Its solid technical capability at the staff and cooperator level (e.g., boards and committees) was well recognized also; noted in about 15% of the comments. Approximately 10% of the comments recognized the value of the Boundary Waters Treaty of 1909 and the Great Lakes Water Quality Agreements of 1972 and 1978 as sound instruments providing a firm framework for directing institutional activity. The fact that the Commission was firmly established and possessed a sense of "history" was identified in numerous comments as a positive attribute. Other perceived strengths mentioned included the prestige and positive public profile exuded by the Commission; its Basin-wide orientation and subscription to the "ecosystem approach" concept; its ability to provide for joint consideration of U.S. and Canadian concerns; its value as a consensus building mechanism; its relative independence and impartiality; and its firm legal basis.

Approximately 140 comments identifying perceived weaknesses in the Commission structure and operation were generated; the majority fell into seven categories. About 25% of all comments noted the absence of

authority within the Commission to exercise any degree of autonomy (vis-à-vis the federal governments) in initiating or implementing programs or regulating resource use. An operational issue - the lack of initiative and timely follow through on issues under its purview - was identified as a weakness in about 10% of comments received. Other comments arising with similar frequency included: the politicized nature of the Commission's appointment and decision-making processes; the inadequacy of staffing and funding resources for program implementation; the inadequacy of state representation in Commission activities; and the Commission's failure to exercise full authority under its existing mandate. Significant concern over the consistency and adequacy of Commission leadership was raised as well.

o Great Lakes Commission

Survey responses elicited 108 comments highlighting perceived strengths of the Great Lakes Commission structure and operation. Almost 20% of these comments alluded to the Commission's value as a mechanism which encompasses all eight Great Lakes states on a co-equal basis. A related strength, mentioned in about 15% of the comments, was the Commission's use as a coordinative device among its member states. An identical percentage noted the intrinsic value of the Great Lakes Basin Compact as a legal instrument for interstate activity. Other areas of perceived strength included the real or potential use of the Commission as an instrument for interstate advocacy; the level of staff capability and dedication; and the Commission's ability to address a broad range of economic development and environmental issues.

The 177 comments identifying perceived weaknesses were rather evenly distributed among a range of concerns. Of these, twelve categories elicited a substantial amount of attention. As with the International Joint Commission, the most often cited weakness (10% of all comments) concerned the institution's limited mandate and attendant absence of authority to implement management programs. Other areas of perceived weakness collectively comprising half of all comments included: inadequate Canadian representation; limited state interest and support for Commission activities; inconsistent or inadequate state involvement and leadership; unclear direction at the membership and staff levels; lack of follow-through and impact; an overly broad and unfocused program; an inability to achieve interstate consensus on issues; a low public profile and level of support; a singular focus on issues; and the poor caliber or inappropriate selection of commissioners - many of whom are far removed from state water policy circles. Limitations in staff size and funding round out this listing.

o Great Lakes Fishery Commission

Almost 75% of the 74 comments addressing perceived strengths of the Great Lakes Fishery Commission structure and operation were focused in five areas. Its Basin-wide orientation and binational participation were highlighted in about 25% of all comments. The strength of its technical capability at the staff and cooperator (i.e., boards and committees) level was identified almost as frequently. The clear focus and manageable mandate of the Commission was mentioned as well. Its

record of accomplishment with respect to eradication of the sea lamprey was of equal note. Staff dedication to the Commission mandate was the fifth principal strength, identified in numerous comments.

With few exceptions, distinctive patterns did not emerge with regard to perceived weaknesses associated with this institution. Of the 61 comments elicited, approximately one-third alluded to the narrow mandate and focus of the Commission in view of the broader range of Great Lakes resource management issues demanding attention. A subset of these comments noted a narrow focus within fishery management as well (e.g., preoccupation with lamprey control; a production rather than habitat management orientation; limited concern over water quality). One-fourth of the comments were divided equally between contentions of a low profile among the public and the resource management community, and an inadequate funding base. Approximately 10% of the respondents found the Commission's lack of implementation and enforcement authority in fishery management to be problematic. An equal number saw a weakness in the Commission's stature as a focal point for "turf battles" among its state and provincial cooperators.

o Council of Great Lakes Governors

Not surprisingly, almost three-fourths of the 108 comments elicited on Council strengths relate directly to the consequences of direct gubernatorial participation in institutional activity. The Council's high-level representation and attendant decision making ability was cited most frequently as a positive attribute. The political "clout" emanating from such an arrangement was noted in numerous comments as well. Other positive attributes sharing equally in almost a third of the total comments included: the Council's high public and media profile; a quick-response capability which can transcend state bureaucracy; and its value as a forum for interstate coordination.

Of the 122 comments received pertaining to Council weaknesses, the eight principal response categories were fairly evenly divided between perceived structural and operational inadequacies. About 15% of the respondents found the Council lacking a defined plan of action or a sense of continuity and follow-through on issues addressed. The absence of co-equal representation by all Basin states (including New York and Pennsylvania) was found to be a failing in about 10% of all comments received. The politicized nature of the Council's composition was similarly reflected in responses received. Other perceived weaknesses eliciting numerous comments included inadequate staff size and expertise; inadequate coordination with other institutions in the region; the absence of statutory authority; the extent of the actual and potential turnover in Council membership and staffing; and the attendant U.S. bias associated with the absence of full provincial representation on the Council.

Views on Desired Institutions and Institutional Arrangements

The third component of the survey questionnaire constituted a shift in emphasis from existing to desired institutional arrangements for Great Lakes management. The respondent was encouraged to draw upon his/her

assessment of perceived strengths and weaknesses in existing arrangements and incorporate those perceptions into an "institution-building" exercise. The intent was to construct, by consensus opinion, a single regional institution which might serve as a benchmark or prototype against which current and potential arrangements might be compared.

As stated earlier, the respondent was to assume that 1) all existing regional institutions were to be replaced by a single one; and 2) the respondent had the exclusive authority, devoid of political constraints, to design that institution. Results are presented in narrative below, as well as in Table 17 following the narratives.

Membership. The majority of respondents (56.6%) selected a broad based institutional membership comprised of state, provincial and US/Canadian federal agencies. Far fewer selected a state/provincial arrangement (12.3%); while 10.4% preferred an arrangement accommodating all Basin jurisdictions, including localities. Few respondents selected other alternatives, such as an independent binational agency without jurisdictional representation (6.6%).

Selection of Members. Jurisdictional representation by appointment was the preferred means of membership selection (41.2%); followed by mixed (executive and legislative) representation (26.5%) and direct participation by heads of government (19.6%). Interestingly, an open elective process received little support (3.9%).

Geographic Scope. Overwhelming support for a binational focus was indicated (93.4%); although differences were observed in that 56.6% of all respondents preferred Basin boundaries as the extent of institutional jurisdiction, while 36.8% indicated a preference for political jurisdictional boundaries. The latter preference was stronger among U.S. respondents.

Financing. Respondents found conventional means of institutional financing (e.g., appropriations from member jurisdictions) as most desirable (46.2%); while granting the institution taxing power as its sole means of support generated little interest (4.7%). Government grant-making was preferred by 12.3%, while 30.2% of respondents selected a flexible arrangement in which various funding schemes might be pursued cooperatively.

Institutional arrangement. A binding binational compact or treaty was by far (71.4%) the preferred legal device for Basin management, while all other options, including domestic arrangements and separate but parallel U.S. and Canadian entities, failed to generate support among more than 14.3% of all respondents.

Management Focus. Respondents largely chose to endow their "desired" institution with both "soft" (e.g., advisory, coordination) and "hard" (e.g., regulation, enforcement) powers (74.5%). Of those selecting between the two, however, the tendency toward the "soft" management powers was pronounced; 18.9% as opposed to 6.6%.

Scope of Concern. Over 60.0% of all respondents chose to charge their desired institutions with comprehensive management responsibility, while the balance opted for a more selective management approach in which issues were prioritized and selectively addressed. Canadian responses favored the former most decisively; state respondents exhibited the most reluctance on this matter as did academics, regional and citizen group respondents.

Staffing Arrangements. Interestingly, respondents largely selected to maintain a "tight rein" on the desired institution: most (64.1%) opted for a small, in-house staff with assistance from personnel on loan from member jurisdictions. The balance opted for a large "in-house" staff capable of conducting management functions in and of itself. The U.S. respondents were somewhat more amendable to the latter. State respondents looked upon loan arrangements most favorably.

Level of Autonomy. Few respondents were willing to grant the desired institution total autonomy (11.3%) or hold it entirely accountable to its membership jurisdictions (7.5%). Most (80.2%) opted for a modified arrangement: some autonomy in program development, but accountability to membership in program implementation, advocacy and the like.

Management Functions. Thirteen functional areas were presented to the respondent, who was requested to assess their relative importance to their desired institution. Each was ranked on a scale of 1 (very important) to 6 (undesirable). The analysis found all functions to have an average value of 2.66 or better, indicating all were viewed as more than of marginal importance. Ten of the thirteen rated, on the average, on the continuum between "important" and "very important." Significantly, not one respondent found any of the functions to be "undesirable." Those receiving the higher ratings included: policy development (1.5); data collection (1.76); impact assessment (1.76); Basin planning (1.74); and research/issue analysis (1.8). Those with the lowest ratings included regulation (2.6) and enforcement (2.66).

To accommodate observations not otherwise addressed in the listing of management functions, respondents were invited to identify additional characteristics deemed desirable for the "ideal" Great Lakes management institution. Some thirty comments were elicited from twenty-three respondents. A common theme running through these comments was apparent - a theme focusing upon the operational characteristics of the "ideal" institution. The notion of institutional integrity was paramount: a professional organization with vision, integrity and skilled leadership capable of impacting management decisions through a balancing of competing interests. The importance of a binational mandate; a relative degree of autonomy; a clear mandate and an open decision-making process was stressed.

TABLE 17

CHARACTERISTICS OF THE "IDEAL" INSTITUTIONAL ARRANGEMENT

Leading responses to each category:

1) Membership

a) Great Lakes states, provinces, US/CA federal agencies (56.6%)
b) Great Lakes states, provinces only (12.3%)
c) All levels, including localities (10.4%)

2) Selection of Members

a) Appointment by appropriate heads of government (41.2%)
b) Mixed representation (executive and legislative) (26.5%)
c) Direct participation by heads of government (19.6%)

3) Geographic Scope

a) Great Lakes Basin boundaries - hydrologic (56.6%)
b) Great Lakes political boundaries (36.8%)

4) Financing

a) Annual appropriations from member jurisdictions (46.2%)
b) Flexible - appropriations, grants and taxing power (30.2%)

5) Institutional Arrangement

a) Binational compact or treaty-binding (71.4%)

6) Management Focus

a) Balanced "hard" and "soft" management (74.5%)
b) "Soft" management focus - advisory, coordination, research (18.9%)

7) Scope of Concern

a) Comprehensive - all pertinent issues (60.6%)
b) Selective attention - key issues (36.5%)

8) Staffing Arrangements

a) Small "in-house" staff; member jurisdictions allocate personnel for carrying out management functions (64.1%)
b) Large "in-house" staff (28.2%)

9) Level of Autonomy

a) Some autonomy in developing programs, but accountable to membership in developing and implementing planning recommendations, advocacy efforts, etc. (80.2%)

10) Management Functions

a) All listed in questionnaire considered important (Appendix B); higher ratings for policy development, data collection, impact assessment, basin planning and research/issue analysis; comparatively lower ratings for regulation and enforcement.

The balance of the questions associated with this component of the questionnaire were presented with a different assumption: that the respondent had the opportunity to design one or more regional institutions to replace existing ones. The intent was to raise the issue of institutional complexity and explore attitudes toward it.

The survey indicated a divergence of opinion on the relative desirability of a centralized (i.e., single agency) regional management framework versus a decentralized (i.e., multiple agency) framework. A small majority (52.9%) favored a centralized arrangement, while the balance found a multiple agency arrangement more desirable (Table 18). The U.S. respondents were slightly more favorably disposed to the former; the Canadians to the latter. Only among the academic respondents did a majority prefer the latter.

TABLE 18

PREFERENCE ON CENTRALIZATION/DECENTRALIZATION OF MANAGEMENT AUTHORITY

	Number	Percent
Centralized (single agency)	54	52.9%
Decentralized (multiple agencies)	48	47.1
	102	100.0%

The closing questions of this component of the survey continued the "institution-building" theme, while shifting in focus from management functions to the resource itself. Respondents were presented with eleven broad areas of resource management and requested to indicate their relative importance as a focus for their "ideal" regional institution. As earlier, the assessment was provided by a five point continuum (1 - very important, 5 - undesirable). Respondents were afforded an opportunity to identify and assess other areas not mentioned.

As with the management function assessment presented earlier, in all cases the average response was patterned around the category of "important" (i.e., 2.0). However, the variation among resource areas was significantly more pronounced. Those areas given the highest assessments included: water quality management (1.22); water quantity management (1.42); levels and flows (1.56); air quality (1.71); fish and wildlife (1.76); and coastal zone management (1.83). Those areas averaging less than the "important" category included: drainage (2.04); flood plain management (2.26); soils (2.28); geology (2.44) and forests/vegetation (2.52).

Seventeen additional areas were identified by respondents, but in no instance were any identified more than eight times (the majority were mentioned but once). Commercial shipping, economics, social factors and energy were those identified by four or more respondents.

Respondents were asked to review the resource areas listed and state their preference between multi-institutional arrangements where management functions were assigned by resource (e.g., one agency responsible for fisheries, another for water quality) or by level of authority (e.g., one agency responsible for regulation/enforcement, another for planning). The respondents were almost evenly divided on this matter; 47.3% selected the former and 46.0% the latter (Table 19), with several respondents formulating a variation of these options. Canadian respondents exhibited preference for the former; U.S. respondents for the latter. The latter option was preferred by local and regional respondents; others were largely divided on the matter.

TABLE 19

PREFERENCE ON ASSIGNMENT OF FUNCTIONS

	Acad.	Local	St./Pr.	Fed.	Citiz.	Reg'l.	Priv.	Total
By Resource	8 (9.2%)	2 (2.3)	18 (20.7)	4 (4.6)	3 (3.4)	1 (1.1)	2 (2.3)	38 (43.7)
By Level of Auth.	7 (8.0)	5 (5.7)	11 (12.6)	4 (4.6)	5 (5.7)	5 (5.7)	3 (3.4)	40 (46.0)
Other	4 (4.6)	0 (0)	3 (3.4)	0 (0)	1 (1.1)	0 (0)	1 (1.1)	9 (10.3)
	19	7	32	8	9	6	6	87 (100.0%)

Means to Implement Change

The fourth component of the questionnaire constituted a critical transition from "where we should be" to "how we get there" with respect to Great Lakes institutional arrangements. An emphasis was placed on differentiating between the "ideal" arrangement in theory and the "ideal" arrangement in practice (i.e., given political constraints associated with the design or revision of an institutional arrangement).

In a situation where all political constraints could be set aside, the majority of respondents (49.5%) selected "consolidation and/or major revision of existing agencies" as the preferred means to their concept of the "ideal" institutional arrangement. Other options receiving some support included "incremental refinements to existing agencies" (23.4%) and "create new agency(ies), leave others intact" (18.0%). Significantly, only one respondent (.9%) maintained that - even in the absence of political constraints - no change to the existing institutional arrangement was needed (Table 20).

TABLE 20

REVISION OF PRESENT INSTITUTIONAL ARRANGEMENTS - POLITICAL CONSTRAINTS ASIDE

	No Change	Increm.	Consol.	Create	Replace	Other
U.S.	1 (.9%)	16 (15.0)	48 (44.9)	4 (3.7)	15 (14.0)	3 (2.8)
Canadian	0 (0)	8 (7.5)	5 (4.7)	2 (1.9)	4 (3.7)	1 (.9)
	1 (.9%)	24 (22.5)	53 (49.6)	6 (5.6)	19 (17.7)	4 (3.7)

This pattern of response is altered substantially when the "political realities" of Great Lakes management are factored into efforts at institutional change. Under this scenario, only 10.4% of all respondents found "consolidation and/or major revision of existing agencies" to be a viable option. The overwhelming majority (76.4%) found the incremental approach to refinement of existing agencies to be a realistic one. Only 2.8% found the creation of new agencies to be a likely occurrence, while almost 10.% resigned themselves to "no change possible" as the likely scenario. Only one respondent contended that replacement of existing institutions was politically possible in the foreseeable future (Table 21). Responses were uniform across nationality, although the federal respondents were resigned to an incremental approach without exception, while some support for more substantive change was found in state, citizen and academic respondents.

TABLE 21

REVISION Of PRESENT INSTITUTIONAL ARRANGEMENTS - GIVEN POLITICAL REALITIES

	Acad.	Local	St./Pr.	Fed.	Citiz.	Regul.	Priv.	Other	Total
No Change	0 (0%)	1 (.9)	4 (3.8)	2 (1.9)	0 (0)	0 (0)	2 (1.9)	0 (0)	9 (8.5)
Increm.	19 (17.9)	6 (5.7)	25 (23.6)	9 (8.5)	9 (8.5	5 (4.7)	7 (6.6)	1 (.9)	81 (76.4)
Consol.	1 (.9)	0 (0)	7 (6.6)	0 (0)	2 (1.9)	1 (.9)	0 (0)	0 (0)	11 (10.4)
Create	2 (1.9)	0 (0)	1 (.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (2.8)
Replace	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (.9)	0 (0)	1 (.9)
Other	0 (0)	1 (.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (.9)
	22	8	37	11	11	6	10	1	106 (100.0%)

The pronounced variation between the two scenarios (i.e., theory, political reality) was addressed in a question providing respondents with an opportunity to evaluate the comparative contribution of political obstacles to change. A five point scale (1 - very important, 5 - not important) was employed, accompanied by five statements (shaped in part by the personal interviews) and an opportunity for respondents to offer additional ones. The fact that no additional statements were offered, coupled with the high ratings given those provided, attested to their collective value as an

assessment of the political climate toward institutional change. These statements (and their attendant ratings) include: resistance by political jurisdictions unwilling to sacrifice autonomy (1.64); lack of political will (1.75); funding/resource constraints (1.92); resistance by existing regional institutions (1.96); and uncertainty over institutional needs. Responses were remarkably uniform across nationality and affiliation.

The final question in the fourth component of the survey afforded the respondent an opportunity to apply the observations and opinions elicited in all previous components. Based on his/her conception of the "ideal" Great Lakes management institution(s), the respondent was requested to specify any structural or operational revisions which might be made to the four institutions of concern. The request was open ended, permitting responses ranging from outright abolishment to no change at all.

In many cases, comments were quite brief and tended to focus on institutional problems as opposed to the means to address them; the latter were largely inferential. Nonetheless, a number of insightful suggestions were elicited. From their collective analysis emerge patterns of concern with current arrangements and a sense of desired direction in revising them or developing new ones.

International Joint Commission

A total of 104 suggested revisions to the structure and operation of the International Joint Commission were generated by survey respondents. Although varying somewhat in orientation, the various suggestions lent themselves to placement in the following categories: membership/cooperator arrangements (11 comments - 10.6% of total); appointment process (11 comments - 10.6%); authority (20 comments - 19.2%); process (24 comments - 23.1%); coordination/integration (8 comments - 7.7%); administration (8 comments - 7.7%); scope of concern (11 comments - 10.6%); and institutional status (11 comments - 10.6%).

A. Membership/Cooperator Arrangements

All suggestions in this category called for an expanded membership or cooperator arrangement to permit direct participation by governmental units beyond the federal level. Emphasis was placed upon state and provincial involvement - either as full members or as cooperators under a formal Commission agreement. Two respondents called for a similar arrangement providing for participation by metropolitan governments.

B. Appointment Process

Virtually all comments addressing the appointment process for Commissioners reflected a frustration with the caliber and performance of those historically occupying that position. The majority called for efforts to upgrade the quality of the appointments: standard setting, candidate screening procedures, and movement away from a political appointment process were suggested measures. With regard to the latter, one respondent recommended citizen election of Commissioners, while another called for election by government leaders. Two comments

called for revised terms of appointment - one recommending a fixed term, the other an extended as well as fixed term.

C. Authority

Without exception, survey respondents called for expanded Commission authority in carrying out its resource management responsibilities. The majority supported additional autonomy for the Commission in the areas of policy development, Basin planning and initiation of studies. Additional regulatory and enforcement authority was identified by several other respondents. Other comments included a voter approved taxing authority to enhance and stabilize the funding base; consolidation of all regional resource management functions under the auspices of the International Joint Commission; and securing an arrangement whereby the two federal governments are required to respond to Commission studies and recommendations.

D. Process

The thrust of suggestions in this area were oriented toward opening up and streamlining the Commission's procedures. Accessibility was a key concern - the need to provide an avenue for participation by interested parties in the development and review of reports and policies, as well as the provision of ongoing advisory services. The display of the "pros and cons" of major Commission decisions was a related suggestion. With regard to streamlining Commission procedures, recommendations included improved access to federal agency heads in the conduct of business, expedited response to requests from the two governments; and expedited reporting cycles. Other process related suggestions included heightened publicity efforts to enhance the Commission's visibility; integration of social science considerations into Commission deliberations; and in general terms, better use of existing authority.

E. Coordination/Integration

The relationship of the Commission to other components of the Great Lakes institutional arrangement was the basis of several suggestions for a revised Commission structure/operation. Several respondents called for closer integration or an outright merger with the Great Lakes Commission, Great Lakes Fishery Commission and Council of Great Lakes Governors. Others were more tempered, advocating a Commission role as an "umbrella" agency, calling for periodic joint meetings with other institutions or simply issuing a plea for "closer cooperation."

F. Administration

Administrative concerns focused upon staff and funding limitations, calling for expansion of both to strengthen "in-house" expertise. Reduced reliance upon what was described as "volunteerism" was supported by some, while others called for additional use of cooperators. One respondent called for the resolution of "serious staff problems" with respect to performance and productivity. Another called for a reduction in the number of boards and committees.

G. Scope of Concern

The majority of the respondents found cause to support a better definition and broadened scope of Commission concerns. Areas recommended for additional emphasis included land use, air quality and fisheries management, as well as a reference on the diversions issue and a strengthened water quantity management mandate. One respondent recommended that the Commission withdraw from some activities not well suited to it (e.g., public information, advocacy) and defer to other institutions.

H. Institutional Status

The comments assembled under this category ranged from those calling for outright abolishment of the Commission (3 comments) to those recommending no change at all (6 comments). The remaining two comments called for additional support of the two governments in the conduct of the Commission's business.

Great Lakes Commission

The 88 suggestions for revision of the structure/operation of the Great Lakes Commission were comfortably arranged in the same eight categories used in the International Joint Commission analysis. The distribution was as follows: membership/cooperator arrangements (9 comments - 10.2% of total); appointment process (11 comments - 12.5%); authority (3 comments - 3.4%); process (5 comments - 5.7%); coordination/integration (14 comments - 15.6%); administration (13 comments 14.8%); scope of concern (15 comments - 17.0%); and institutional status (18 comments - 20.4%).

A. Membership/Cooperator Arrangements

Virtually all of the numerous comments in this category reflected dissatisfaction with the present mix of state delegates to the Great Lakes Commission. (Each state maintains its own selection process, resulting in substantial variance - both within and among the states - in the professional affiliation and status, technical knowledge and political profile of those individuals.) Most comments called for a consistent method of selection among all states, but did not specify what that method might be. One respondent recommended that consistency be attained through the self-appointment of each state's governor to their respective delegation.

B. Appointment Process

In addition to concern over the quality and mix of state delegates, numerous comments were directed toward the breadth of representation from a jurisdictional standpoint. Eight of the eleven comments in this area called for adequate Canadian and/or U.S. federal representation in Commission deliberations. Two comments called for reduction in the number of delegates from the present 3-5 per state to one. One respondent recommended that all appointees be citizens as opposed to state employees.

C. Authority

Interestingly, very few (3) comments addressed the breadth of the Commission's authority under the Great Lakes Basin Compact. Two comments were calls for more regulatory and implementation authority - no elaboration was provided. A third was a recommendation that the Commission's role as a forum for discussion be retained while its advocacy/political action authority is vested in the Council of Great Lakes Governors.

D. Process

Process-oriented recommendations were also few in number. Emphasis was placed upon the need to develop a strengthened public relations and advocacy stance to heighten the image and impact of the organization in regional policy decision making. A plea for the Commission to free itself of undue influence of special interest groups was offered by one respondent.

E. Coordination/Integration

The majority of comments in this category reflected an uneasiness with the co-existence of the Great Lakes Commission and the Council of Great Lakes Governors. Ten respondents recommended that the Commission's functions be merged with the Council, with the former serving as the Council's secretariat. The balance of recommendations (4) were moderate, calling for movement toward strengthened ties to member states; enhanced cooperation with the Council; and stronger linkages to academic institutions.

F. Administration

Virtually all comments in this area mentioned deficiencies in organizational resources, calling for additional funding and an improvement in staffing capabilities through expansion.

G. Scope of Concern

Comments in this area reflected consensus that clarification of the Commission's role and a strengthened state involvement in its policy making process is of paramount concern. Differing viewpoints were expressed as to whether the Commission needed additional emphasis on environmental or economic development issues. One respondent called for Commission forfeiture of its regional advocacy functions, while another supported its focus upon federal legislative proposals.

H. Institutional Status

The one comment registered more frequently than any other - in any category - called for the outright abolishment of the Great Lakes Commission and transfer of its functions to the Council of Great Lakes Governors (11 comments). Coupled with the comments advocating a merger of the two institutions (10 comments), we find that well over 25.0% of all recommendations pertaining to Commission structure/operation call

for the thorough revision of its institutional status. One respondent alone found the "no change" alternative the preferred one. Other recommendations identified by one or two respondents included establishment of a Commission office in each member state; revisions (unspecified) to the Commission's enabling legislation; consolidation with the International Joint Commission and Great Lakes Fishery Commission into a single institution, and complete restructuring into a "cabinet committee" responsible for designing politically acceptable programs for implementation by the states and/or other regional entities.

Great Lakes Fishery Commission

Recommendations for revision to the structure and/or operation of the Great Lakes Fishery Commission were fewer in number (50) and significantly less extensive than those identified for the other institutions of concern. These comments are summarized below within the response categories developed earlier.

A. Membership/Cooperator Arrangements

Despite some concerns over the breadth of representation on the Commission expressed elsewhere in the survey, no recommendations for altering the present arrangement were offered. One respondent called for the establishment of attendance/participation criteria for Commissioners to ensure an adequate level of substance in Commission deliberations. Another recommended that the U.S. and Canadian co-chairmen serve on a full or half time basis.

B. Appointment Process

A similar dearth of recommendations in this area was experienced; one comment alluded to the inadequacy of the appointment process, but did not elaborate on the nature (or proposed resolution) of that inadequacy.

C. Authority

Of all comments pertaining to the Great Lakes Fishery Commission, the most frequently cited (7) was a call for broadened responsibility and autonomy in the conduct of its mission. An additional comment called for broad regulatory powers in fishery management activities.

D. Process

Procedural aspects of the Commission's operation prompted few suggested changes. Upgrading the Commission's public profile was suggested by two respondents, one of whom recommended the addition of a staff specialist with public relations/information and education skills. Support was also expressed for expanded use of the Commission's cooperators in the day-to-day activities of the Commission; one suggestion called for a strengthened role for the Lake Committees, while another recommended standing for the Committee of the Whole.

E. Coordination/Integration

Virtually all of the comments in this area found outright consolidation of Fishery Commission functions with the International Joint Commission (6 comments) or some other form of binational entity (5 comments) to be the preferred means of resolving any coordination/integration problems. Two respondents indicated a desire to preserve the Commission's autonomy while expanding its technical assistance services to, and linkages with other institutions.

F. Administration

As with the other institutions, administrative comments focused upon the need for additional funds (3 comments); additional staff (3 comments); and the need to improve staff performance (2 comments). One respondent advocated a "complete shake up of staff and mission," but no elaboration was provided.

G. Scope of Concern

Comments in this area reflected previously articulated concerns over the Fishery Commission's comparatively narrow mandate and (to some) parochial perspective on fishery management issues. The Commission was encouraged to increase its attention to socio-economic issues; broaden its emphasis in the area of fishery habitat; serve as a Basin-wide repository for fisheries data; and focus special attention on critical problem areas (1 comment each).

H. Institutional Status

Only one respondent called for outright abolishment of the Fishery Commission, while three recommended maintenance of the status quo. The overwhelming majority (as previously indicated), found consolidation of functions with those of other institutions an option worthy of consideration.

Council of Great Lakes Governors

The 63 comments directed at the Council of Great Lakes Governors, as indicated below, indicate the extent of concern over the breadth of representation by Basin jurisdictions and, secondly, the relationship of the Council to other elements of the Great Lakes institutional framework. The distribution of comments was as follows: membership (15 comments - 23.8% of total comments); appointment process (0 comments - 0%); authority (8 comments - 12.7%); process (8 comments - 12.7%); coordination/integration (14 comments - 22.2%); administration (7 comments - 11.1%); scope of concern (5 comments - 7.9%); and institutional status (6 comments - 9.5%).

A. Membership/Cooperator Arrangements

All 15 comments called for a broadened membership beyond the six westernmost Great Lakes states. Ten comments called for formal Canadian representation; four called for equitable standing among the

eight Great Lakes states; and one recommended the addition of a federal (Department of State) representative to the Council.

B. Appointment Process

No respondents questioned the membership arrangement limiting membership to the governors themselves.

C. Authority

Virtually all respondents with comments in this category called for an expansion of present Council authority. Most recommended that it remain the "political arm" of the Great Lakes region while assuming the various other functions presently under the auspices of the Great Lakes Commission. Other comments called for a Council with program planning and implementation functions and authority to make decisions and directives binding on its members. One respondent suggested reduction in authority - relegating the Council to a nonvoting advisor to a (prospective) consolidated binational institution.

D. Process

The process by which the Council conducts its business was the focus of some concern by respondents. An improved definition of areas of interest (including additional focus upon Great Lakes-specific issues) was advocated, as was the development of procedural guidelines to ensure follow-through on policy issues. Other comments called for heightened Council visibility; additional efforts to broaden its environmental/economic development concerns; and additional activity in generating political support for the activities of the International Joint Commission.

E. Coordination/Integration

As might be expected in light of the earlier discussion of comments on the Great Lakes Commission, the preponderance of respondents viewed consolidation of the Council and Commission as the preferred means of addressing coordination and integration problems (9 comments). The balance (5 comments) simply noted the coordination problem or suggested: use of the Council to promote rapport among other regional institutions; a stronger linkage to the academic community to strengthen Council expertise in scientific understanding; and expanded use of outreach programs.

F. Administration

Six of seven comments in this area called for the establishment of an expanded permanent staff to either strengthen the Council's research capability or ensure continuity during political transitions brought on by gubernatorial elections. One comment referenced the need for more frequent Council meetings.

G. Scope of Concern

The few comments generated yielded no consensus opinion on the "appropriate" scope of the Council's activity. For example, one respondent recommended that the Council focus its efforts on implementation of the Great Lakes Charter; another called for primary emphasis on regional economic development issues; and a third called for a selective issue focus and emphasis on advocacy. One respondent suggested that the Council serve as the "political action arm" of the Great Lakes Commission. Another maintained that any change in the Council's scope would be inappropriate until a better understanding of the responsibilities of all regional institutions was obtained.

H. Institutional Status

Comments relating to the Council's institutional status were similarly few in number. Two called for abolishment: one outright and one coupled with the creation of a "Governors' Committee" under a lead regional institution. Two others called for an elevated stature - as the executive branch or cabinet council on all Great Lakes management matters. One recommended consolidation with the International Joint Commission and the creation of two entities under a single umbrella - one representing state, local and regional concerns; the other addressing federal/international concerns.

Finally, one respondent recommended no change in the Council's present institutional status.

Miscellaneous Questions

The fifth and final component of the survey was comprised of three miscellaneous, open-ended questions affording the respondents an opportunity to "round out" their previous comments.

The first of these sought ideas on "any agency or organization (past or present, in or out of the Basin) that may possess structural or operational characteristics with potential applicability to the Great Lakes management effort." In addition to identifying the organization itself, respondents were asked to highlight the "desired characteristic" potentially applicable to the Great Lakes management effort.

Of the 67 comments elicited, 38 different institutions were identified. Of those institutions, only 12 were mentioned more than once and five more than twice. Nine respondents (13.4%) found the structure and operation of the now defunct Great Lakes Basin Commission to possess particularly desirable characteristics, specifically: broad state and federal representation; coordinative services; public participation element; and long-term basin planning efforts. Five respondents identified an existing Basin institution - the International Joint Commission - making principal reference to its treaty power and level of authority. The Delaware River Basin Commission was identified by four respondents on the strength of its compact authority and organizational resource base (i.e., funding, staffing). The responses were diverse, and included the Great Lakes Basin Commission,

Susquehanna River Basin Commission,the United Nations Environmental Program, the League of Women Voters, and others.

Significantly, not one of the institutions identified was cited as possessing, in and of itself, the breadth of authority and functions suited to the Great Lakes management arena. Rather, the tendency was to select one or two key characteristics for emphasis. Those characteristics receiving numerous references included: research capability; broad issue orientation; firm legal basis and broad authority; coordinative/consensus building forum; long-term planning; and standard of professionalism.

A second question constituted a shift in focus from organizational characteristics to resource management problems and needs requiring attention at present and in future years. The intent was to help guide any effort at institutional revision by focusing upon the issues the institutional arrangement will likely address.

Some 226 comments were generated, distributed among nine broad categories as follows: water quantity management (54 comments - 23.9%); water quality management (38 comments - 16.8%); toxic/hazardous waste management (30 comments - 13.3%); institutional and policy needs (24 comments - 10.6%); maritime concerns (20 comments - 8.8%); air quality (18 comments - 8.0%); coastal zone/land resource management (16 comments - 7.1%); economic development (13 comments - 5.8%); and ecosystem management (13 comments - 5.8%). Each of these categories is discussed in additional detail below.

A. Water Quantity Management

The issue of Great Lakes diversion and consumptive use was identified in 29 responses; a full 12.8% of all comments and 53.7% of those pertaining to water quantity management. It constituted the single most frequently identified issue. An additional 12 comments identified water quantity management as a critical issue, but did not elaborate. Eight comments highlighted lake level issues; most noting present problems with high levels and shoreline erosion and property damage. Other related issues identified included: multiple use of water resources; interface with water quality; and water conservation.

B. Water Quality Management

Of the 38 comments in this category, 29 (76.3%) did not specify the type of water quality issue they found of particular concern. Nonpoint source pollution problems were identified in 8 comments (26.3%); one respondent stated that renegotiation of the Great Lakes Water Quality Agreement of 1978 was of paramount concern.

C. Toxic/Hazardous Waste Management

Concern over toxic contamination of Great Lakes waters was second only to the diversion/consumptive use issue in terms of the number of comments received (24 comments - 10.6% of all comments and 80.8% of those pertaining to toxic/hazardous waste management). Other related issues raised included hazardous waste disposal, nuclear contamination from leakage/transport accidents; and human health in general.

D. Institutional/Policy Needs

Issues identified under this category are diverse; addressing organizational needs rather than resource management issues per se. Those identified include: the need for a regional identity and a national recognition of unique characteristics; uniformity or consistency in laws, enforcement, regulations and monitoring/data collection across jurisdictions; a balancing of environmental and economic development concerns; expanded inter-jurisdictional coordination; broadened jurisdictional representation in regional institutions; and others.

E. Maritime Concerns

Eleven (37.9%) of the 20 comments in this category called, in general terms, for additional attention to the future of the Great Lakes/St. Lawrence Seaway transportation system. The balance were more specific, identifying issues such as winter navigation/season extension; cost recovery policies; lock enlargement; toll reduction; and enhanced competitiveness.

F. Air Quality Management

All of the 18 comments identified acid rain/atmospheric loading of toxic contaminants as an appropriate issue for attention by Great Lakes institutions.

G. Coastal Zone/Land Resource Management

A variety of issues were identified in this broad category, fairly evenly distributed among: coastal management (in general); wetlands; flood plains; land use planning; soil conservation; agricultural development and erosion.

H. Economic Development

Eleven comments called for increased institutional attention to the relationship between the Great Lakes resource and regional economic development. Two additional comments specified tourism as an area in need of particular attention.

I. Ecosystem Management

Ten comments called for increased attention to ecosystem rehabilitation and the application of the ecosystem management approach to problem areas around the Basin. Three comments called for broadened habitat management planning efforts.

The final item on the survey questionnaire was an open-ended request for "any additional comments/observations regarding the present institutional arrangements for Great Lakes management and the alternatives available for strengthening them." Fifty-six statements were elicited, and due to the nature of the question, were understandably diverse in nature. Approximately one-half were reiterations of comments provided in preceding sections; the balance were more general and might best be characterized as

reflections upon efforts to understand and revise Great Lakes institutional arrangements. Several themes emerged:

1) A firm understanding of present institutional mandates, functions and interrelationships - in both theory and practice - is the essential precursor to any revision efforts. Without that understanding, any such revision is unlikely to yield a positive contribution to present management efforts.

2) The creation of a single "superagency" is not only politically unlikely; it may very well be undesirable. Substantive changes in the management effort can also be attained without extensive institutional restructuring. Strong leadership and a commitment to institutional mandates, coupled with enhanced inter-institutional coordination may be an effective and more politically acceptable alternative.

3) Political will is perhaps the most essential ingredient in institutional "success," and yet, is widely viewed as lacking in the Great Lakes management arena.

4) Special interests operating in the management arena are such that neither a single "umbrella agency" nor a set of agencies can be expected to operate in some universally satisfactory mode. Simply providing a forum for multi-jurisdictional discussion and consensus building is an important function which should be supported. Accommodating differences can be a useful function if resolving them is not possible.

5) A "regional consciousness" is slowly evolving in the Great Lakes Basin, as reflected in incremental revisions to existing institutions. Nurturing this consciousness and encouraging change within established political parameters is a positive contribution to the Great Lakes management effort.

Summary of Findings

The analysis and interpretation of survey questionnaire responses serves a two-fold purpose: 1) in gaining a perspective on attitudes and opinions on present and desired institutions and institutional arrangements; and 2) in contributing to an information base from which alternatives for institutional revision might be drawn. Clearly, the survey itself cannot be relied upon as the sole rationale for development of such alternatives: its audience was but a sampling of the community of Great Lakes interests and its questions, by design, elicited observations and opinion as opposed to indisputable fact. Yet, its findings do present a broad and rather detailed "snapshot" of present institutional arrangements and the prevailing attitude toward them. The closing section of this chapter presents summary statements and interpretations of findings drawn from the aforementioned survey questionnaire components. The reader is referred to the appropriate preceding section for statistical specificity not provided below.

A. Views on Existing Institutions and Institutional Arrangements

1) Present institutional arrangements for Great Lakes management are viewed as less than satisfactory by over 70% of respondents; with the preponderance finding the arrangements to be marginal at best. This finding is significant by virtue of both the extent of dissatisfaction and the fact that those responding are key players in the collective Great Lakes management effort. The response itself provides but a gauge of perception and does not attempt to uncover the source of dissatisfaction: that is left to later questions. The nature of the response, however, is also significant in that it confirms a hypothesis presented in Chapter One - that there is a "long-standing yet poorly articulated sense of dissatisfaction" among the community of Great Lakes interests. The response, therefore, presents a challenge: to determine the basis for dissatisfaction and the means to address it. The strength of the response suggests that a window of opportunity may be open to effect positive change.

2) While duplication of effort and conflicting goals within the Great Lakes institutional ecosystem are not perceived to be significant problems, over 80% of respondents find current coordination and cooperation levels to be inadequate. The first of these findings is of interest in that the complexity of institutional arrangements for Great Lakes management has long been referenced by those (generally elected officials) who bring charges of duplication and inefficiency against them. The response to the contrary by this group of knowledgeable respondents dispels that misconception and serves to demonstrate that institutional complexity, whether it be desirable or not, is a characteristic of the federal system of Basin governance. This, consolidation or outright elimination of institutions for the sole purpose of reducing the number of "players" is inappropriate; questions of inefficiency and ineffectiveness must also be present.

   The overwhelming concern regarding coordination and cooperation is of great consequence, as such activities provide the mechanism by which the federal system functions. Further, these are the essential functions allocated to regional, multi-jurisdictional institutions. The extent of the unfavorable response suggests that considerable attention must be paid to the linkages and communication mechanisms between and among the various levels of government and the facilitative role that regional institutions play. Dissatisfaction was pronounced among respondents from academia and local government; two groups that are removed from the coordinative mechanisms that do exist and possibly for that reason look less favorably upon them. Redefining the institutional ecosystem to embrace such interests is suggested.

3) While the overall adequacy of management functions pursued by the collectivity of Great Lakes institutions might best be termed as "marginal," the strongest areas consist of policy development, impact assessment and coordination, with pronounced weaknesses in advocacy, enforcement, public-participation/education and

monitoring/surveillance. In no case did an "adequate" or "very adequate" response total more than 52%, with 17.8% the low end.

An analysis of responses indicates that even the "best" is marginal when management functions are subjected to respondent perceptions. The fact that "coordination" was rated one of the better pursued functions is telling when one reviews the previously presented finding on levels of dissatisfaction with coordinative/cooperative activity. The critical consideration in the Table 14 display is not in the comparison of functions, but in the fact that all are viewed as marginally pursued at best.

4) While most respondents find that both structural and operational characteristics contribute to dissatisfaction with present institutional arrangements, of the balance, twice as many pointed to predominantly structural problems.

   This finding is significant in that structural (e.g., membership, staffing, mandate) problems require a substantially greater investment of time and political energy to remediate, as compared to operational problems that can often be addressed via lower-profile procedure-oriented means. U.S. respondents were inclined to identify the former, suggesting perhaps a more fundamental dissatisfaction with institutional arrangements than their Canadian counterparts. Local and private sector respondents were also so inclined,and much more so then other affiliations. One might speculate that those with direct involvement in the institutional ecosystem (i.e., federal, state, provincial respondents), recognize the inherent flexibility in current arrangements, while those largely "on the outside" (i.e., local, private sector respondents), may view the limited access to these arrangements as an inherent structural deficiency as opposed to one that can be overcome through policy or procedural revision.

5) Dissatisfaction with present institutional arrangements has a number of origins, principal among them: poor coordination; fragmentation of authority (i.e., "no one in charge"); limitations in management authority; poor representation at the federal level and "turf protection" tendencies that inhibit cooperation. Interestingly, one of the few possible explanations receiving little support was "insensitivity to local and citizen needs". While under-representation of those sections in the institutional ecosystem is widely recognized, it appears that it is viewed as a contributing but not leading source of dissatisfaction.

   Interpretation of the responses leads one to recognize that there is no single source of dissatisfaction to focus upon, but a number of them demanding both structural and operational solutions.

6) With regard to perceptions of individual institutions and their respective missions, 71% of all respondents with an opinion found the performance of the Great Lakes Fishery Commission to be satisfactory. Other figures were: International Joint Commission - 44%; Council of Great Lakes Governors - 31%; and the Great Lakes

Commission - 30%. When these responses are analyzed on the basis of respondent affiliation, three findings of particular significance are elicited:

a) almost one-half of all respondents chose not to assess the Great Lakes Fishery Commission - double the rate for the Council and Commission and ten times that for the IJC. While various reasons for this may exist, one might speculate that lack of familiarity was a factor, given responses to a earlier question and the relatively low profile of the Fishery Commission vis-à-vis other institutions. Of those that did respond, favorable responses were dramatically higher than for the apparently more familiar institutions.

b) Canadian respondents are substantially more favorably disposed toward the IJC, perhaps because it is the Great Lakes institution in Canada, while U.S. respondents have available other institutional means to address regional/binational issues. The favorable Canadian response to the GLFC can be similarly explained.

c) State/provincial attitudes toward the Council and Great Lakes Commission were predominantly "marginal" or "inadequate" (50-60%), yet this is the very clientele they seek to serve. This reflects some widely shared concerns and is therefore a matter of priority attention.

7) Organizational strengths and weaknesses (of both a structural and operational nature) were identified for each of the four institutions of principal concern - with respect to their potential in addressing the breadth of Great Lakes management needs. Results, for each institution, in order of frequency are as follows:

International Joint Commission

Strengths include: binational membership; technical capability; firm legal framework (i.e., Boundary Waters Treaty of 1909, Great Lakes Water Quality Agreement of 1978); sense of "history" (i.e., firmly established); prestige and positive public profile; Basin-wide orientation and subscription to the "ecosystem approach;" joint consideration of U.S. and Canadian concerns; consensus building vehicle; and independence and impartiality.

Weaknesses include: lack of authority for program initiation, implementation or regulation; lack of initiative and follow-through; politicized appointment and decision making process; staffing/funding inadequacies; lack of state representation; failure to exercise full authority under existing mandate; and inconsistent and inadequate leadership.

Great Lakes Commission

Strengths include: co-equal state representation; coordinative device; legal authority under the Great Lakes Basin Compact; use

for interstate advocacy; staff capability and dedication; and ability to address a broad range of economic development and environmental issues.

Weaknesses include: limited mandate and absence of implementation authority; inadequate Canadian representation; limited state interest and support; inconsistent/inadequate state involvement and leadership; unclear direction at state and staff levels; lack of follow-through and impact; inability to achieve consensus; low public profile and level of support; singular focus on issues; poor caliber or inappropriate selection of Commissioners; and staffing/funding inadequacies.

Great Lakes Fishery Commission

Strengths include: Basin-wide orientation; binational participation; technical capability; clear focus and manageable mandate; record of accomplishment (i.e., sea lamprey control); and staff dedication.

Weaknesses include: narrow mandate and focus; narrow focus within fishery management (e.g., preoccupation with sea lamprey control, production rather than habitat management orientation); low profile among the public and resource management community; inadequate funding base; lack of implementation and management authority; and focal point for "turf battles" among cooperators.

Council of Great Lakes Governors

Strengths include: high level representation and decision making authority; political "clout;" high public and media profile; quick response capability; forum for interstate coordination.

Weaknesses include: lack of defined plan of action; lack of continuity and follow-through; lack of co-equal representation by all Basin states; politicized nature; inadequate staff size and expertise; inadequate coordination with other regional institutions; absence of statutory authority; actual/potential turnover in membership and staff; and absence of full Canadian representation.

These findings are of importance in two respects, first as an indication of means to strengthen individual institutions and, second, as an indication of the relative importance of various characteristics for "institution-building" purposes in a more generic sense. With respect to the latter, the following desirable characteristics can be highlighted: binational multi-jurisdictional membership; Basin-wide focus; technical capability on a range of environmental and economic development issues; consensus building; positive public profile; comprehensive and flexible mandate; authority for program implementation and others.

B. Views on Desired Institutions and Institutional Arrangements

1) Given the opportunity to design the "ideal" regional institution, most respondents would select a binational compact/treaty

commission with an appointed state, provincial and federal membership; a Basin-oriented jurisdiction; a comprehensive management focus with some limited regulatory/enforcement powers, and a small staff with some autonomy but accountable to member jurisdictions. Management functions would be broad based, with special emphasis upon Basin planning, regional policy development, coordination, data collection, impact assessment, and research/issue analysis.

It is important to note that this institution-building exercise was pursued by each respondent under the assumptions that the "new" institution would replace all other regional, multi-jurisdictional institutions and would be devised with all political constraints aside. Given this level of autonomy and power, however, it is interesting to note that the institution built by consensus in not a radical departure from what now exists, but rather a new institution that incorporates the positive attributes of many others. Thus, it appear that in the "real" environment where obstacles to change do exist, one need not view the "desired" arrangement as unattainable under any circumstances. As it is a composite of institutional characteristics currently observed or, at the minimum, in good-standing on a conceptual basis, it can realistically serve as a long term goal either through incremental revision to existing arrangements or through carefully planned, single-step change. This consideration is reflected in later discussion of alternate scenarios for institutional revision.

It is also important to note that substantial differences of opinion or emphasis across nationality or affiliation were observed only infrequently, suggesting that consensus (at least conceptually) on new directions for Basin governance is achievable within the broader community of Great Lakes interests.

2) A small majority of respondents (53%) favored a centralized institutional arrangement in which all principal management functions are consolidated into a single lead entity. The balance found a decentralized, multi-institutional approach to be more desirable. U.S. respondents favored the former relative to Canadian preferences; academic respondents favored the latter relative to other affiliations.

The obvious lack of consensus reflects the fact that numerous respondents view institutional complexity as the "lesser of two evils"; the second being a single "superagency", that by virtue of its size and standing may prove to be a bureaucracy insensitive to the needs of Basin users, interest groups and political jurisdictions. In fact, numerous, general comments questioned the propriety of the "superagency" concept, recognizing that institutional consolidation does have its limits and should not be an end unto itself. This is an important perspective to consider in institutional revision efforts.

3) Issue areas of relevance to the desired institution, in order of importance, include: water quality; water quantity; levels and flows; air quality; fish and wildlife; and coastal zone

management. Those with lower ranking include: drainage; flood plain management; soils; geology; and forests/vegetation.

This ordering demonstrates that preferences for Basin managements focus on water resources as well as the airshed, while land-oriented and more locally definable resource areas are less appropriate for management attention at the Basin-wide level. These preferences are in line with historical ones, although the high ranking for air quality may be indicative of increasing receptivity to the idea of embracing an issue area largely shunned by established channels for Great Lakes Basin management.

4) Respondents are virtually evenly divided as to whether management functions should be allocated to institutions on the basis of level of authority (e.g., one institution responsible for regulation an enforcement, another for planning), or by resource area (e.g., one institution entirely responsible for fisheries, another for water quality). U.S. respondents preferred the former; Canadians the latter. Allocation by level of authority was preferred by local and regional respondents, while other affiliations exhibited a mixed response.

Under both scenarios, of course, strong inter-institutional linkages would be required to ensure that the ecosystemic aspects of the resource are addressed in management activities. It is equally clear that the federal system of Basin governance required some means of sharing management tasks and implementing roles. The fact that the respondents did not achieve consensus in how this allocation might be designed grants the issue special consideration in later discussion of alternate institutional scenarios.

C. Means to Implement Change

1) All political constraints aside, consolidation of existing agencies is the preferred approach to institutional change (50%), followed by incremental change to existing agencies (23%) and creation of new institutions (18%). Given political realities, however, incremental change was viewed as most realistic (76%), followed by consolidation of existing agencies (12%) and creation of new institutions (4%). Almost 10% of respondents believe that political realities prohibit any type of directed change at the present time.

Under the "constraint free" scenario, it is enlightening to note that, on a percentage basis, Canadian respondents preferred the "incremental revision" alternative by a two to one margin over U.S. respondent preferences. One can speculate that this is due to the comparatively high level of satisfaction of Canadian respondents with the IJC, presently Canada's principal binational water resource management mechanism. Further speculation might be that more substantive change (e.g., replacement of the IJC) might serve to weaken the level of representation and influence presently available to Canada through the IJC.

Also of interest is the radical change in views - across nationality and affiliation-observed when the political constraint variable is altered. It is clear that the preponderance of those in the community of Great Lakes interests are resigned to the fact that an incremental approach may be the only viable approach to effect change. While this may be a valid observation, it tends to encourage narrow thinking: focusing on what can be done politically rather than what should be done in terms of better managing the resource. This tendency is a dangerous one, as it discourages innovative thought and decisive action. Thus, political reality should be tempered with an element of idealism when institutional design is approached.

2) In order of frequency, respondents identified prevailing obstacles to institutional change as: resistance by political jurisdictions unwilling to sacrifice autonomy; lack of political will; funding/resource constraints; resistance by existing regional institutions and uncertainty over institutional needs. Responses were uniform across nationality and affiliation.

   As with the "sources of dissatisfaction" presented earlier, it is clear that no single obstacle to institutional change exists, and efforts to overcome those that do will require, in concert, motivating elected and member agency officials; defining unmet needs; gaining support of existing regional institutions as well as the political jurisdictions to be involved; and securing the necessary funding and organizational requirements to establish the new or revised institutional arrangement. Each of these considerations plays a role - to some extent - in the adoption of any revision initiative.

3) Suggested structural and operational revisions to the four institutions of concern focus on the areas of membership/cooperator arrangements; appointment process; authority; coordination-administration; scope of concern and institutional status. Suggested revisions with each category are presented in detail in the body of the chapter and reflected in Chapter Eight and Nine discussion.

D. Miscellaneous Questions

1) Responses yielded no single institution generally capable of serving as a "prototype" for addressing Basin-wide resource management needs. The now-defunct Great Lakes Basin Commission was identified by 13% of the respondents, followed by the International Joint Commission and the Delaware River Basin Commission. However, the 67 responses were scattered over 38 institutions.

   It is interesting that the institution held in highest regard by the respondents as a prototype for Basin management is the GLBC. This opinion is reinforced by the consensus-built "ideal" institution presented earlier - an institutional form reflecting many Basin Commission characteristics. Thus, it appears that regional leaders are well-advised to look to their own past as they design institutions for the future. The GLBC, as well as the entire

Title II River Basin Commission arrangement under the Water Resources Planning Act of 1965, deserves additional study as opportunities for operationalizing components of that effort may be warranted.

The Basin Commission aside, responses clearly verified that there is no single prototype agency in existence (or at least identified) that is widely regarded as a candidate for application in the Great Lakes setting. Thus, the generic institutional forms presented in Chapter Five warrant careful consideration.

2) Of the institutions identified, desirable characteristics include: a research capability; broad jurisdictional representation; Basin-wide orientation; broad issue orientation; firm legal basis and broad authority; coordinative/consensus building forum; long-term planning and a standard of professionalism.

3) Respondents identified 226 present and emerging resource management needs in the Great Lakes Basin. Assembled into nine resource categories, they are as follows in order of frequency: water quantity management; water quality management; toxic/hazardous waste management; institutional/policy needs; maritime concerns; air quality; coastal zone/land resource management; economic development and ecosystem management. Of the above, the most frequently mentioned issue was that of Great Lakes diversion and consumptive use, followed by concern over toxic contamination of the resource.

As discussed earlier, the desirability of "form following function" is a standard for Basin governance. For this reason, institutional revision efforts must be sensitive to and accommodate the range of issues to be addressed. On a second note, the relatively high standing of "institutional/policy needs" on this listing of otherwise predominantly resource-specific issues is significant, and attests to the importance placed on such needs by the community of Great Lakes interests.

4) Respondents provided a number of general comments/observations of note. Several major themes emerged, (see discussion in body of chapter), providing a conceptual framework for examining the role of institutional change in enhancing the management effort.

SECTION THREE: ALTERNATE INSTITUTIONAL ARRANGEMENTS FOR GREAT LAKES MANAGEMENT

Introduction

At this point, it is important to emphasize that all preceding discussion has had a decided emphasis upon the description, interpretation and analysis of institutional activity in Great Lakes management. Any presumption of institutional inadequacy - at either the individual or collective institutional level - was studiously avoided from the outset. Rather, areas of strength and weakness emerged through the examination of the literature; input from personal interviews and interpretation of responses from a broad-based survey of regional policymakers and opinion-leaders. These sources also provide the means to construct a set of guidelines, or benchmark, for use in the design, evaluation and refinement of a given institution or set of institutions.

As will be discussed, one of the many consensus findings which emerged from earlier analysis pertains to the evolutionary nature of regional resource management and the need for Great Lakes jurisdictions to overcome the constraints which have thwarted its maturation. One such constraint, for example, is the historical inability of political jurisdictions to translate the tenets of the "ecosystem management approach" into institutional process. Wendall and Schwann (1972) explain, "The institutional labyrinths that seemed perfectly logical as they were designed over the years were suddenly seen as clearly inadequate when the environmental issue emerged. Public policy officials have a new "ecological" approach to resource problems. Natural resource and pollution problems are seen to interact in ecological systems requiring common governmental solutions." This, and other findings and observations on present institutional arrangements, make it abundantly clear that nurturing the status quo will serve only to compromise the region's potential and the use and protection of its resources. Cadieux (1979), in fact, provides a most appropriate theme for the final chapters of this study in stating that "We should be considering new arrangements which will respond to present challenges, build on proven techniques and institutions and combine or blend them with new ones which will serve our present and future requirements."

This section, via its two component chapters, provides a point of transition between the documentation of institutional needs and the adaptation of the present institutional structure to accommodate them. In Chapter Nine, the previous analyses (i.e., literature review, personal interviews, survey questionnaire) are drawn together to elicit summary statements of finding on a individual and collective institutional basis. Based on these findings, a goals and objectives statement to guide Great Lakes institutional activity is offered, as is a "checklist" of desirable structural and operational characteristics.

This information provides the basis for Chapter Ten discussion, in which specific options for structural and operational revision to the present Great Lakes institutional ecosystem are presented under both incremental and comprehensive change scenarios. Recommendations are offered, their rationale presented, and the likelihood of their implementation given political/institutional constraints explored.

The analytical framework and recommendations presented in these closing chapters address the central theme of the study hypothesis, which maintains that the "evolution of effective institutional arrangements" can be aided by the integration of appropriately derived organizational characteristics into new or existing arrangements.

CHAPTER EIGHT

GOALS, OBJECTIVES AND PARAMETERS FOR THE COLLECTIVE INSTITUTIONAL EFFORT: DEVELOPING A BENCHMARK

Introduction

In earlier discussion, several factors which constrain or otherwise complicate the search for the "ideal" institutional arrangement were presented, including: superficial attention by policy makers to resource management goals and needs; the absence of a benchmark for institutional adequacy; and the inadequacy of evaluative mechanisms for assessing institutional performance.

Clearly, any effort to institute or otherwise advocate structural or operational revisions to a given institution in the absence of defined goals is at best ill-advised. Craine (1972) made this point quite clear in his institutional arrangements study for the Great Lakes Basin Commission. Some years earlier, the Water Resources Council (1967) stated that "before a new institutional arrangement is established in any basin, the needs of the basin should be determined and the major outlines of a basin comprehensive plan for the conservation and management of the basin should be clearly seen."

It is further argued that any such revision may be of questionable utility if neither the pre- nor post-revision performance of the subject institution can be adequately evaluated in light of defined goals and objectives. The Federal Council for Science and Technology (1968), in its study of national water resource policy and political institutions, was emphatic in documenting a need "to establish effective means of providing a continuing assessment of institutional effectiveness so that needed changes - particularly in new programs and policies - can be quickly identified." The Council went on to make an observation that remains relevant almost twenty years later: "It is not at all clear that we have the knowledge to implement a program for early and adequate evaluation of institutional performance. It seems abundantly clear that we should develop adequate techniques to accomplish this task."

In recognition of the magnitude of these constraints, they are afforded substantial attention in this chapter, and provide the basis for an analysis of individual and collective institutional approaches to Great Lakes management. Specifically, the chapter seeks to interpret and synthesize information presented in preceding discussion; analyze the overall institutional framework and its component parts; and through identification of attendant strengths, weaknesses and institutional needs, provide a basis for the options presented in Chapter Nine.

Goals for Great Lakes Management: Developing a Context for Institutional Change

As evidenced in earlier discussion and confirmed through personal interviews and the survey questionnaire response, the goals espoused by the four regional institutions of concern are largely compatible; tending to overlap or, at the minimum, complement each other. They are, by and large, broad statements advocating the protection and enhancement of the resource via multi-jurisdictional cooperation. As indicated in Chapter Three and Appendix A, the goal statements of the Great Lakes Commission and Council of Great Lakes Governors bear great similarity in their breadth, focus on an economic development/environmental protection balance; and an emphasis on cooperative state action. The goal statements of the International Joint Commission and Great Lakes Fishery Commission place a primary emphasis on resource management and protection (as opposed to regional economic development), tend to be more explicitly defined, and focus on the international level.

While the compatibility of these various goal statements is fortuitous in the context of the overall Great Lakes management effort, two difficulties are apparent. First, despite this compatibility, a dominant, central theme for the collective management effort does not emerge. Rather, each institution largely formulates its own programs in pursuit of its own goals, either independently or with some nominal level of cooperation and coordination with other institutions. While the relative dearth of cooperative efforts has generally not been shown to foster inefficiency due to duplication of effort, the failure to consolidate already limited resources in pursuit of common objectives does have efficiency and effectiveness implications. A case in point is the observed hesitancy or unwillingness of the Great Lakes Commission (with its technical expertise) and the Council of Great Lakes Governors (with its advocacy influence) to fully join forces in active, vocal representation of the region at the Congressional level.

A second difficulty is the nature of the institutional goals themselves. As noted, they tend to be broad, open-ended and subject to variant interpretations. This is particularly true of the Great Lakes Commission and Council, which are not bound by the specificity of a Great Lakes Water Quality Agreement or Convention on Great Lakes Fisheries. The result is a goal statement which tends to be selectively pursued and programs which defy evaluation because the goal statement does not lend itself to measurement.

The relative compatibility of goals across these institutions presents a substantial yet largely untapped opportunity to enhance the overall regional management effort. The missing element is a <u>single</u>, unifying statement of goals and objectives for the region; a statement which draws from and consolidates those embodied in the individual institutions. Such a statement, cooperatively derived and approved by consensus, would provide the common focus under which all individual institutional goals, objectives and programs would be pursued. Further, it would provide the means by which individual institutions could evaluate their contribution to the overall management effort; determine those areas warranting further attention, and identify opportunities for enhanced effectiveness via

cooperative efforts. Finally, it would demonstrate - to Basin and non-Basin interests - that the Basin jurisdictions and their regional institutions share common convictions and can form formidable alliances to pursue their goals.

Such a statement is not without precedent. In fact, the Great Lakes Basin Plan, prepared under the auspices of the Great Lakes Basin Commission, consisted of a series of policy-oriented elements approved via consensus of its U.S. state and federal member agencies. More recently, the Great Lakes Charter, and in particular the broad management principles embodied within it, has served in such a capacity for the states and provinces. The Great Lakes Toxic Substances Control Agreement, approved by the Great Lakes Governors in mid-1986, with formal provincial adoption forthcoming, serves in a similar capacity.

As envisioned, this statement of management principles would consist of a single goal statement and a series of supporting objectives which include those presently espoused by the regional institutions of concern.

An acceptable goal statement for the collective regional management effort can be derived by reviewing the goal statements of individual institutions in light of comments received via the personal interviews and survey questionnaire responses. The following is suggested:

> "To enhance the public health and welfare of Basin residents through: the restoration and maintenance of the integrity of the Basin ecosystem; the orderly development and management of its resources for sustainable and equitable use; and common stewardship via binational, public-private sector partnership."

This carefully fashioned statement is a composite of various concepts embodied in the individual regional institutions, but is more than simply a "sum of the parts." Unlike other goal statements, it rejects the notion of merely "balancing" competing interests. Rather, it recognizes the inseparability of economic development and environmental quality goals. Further, it acknowledges the concepts of ecosystem management, sustainable use and equitable access by the range of resource users. Finally, it embraces the notion of universal stewardship which transcends both national boundaries and agency jurisdictions. Such a generic statement for the collective Great Lakes management effort poses no conflict for individual institutional goals while providing a single focus for all.

Specific objectives under this broad goal statement might best be categorized under the headings of Basin Planning and Management; Resource Development and Promotion; and Intergovernmental Relations. Again turning to existing institutional objectives and those generated via personal interviews, survey responses and related analysis, the objectives presented in Table 22 are offered for consideration.

Recognizing that such a goal and objectives statement must evolve to address emerging needs, and can undoubtedly be embellished upon, it is presented here to provide a fundamental focus for discussion of requirements for institutional design and operation.

TABLE 22

GOALS AND OBJECTIVES FOR GREAT LAKES INSTITUTIONAL EFFORTS

Goal: "To enhance the public health and welfare of Basin residents through: the restoration and maintenance of the integrity of the Basin ecosystem; the orderly development and management of its resources for sustainable and equitable use; and common stewardship via binational, public-private sector partnership."

Objectives:

1. Basin Planning and Management

   a) to restore and maintain the quality of Great Lakes waters and related resources through the development, implementation, promotion and coordination of appropriate programs, practices and technology.

   b) to maintain an updated comprehensive plan for the protection, development and sustainable use of the water and related land resources of the Basin.

   c) to provide a central repository for the collection, storage and analysis of resource data.

   d) to conduct research in support of ongoing management functions and undertake issue analyses and special studies.

   e) to develop environmental standards for Basin-wide application and provide the regulatory and enforcement capability to ensure their attainment.

   f) to maintain a monitoring/surveillance program capable of providing an historical data base on the status of the use and quality of the Basin's resources.

   g) to provide a locus for the avoidance or resolution of disputes among and between resource users and the jurisdictions with resource management responsibilities.

   h) to promote consistency among and coordination of resource management programs and policies pursued by individual Basin jurisdictions.

   i) to educate and inform Basin residents of the nature and consequences of resource use and encourage active involvement in all aspects of the planning and management process.

   j) to acknowledge the ecosystemic nature of the Basin and its resources and pursue management programs reflective of it.

2. Resource Development and Promotion

a) to provide for environmentally sound regional economic development through programs to facilitate sustainable use and development of the Basin's resources.

b) to foster, through regulatory, policy and related management efforts, a balance among the various resource user communities.

c) to publicize and promote, on a domestic and international scale, the Basin's resource-based economic attributes; including among others the Great Lakes/St. Lawrence Seaway; port facilities; water-based trade and tourism; and quality of life attributes.

d) to stimulate new, environmentally sound regional economic development through the design, implementation and coordination of plans, programs and special studies.

3. Intergovernmental Relations

a) to provide a forum for interjurisdictional information sharing, issue analysis, program coordination, regional policy development, and promotional and advocacy activities.

b) to serve as the Basin's spokesman in an active and aggressive advocacy program on issues of concern, directed at appropriate levels of government.

c) to provide information, research and advisory services to member jurisdictions and other constituents.

d) to maintain a binding arbitration function on matters referred by the parties (i.e., jurisdictions) to a Basin resource management dispute.

e) to maintain an updated inventory of ongoing Great Lakes research, establish priorities and recommend areas for additional emphasis.

f) to maintain an updated inventory of Great Lakes resource management programs, identify strengths and weaknesses and recommend areas for additional emphasis.

g) to ensure co-equal United States and Canadian representation in all facets of Basin planning, management, policy and coordinative efforts.

Toward a Benchmark for Institutional Design and Operation

Numerous authors in the area of Great Lakes management have proffered listings of the "ideal" characteristics of a regional resource management entity. For example:

- The Interuniversity Seminar on the Great Lakes coordinated by Francis and Dworsky (1971-72) highlighted the importance of

jurisdictional considerations; enforcement powers; fiscal adequacy; staffing adequacy; administrative discretion; flexibility; visibility; accountability; and structural compatibility.

- Bilder (1972) calls for the incorporation of "dispute avoidance and adjustment arrangements" into new and existing institutions. He also presents "principles of environmental management" com prised of an institutional sense of environmental responsibility; diverse approaches to diverse problems; the generation and use of "factual knowledge;" predictability; flexibility; lowest level solutions; non-legalistic solutions; and coordination.

- An International Joint Commission-sponsored workshop on anticipatory planning (1979) called for the creation of a "Basin-wide intelligence operation which monitors changes in ecosystem quality in a number of different ways and exercises surveillance over ongoing activities and new initiatives which tend to impact most heavily on the Great Lakes Basin ecosystem."

- Allee, Capener and Andrews (1975), in their analysis of basin governance systems, advocate a re-examination of jurisdictional representation, a review of how to internalize the externalities of individual actions; development of an information capacity; the building of consent by facilitating interjurisdictional accommodation; and reconciling local and regional interests.

- The U.S. Water Resources Council (1967) sets forth criteria which include: regional orientation, project construction capability; financial adequacy; comprehensive planning; flexibility (i.e., evolution and amendment); and an ability to foster interjurisdictional cooperation.

- Hines and Smith (1973) find that operational efficiency of a water management institution is dependent upon the physical dimensions of the hydrologically defined area (i.e., congruity of area and function); flexibility in determining geographic jurisdiction; population density; comprehensive mandate; and local support.

- Booz, Allen and Hamilton (1970) in a study for the Office of Water Resources Research, identified the following: the formulation, analysis and implementation of a comprehensive range of alternatives; a close relationship between planning and implementation; solution of internal disputes; coordination of private, local, state and federal planning and decisionmaking into a unified basin program; public participation at all stages of the planning/management process; analyze and influence related land and water uses; and operation over a logically complete geographic area.

- The Environmental Studies Board of the National Academy of Science (1970) presents seven "requirements" for effective environmental management: long-range planning; an early warning (i.e., anticipatory) function; monitoring capability; quick reaction field function; quick reaction analytical function; education and

professional training; and communication between researchers, policymakers and the public.

Any such recommendations, however, must be reviewed with caution. In many cases, they were generated as a reaction to the perceived failings of a single institution (such as the International Joint Commission) and consist primarily of measures to address those failings. Little attention has historically been given to the generation of parameters for the Great Lakes institutional ecosystem in its entirety, or for implementation of the broader set of Basin-wide resource management goals and objectives beyond those espoused by individual institutions. The application concepts presented in Chapter Four constitute a step in that direction in that they reflect consensus findings in the literature as opposed to an assemblage of parochial viewpoints from distinct research efforts. The same can be said for the findings elicited from the personal interview (Chapter Six) and survey questionnaire (Chapter Seven) efforts.

Drawing from these various sources, and interpreting them in light of the aforementioned Basin-wide goals and specific Great Lakes management needs, a checklist of institutional parameters is presented in Table 23. Unlike other efforts of this nature, however, it is designed as benchmark for assessing the collective characteristics of Great Lakes institutions, as opposed to those of only a single institution. This orientation reflects the fact that institutional design and operation is but a means to an end; efficient and effective Basin management. The number of institutions in a given Basin setting, or the allocation of management functions among them, is essentially immaterial if this "end" is achieved efficiently and effectively.

TABLE 23

CHECKLIST OF INSTITUTIONAL PARAMETERS FOR GREAT LAKES MANAGEMENT

STRUCTURAL PARAMETERS

1. Definition of Mandate

   a) Institutional goals and objectives must be consistent with, and supportive of those for the overall Basin management effort.

   b) Objectives should complement those of other institutions while avoiding duplication.

   c) Goals and objectives, where possible, should lend themselves to evaluation to provide indications of progress over time.

   d) The institutional mandate should be specific yet flexible to accommodate emerging management needs.

   e) The mandate should be given a degree of formality and longevity through use of legislation, treaty, compact, articles of incorporation or other legally recognized means.

2. Geographic Area of Concern

a) Authority should extend throughout the drainage basin of the Great Lakes/St. Lawrence River system.

b) Acknowledgment of, and sensitivity to the resource management needs of non-Basin portions of Basin jurisdictions should be maintained.

3. Membership

a) The institutional ecosystem should be consensus-based, and provide equitable membership and voting arrangements for Canadian and United States levels of government, including the two federal governments, eight states and two provinces.

b) In those instances where institutional membership is appointed, a legislative confirmation system should be instituted, as well as an opportunity for public input throughout the selection/confirmation process.

c) Representation from the citizen, private sector and sub-state/provincial levels should be secured by providing, through advisory committees or other means, direct access to institution members.

4. Breadth of Authority

a) Regional institutions should be fully accountable to their membership and responsive to its consensus decisions.

b) Singly or collectively, regional institutions should have comprehensive authority to address the broad range of resource issues and uses within the confines of the Basin.

c) While ultimate accountability to political jurisdictions is appropriate, those jurisdictions should vest the regional institution(s) with any and all management functions that can be administered more efficiently and effectively on a Basin-wide rather than political jurisdictional basis.

5. Financing

a) Appropriations from member jurisdictions should provide the basis for financing institutional operations. Acquisition of public/private grants, donations and contracts is an appropriate supplement provided that the objective pursuit of prescribed goals and objectives is not compromised.

b) Full participation and voting privileges should be contingent upon a given member jurisdiction's full financial contribution to institutional operations.

6. Staffing Arrangements

a) Staffing should be conservative, but appropriate for mandated functions.

b) Detailing of member jurisdiction staff to institutional activities should be vigorously pursued.

c) An emphasis on staff training and development should be maintained to secure and retain quality staff with a sensitivity for member jurisdiction needs and perspectives.

7. Management Functions

The collectivity of Great Lakes institutions should provide for:

a) Centralized data collection, storage and analytical capability;

b) An in-house research or research coordination capability to address/analyze emerging issues;

c) An extension service capacity to advise, educate or otherwise inform member jurisdictions and constituents of relevant issues;

d) Regulation and enforcement functions in those areas where centralized, Basin-wide administration is more efficient and effective than individual jurisdictional approaches. At the minimum, a role in recommending environmental quality/resource development standards for uniform adoption is appropriate.

e) A forum for dispute avoidance, and where necessary, an arbitration/conflict resolution mechanism;

f) Comprehensive, Basin-wide planning for the protection and development of the resource base;

g) An in-house monitoring/surveillance capability, or a role in coordinating such among relevant Basin jurisdictions;

h) Coordination of policies and programs among members jurisdictions and other relevant public and private sector entities with shared interest in management of the resource base;

i) A public participation program designed to inform, educate and solicit input from interested parties at all stages of the management process;

j) An advocacy/lobbyist role directed at points of political influence (as appropriate for a given institution), for the purpose of enhancing progress toward stated goals and objectives for Great Lakes management;

k) A consensus building mechanism providing for regional policy development on issues of concern to member jurisdictions; and

l) A special studies function to undertake impact assessments and otherwise address emerging issues.

8. Resource Focus

a) The resource base in its entirety - the components and interactions among them - should be within the realm of institutional interest.

b) Principal focus should be directed at those areas of the resource with pronounced transboundary implications (e.g., water quantity; water quality; levels and flows; drainage; aquatic resources; air quality; coastal zone management); their linkages and associated socio-economic issues.

OPERATIONAL PARAMETERS

1. Role in the Institutional Ecosystem

a) Before a new or revised institution is set in place, a clear demonstration of need must be evident in light of existing institutional capabilities and Basin management goals and objectives.

b) A new or revised institution must be set in place in such a manner as to avert or otherwise minimize disruption of ongoing institutional activity.

c) Informal linkages among regional institutions should be fostered to ensure complementary and mutually supportive programs.

d) institution must display a sensitivity to (and accommodation of) the methods, biases and constraints within which political jurisdictions approach Basin issues.

e) A sensitivity and responsiveness to the needs of public and private sector entities beyond member jurisdictions should be pursued in recognition of their role in the overall Basin management effort.

2. Pursuit of Mandate

a) Full authority under institutional mandates should be exercised; selective attention to areas of authority should be pursued only in light of an overriding rationale.

b) Rigidity in program design should be avoided in favor of institutional flexibility to address emerging issues.

c) An anticipatory posture should be nurtured to avoid historical "crisis response" management tendencies.

d) Areas for potential institutional activity should be assessed in light of goals and objectives to ensure their relevance.

3. Membership/Constituent Relations

a) Responsiveness to the needs of member jurisdictions should be of paramount importance in both day-to-day operations and long-term planning.

b) The institution should serve as a catalyst for interjurisdictional regional activity, but take every opportunity to credit member jurisdictions for successes achieved.

c) Informal, interpersonal linkages between the institution's staff and member jurisdiction representatives should be nurtured.

d) The institution should approach its coordinator/catalyst role subtly, to ensure that member jurisdictions regard it as a mechanism to serve rather than lead them, even if the converse is true in some respects.

4. Stature and Credibility

a) Objectivity in agenda setting, analyses and policy development must be pursued and a reputation in that area fostered among membership and constituents.

b) Building institutional support through promotional/public relations activities is essential to institutional stature and credibility; approaches include developing political linkages; utilizing the media to disseminate information; and maintaining a program open and accessible to the interested public.

c) A sensitivity to Basin-wide priorities in agenda setting and an integrated approach to environmental and economic development aspects should be pursued to ensure a broad support base.

d) In maintaining an open planning and management process, full disclosure of the rationale behind all decisions - particularly the unpopular and controversial ones - is advised.

e) The interest and political will of member jurisdictions must be nurtured to maintain support for regional management efforts. Voluntary and compulsory incentive systems should be investigated and applied, as appropriate.

5. Management Philosophy

a) The ecosystemic attributes of the Basin and its resources should be acknowledged and reflected in planning and management programs.

b) Long-term planning and pursuit of Basin management goals should not be sacrificed for short-term considerations designed only to enhance the institution's stature.

c) The institution should be wary of "capture" by special interests and any tendency to compromise its objectivity in pursuit of its mandate.

d) Coordination of disparate management functions (e.g., planning and implementation) should be pursued at the intra- and inter-institutional level to ensure consistency of approach toward Basin management goals and objectives.

e) While acknowledging ultimate accountability to member jurisdictions, the institution should exercise some degree of autonomy and discretion in the interpretation and application of stated regional policies.

The differentiation between structural and operational characteristics is a critical one for two principal reasons. First, as discussed in Chapter One, resource management needs cannot be addressed with certainty simply through the passage of legislation, creation of institutions or the development of programs. It is the nature of their application - the translation of goals to action - which is the ultimate determinant of success, however measured. Even an institution with a broad mandate and comprehensive, authoritative power can be rendered ineffective if operational requirements are not met. Conversely, even the most structurally constrained institution can assume a pivotal role in Basin management if its operational requirements are pursued fully and vigorously.

Second, securing operational revisions in a given institutional system, while often difficult, is infinitely easier than securing structural revisions. For this reason, it provides an area of available yet largely untapped opportunity for efforts at institutional change. This is particularly true in light of analyses (see Appendix A) which found substantial variance between activities presently pursued by Great Lakes institutions and those that could be pursued under existing authority.

Because it reflects only those parameters emerging from the study effort, this listing should be construed as comprehensive yet not exhaustive. While additional detail is possible, it can be argued with conviction that an institutional ecosystem reflecting the parameters identified can serve as a model for Basin management.

Statements of Finding - The Collective Institutional Effort

Drawing upon the descriptive analyses presented in Chapter Three and Appendix A, the collective characteristics of the four institutions of concern can be examined in light of the stated parameters to assess their structural and operational adequacy in meeting the goal and objectives statement. This assessment is provided below, highlighting strengths and weaknesses, and providing a focus for the recommended revisions presented in Chapter Nine.

A. An Assessment of Structural Considerations

1) Definition of Mandate

a) While the individual institutional mandates do not necessarily conflict, an overall Basin management strategy providing a common and central theme for their pursuit does not exist.

b) The complementary nature of the various mandates is evident, but inadequate coordination among them compromises the potential benefit of joint action. For example, the Basin management effort would benefit from closer Great Lakes Commission/Council of Great Lakes Governors cooperation in the pursuit of interstate initiatives. The Great Lakes Fishery Commission and International Joint Commission share an interest in habitat issues but have demonstrated little historic joint activity in that area. Duplication of effort has not been a significant problem among any of these institutions, but in the absence of more formalized coordinative arrangements, could become an issue.

c) Goals and objectives for the various institutions do not lend themselves to evaluation, and historically there has been little effort to do so. Institution-specific analyses have been limited at best, and broader Basin-wide analyses virtually nonexistent. Beyond arrangements such as the mandated review of the Great Lakes Water Quality Agreement, evaluative requirements/mechanisms have not been incorporated into institutional design.

d) Generally speaking, flexibility in management activity is provided in institutional mandates. While management authority is of the "soft" variety, discretion in the selection of issues is substantial. The real issue is that of political will; do the member political jurisdictions exercise the flexibility provided for in institutional mandates?

e) The institutional ecosystem is well established; it is an ever-changing, dynamic system with many "newcomers," but most principal regional institutions have been in place for decades. The four institutions of concern are based on formal legal authority (i.e., treaty, compact, convention, articles of incorporation) and, as such, lend a sense of permanence and continuity to interjurisdictional resource management considerations.

2) Geographic Area of Concern

a) While all institutions exhibit a sensitivity to Basin concerns, inadequacies exist in the areas of comprehensiveness and equity of jurisdictional representation. For example, the GLFC and IJC possess a binational, Basin-wide mandate, but their flexibility in responding to the range of management issues is limited by their mandate. The GLC and Council, on the other

hand, possess great flexibility in selecting their issues, but lack the binational focus and equitable U.S.-Canadian representation.

b) Because all the institutions of concern are membership entities accountable to political jurisdictions, they do exhibit a sensitivity to the resource management needs of non-Basin portions of Basin jurisdictions.

3) Membership

a) The GLFC and IJC provide for equitable U.S. and Canadian representation. The GLC is clearly lacking in this area, while the Council provides for Canadian representation in selected activities. Other than the IJC, however, none have provided an ongoing forum for discussion and action on a wide range of shared issues.

b) The appointment process has been widely considered a problem area for all institutions except the Council, where the governors themselves serve as members. A perceived need for a more open nomination/review process for IJC appointees has been articulated by many in the United States, for example. Concerns over the consistency of GLC state appointment processes have long been expressed, as has concern over the stature and participation levels of appointees. The latter concern has been raised with the U.S. Commissioners of the GLFC as well.

c) Informal avenues for nongovernmental organization input do exist within the process of each institution, but no formal public participation programs are presently active. Similar limitations are experienced by sub- state/provincial government jurisdictions.

4) Breadth of Authority

a) Accountability of regional institutions to their membership is not an issue - at least not in theory. All have mandated requirements or established procedures governing the selection of issues to be addressed and the nature of any resultant action. In practice, however, institutional priorities can be shaped not only by member jurisdiction attention to Basin management needs, but by passive indifference, turf protection concerns, or desires to focus on areas of ready agreement rather than potential confrontation.

b) Taken collectively, the institutions of concern do have the authority to address Basin issues in a comprehensive manner; their broad mandates provide for this. However, the extent of this authority is quite limited. With few exceptions, the regional institution itself has no unilateral authority to render binding decisions or exercise regulatory/enforcement functions. Further, there exists no standing requirement that

the broad range of issues be addressed; selective attention to particular issues is the rule rather than exception.

c) The fact that "hard" management functions are generally not vested in the regional institutions themselves reflects the historic unwillingness of the political jurisdictions to compromise their autonomy.

5) Financing

a) Appropriations from member jurisdictions are the principal and, in most instances, exclusive means of institutional financing. While such arrangements are viewed as desirable, little emphasis is placed upon alternate funding sources (e.g., grants, endowments, public and private contracts) to augment limited funding levels.

b) All of the institutions of concern have experienced some level of difficulty in securing contributions from member jurisdictions - even in those instances when the "holdouts" retain an active role in institutional activity. State contributions have been an issue with the GLC and Council; GLFC and IJC concerns have centered around allocation formulas and federal funding levels.

6) Staffing Arrangements

a) Staffing within and across all institutions is modest at best and generally considered too limited to accomplish prescribed objectives.

b) The "detailing out" of institutional program activity to member jurisdictions - through their representation on committees and task forces - has been an effective means of augmenting limited staff size. Through their representatives, member jurisdictions of the IJC, GLFC and Council are oriented as much (or perhaps more) toward undertaking work themselves as they are to directing regional institution staff. The GLC, at least in recent years, has been characterized by a comparatively limited level of direct membership involvement in program activity.

c) ith some notable exceptions, the institutions of concern find it difficult to secure and retain the services of highly qualified personnel. In many cases, financial, personal development and promotion opportunities cannot compete with those in other settings; a comparatively high turnover rate and difficulty in attracting and retaining mid-career professionals can result.

7) Management Functions

a) A centralized data collection, storage and analytical capability is not presently provided for. The present orientation is toward coordination in this area, advocating

consistency and the collection of data for issue-specific purposes rather than broader historical ones.

b) A research coordination capability exists within each institution although it is practiced only selectively and primarily by the IJC and GLFC. Present in-house research capability is limited primarily to policy research and the assemblage and interpretation of existing data or that collected by other jurisdictions.

c) The advisory/extension service capability is exercised by all institutions of concern, but in a limited and largely reactive manner. Inquiries are responded to but programs to actively seek out target groups are not provided. Further, these services are oriented toward member jurisdictions and constituents in the policy/management arena rather than the public at large.

d) Regulatory and enforcement functions within the regional institutions themselves are essentially nonexistent with the exception of quasi-judicial authority vested in the IJC. Recommendatory powers in terms of standard setting are exercised.

e) All the institutions of concern, by virtue of their existence and operation, provide a forum for interjurisdictional dialogue and therefore dispute avoidance. Formal arbitration/conflict resolution procedures (e.g., voting procedures, Article X of the Boundary Waters Treaty), are largely shunned, reflecting a desire to avoid areas of potential conflict for those in which consensus can be generated. Fundamental differences have historically in many instances been addressed outside the regional institution arena.

f) Comprehensive planning at the Basin-wide level is not presently pursued by any institution.

g) The monitoring/surveillance function in terms of water quantity and quality considerations is pursued by the IJC, which has substantial coordinative responsibility in that area. Similar though less extensive activity is pursued by the GLFC for fishery management considerations. Policy and legislative monitoring - at the state, regional and federal level - is a focus of the GLC and Council.

h) Policy and program coordination is a strength within each institution and among its member jurisdictions. Coordination of such <u>between</u> regional institutions is generally considered to be less than adequate.

i) A formal, continuing public participation program is not provided for by any of the institutions of concern.

j) An overt advocacy/lobbyist role for the region is provided for by the GLC and Council. The mandate exists; concern over the extent, effectiveness and direction of such activity is of continuing concern.

k) Institutional effectiveness in consensus-building is a strength. Even though all institutions of concern have provisions for majority-rule voting, work is almost exclusively accomplished by consensus. This is significant given the fact that the lack of binding authority or enforcement power means that a dissenting jurisdiction is not compelled to comply with any given decision.

l) All institutions possess a "special studies" function for issues within their area of responsibility. Again, political will to utilize this function for a given issue is the critical concern.

8) Resource Focus

a) The collective institutional effort does not provide for consideration of the Basin's resource base in its entirety. The institutions of concern either lack a full Basin-wide focus (i.e., GLC, Council) or operate under a mandate with principal consideration of only a subset of the range of resources in the Basin(i.e., GLFC, IJC).

b) Due to the ecosystemic nature of the Great Lakes and the nature of the region's political and hydrologic boundaries, most institutional activity does focus on issues with transboundary implications.

B. An Assessment of Operational Considerations

The operational parameters presented earlier, by their very nature, might best be described as "abstractions" in comparison to the structural parameters. They are concerned with institutional process and perception and, as such, can introduce an element of subjectivity into any assessment effort. As suggested in earlier discussion, however, operational considerations play a major role in determining the adequacy of institutional performance. Further, adjustments to operational characteristics may provide an effective and politically viable means of achieving institutional change in a prescribed direction.

Presented below is a series of observations on the Great Lakes institutional ecosystem; each corresponds to the similarly identified operational parameter presented earlier. The statements reflect the researcher's observations based upon the interview, survey questionnaire and literature review efforts presented in earlier chapters.

1) Role in the Institutional Ecosystem

a) Only rarely is a clear demonstration of need established prior to the creation of a new Great Lakes institution or the revision of an existing one. Rather, political expediency, displeasure with an existing institution or other motive is the motivating force. As a consequence, attempts to reconcile responsibilities and needs among institutions is undertaken after the fact rather than in the form of an "institutional feasibility study" prior to any such institutional manipulation.

b) Temporary disruption of the institutional ecosystem is inevitable upon entry of a new component (i.e., institution), particularly when that component has a broad and flexible man date. This was certainly the case with the entry of the Great Lakes Basin Commission in the early 1970's and the Council of Great Lakes Governors some ten years later. Minimizing such disruption - perhaps through the aforementioned "institutional feasibility study" approach - has historically been given little consideration.

c) Informal linkages among the institutions of concern are fostered to an extent at both the staff and membership level. In some respects, the inter-institutional memberships resemble the interlocking directorates observed in corporate structures. Nonetheless, these linkages can be tenuous and have historically been used as an information transfer device rather than a means for extensive cooperative action.

d) Great Lakes institutions have long exhibited a sensitivity toward, and ability to accommodate the methods, biases and con straints of the political jurisdictions within the Basin. Proficiency in this area is attributable, in large part, to the fact that these institutions draw their authority from and are accountable to these political jurisdictions. Hence, sensitivity and responsiveness to them is a matter of institutional survival. Second, the institutions of concern - as well as their predecessors - have recognized the subtleties of promoting Basin management despite long established political jurisdictional practices.

e) Great Lakes institutions - both singly and collectively - have failed to provide the means for open and extended interaction of public and private sector interests in their activities. All institutions are proficient at coalition building and each has its following of supporters and critics. In a broader sense, however, public participation programs are conspicuously absent. The last concerted attempt at such was the Public Information Work Group of the Great Lakes Basin Commission.

2) Pursuit of Mandate

a) As previously documented, Great Lakes institutions, through a process of evolution, actively attend to only a subset of their mandated authority. Selective attention is defensible; a means to allocate scarce resources, focus on areas of expertise, avoid duplicative or marginally effective areas of involvement, and accommodate membership preferences and directives. In practice, however, little attention has been paid to the rationale behind such selective attention, or whether the perceived gain at the individual institutional level is realized at the greater expense of the overall Basin management effort.

b) Flexibility to accommodate changing priorities is an inherent and often demonstrated operational characteristic in Great Lakes institutions. Generating and directing the political will to exercise such flexibility is the critical consideration.

c) Advocacy of an anticipatory posture has long been supported by Great Lakes institutions in concept, but organizational resources, the magnitude of Basin problems and institutional tendencies toward the "crises response mode" have limited its application.

d) Through their membership and staff, institutions constantly screen areas for potential activity, using criteria which include not only an assessment of relevance of goals and objectives, but political pressures, potential gains, institutional advancement and the like. Due to the absence of goals and objectives for the institutional ecosystem as a whole, the screening process is not as responsive to Basin management needs as it could be.

3) Membership/Constituent Relations

a) Great Lakes institutions have historically been responsive to the needs of member jurisdictions; when those needs can be determined. Difficulties in this area are evidenced by long-standing difficulties of the GLC membership in reaching consensus on priorities; and the unresponsiveness of the federal governments to the recommendations of the IJC. Historically, the regional institutions themselves have found it generally necessary to generate priorities internally for membership consideration rather than serving merely as a vehicle to implement them once identified by that membership.

b) A number of observers have attributed the downfall of the Great Lakes Basin Commission, in part, to its failure to credit member jurisdictions (rather than itself) for successes achieved. While its closing was, of course, attributable to a presidential Executive Order disbanding all Title II commissions, it has been suggested that this tendency

discouraged member states from organizing vocal opposition to the impending closure. Such a tendency is studiously avoided by the GLFC, and by virtue of their mandates, is not an issue with IJC and the Council. It seems apparent that the GLC could nurture a sometimes indifferent membership with a similar approach.

c) Informal, interpersonal linkages between the staff and membership of the various institutions are reasonably well developed and, with nurturing, could be invaluable in promoting cooperative efforts.

d) A similar comment to that in "b" is appropriate. Basin political jurisdictions are willing to support existing institutions provided they remain responsive and accountable to them.

4) Stature and Credibility

a) The institutions of concern share a positive reputation in terms of technical expertise and analytical objectivity. Experience has shown that perceptions of subjectivity - when they do occur - are often tied to misinformation among constituents. For example, there is a common misperception that the Great Lakes Commission is an "economic development and shipping agency" lacking in environmental responsibilities. Such instances suggest that these institutions might undertake a "marketing" function to publicize and clarify their mandates and explain to their broad constituency the rationale behind their decisions.

b) Public relations/promotional efforts as a means to enhance stature and credibility receive little attention among the institutions of concern. The one exception is that of the Council, which by virtue of its membership, has inherent media appeal. The Great Lakes Commission has made sporadic attempts to attract coverage - usually in relation to annual/semi-annual meetings - but retains a very low profile and level of recognition. The International Joint Commission does enjoy periodic substantial coverage, often related to issuance of board reports, the conduct of meetings, and high profile issues (e.g., lake levels, toxic contamination problems). The Great Lakes Fishery Commission neither seeks nor receives extensive coverage, preferring a lower profile than that of its cooperating agencies.

Each institution has its distinct public relations/promotional needs, and merely increasing the extent of media coverage is not a panacea. However, it is clear that such coverage does provide significant untested potential in enhancing stature and credibility.

c) The Council and Great Lakes Commission alone possess a broad mandate for the pursuit of environmental and economic

development concerns. Historically, however, the emphasis has been on balancing two disparate interests rather than recognizing their inseparability. This recognition has taken significant steps forward with the signing and continuing implementation of the Great Lakes Charter.

d) Due to their "soft management" approach and desire to focus on areas of consensus among their membership, the institutions of concern seldom draw heated debate, and in many cases not even the concerted interest of their constituents. This relative dearth of controversy notwithstanding, none of the institutions can characterize their planning and management processes as "open;" the public is not excluded by policy, but efforts to invite and encourage its involvement are lacking.

e) Incentive systems for nurturing the interest and political will of member jurisdictions vary widely and at any given time might include turf protection; information acquisition; or a true desire to effect positive change in a cooperative manner. Interest in the various institutions by their respective membership can and does vary widely as a function of the issue at hand or the institution itself. The IJC engenders substantial interest in the region but has characteristically evoked little formal response from the two governments. The level of interest in Great Lakes Commission activities by its membership has varied widely with the issues but has been viewed as a problem on occasion in past years. The Council has been highly selective in setting its agenda and, in so doing, has engendered sustained interest among its members. The Great Lakes Fishery Commission, by virtue of its substantial (and measurable) success, has sustained a high level of interest among its members as well.

5) <u>Management Philosophy</u>

a) Beyond the language in the 1978 Great Lakes Water Quality Agreement, the "ecosystem approach" is not explicitly identified in institutional mandates. The concept - in some fashion - is pursued more by the IJC and GLFC than the Council or GLC, by virtue of the former's physical/biological resource management responsibilities. The Council and Commission do take into account the broader implications of their actions, but lack any studied effort to apply ecosystem management concepts.

b) It is clear that long-range planning can be a secondary consideration to present and near-term concerns - even when an institution is vested with planning responsibilities. The GLFC Joint Strategic Plan for Management of Great Lakes Fisheries, as well as the Remedial Action Plan process coordinated by the IJC are notable exceptions. The Council is clearly moving toward a planning mode under certain provisions of the Great Lakes Charter. The Great Lakes Commission maintains a

monitoring and response mode focusing on U.S. federal policy/legislative developments; planning is not an ongoing function.

c) The danger of institutional "capture" by a given interest group is generally not a problem, given that appropriations are received from member jurisdictions, and the institution is accountable to its membership.

d) Within any given institution of concern, coordination of disparate management functions is not an issue of great import, given limitations in authority, programs and staff size. Coordination between institutions, however, has been a weakness that has limited the collective Great Lakes management process.

e) The nature of mandates and established procedures have allowed all institutions of concern to exercise some degree of discretion in interpreting and applying stated regional policies. In many cases, areas of prospective institutional activity are generated from within and brought before the membership for approval. Of principal concern in recent years, however, has been the Great Lakes Commission/Council of Great Lakes Governors relationship. The Commission has found its discretionary activities constrained by its membership's desire to "wait and see" what the Council does before acting. This relationship is presently (and most appropriately) the focus of concerted attention by the two organizations.

Statements of Finding - The Individual Institutional Effort

Having reviewed the collective institutional approach in light of the Great Lakes management goal and objectives generated, a similar review focusing upon individual institutional efforts is appropriate. Again, it is emphasized that this review is not a performance evaluation comparing institutional achievements with mandates. Rather, it is an assessment of the institution's demonstrated structural and operational compatibility with the set of broader goals and objectives presented. As such, it provides the basis for specific recommendations offered in Chapter Nine.

Presented below, on an institution-by-institution basis, is a review of past institutional analyses and a listing of principal strengths and weaknesses generated from the literature, personal interviews, survey questionnaire and researcher analysis in light of the stated institution-wide goals, objectives and parameters. The list of weaknesses for each institution is a selective one, consisting of those whose resolution is likely to lead to substantive positive change, both within the individual institution and more generally, the institutional ecosystem. It is recognized, however, that there is opportunity for improvement in all areas (see listing of parameters), and such opportunities should be pursued in conjunction with those highlighted.

International Joint Commission

The form and function of the International Joint Commission has, without question, received far more attention than that of the other three institutions of concern combined. This level of focus is attributed to numerous factors, including the binational implications of the Boundary Waters Treaty and the Great Lakes Water Quality Agreements; the longevity of the IJC itself, its principal role in Great Lakes management concerns relative to other institutions; and the fact that it has long been hailed as a unique and innovative device for the resolution of transboundary disputes and coordination of management of a shared resource.

Over time, this stature has established the IJC as a focal point drawing accolades for progress in Great Lakes management and, more frequently, as a target of criticism when this progress was not viewed as forthcoming. The preponderance of criticism (and therefore recommendations) has been directed at the "lack of teeth" in the IJC mandate and its inability to overcome the constraints of two federal governments that tend to be unresponsive to the management needs of the Great Lakes.

A brief review of some of the more notable analyses of the International Joint Commission follows:

- A U.S. Republican House Members Report, appearing in the Congressional Record (1965), called for renegotiation of the Boundary Waters Treaty to broaden IJC functions. Recommendations included: 1) inclusion of Lake Michigan in the definition of boundary waters; 2) empowering the IJC to make recommendations relating to continental development of water and energy resources; 3) establishing the IJC as a "permanent institutional location" for international discussion of foreign policy questions; 4) placing a priority emphasis on water levels and pollution studies; and 5) assuming the lead role in fulfilling "the obvious need for comprehensive advance planning in the development of water resources."

- Jordan (1969) found shortcomings in that the IJC lacks specific jurisdiction over basin boundary pollution matters; cannot control the timing, extent or nature of the investigations it undertakes; must await a reference; lacks power to direct or coordinate the research or information gathering by domestic agencies; and lacks power to give effect to standards and measures it recommends.

- Bilder (1972) suggested strengthening the IJC through the formation of an advisory board with broad Great Lakes-related agency representation; or an "internationalized Great Lakes Basin Commission" combined with a new binational interagency committee on Great Lakes pollution. Powers would include establishing pollution standards; approving and licensing waste disposal facilities; and initiating complaints of non-compliance before courts and agencies in both countries.

- The Great Lakes Basin Commission (1975) stated that the IJC prerogative required expasion to permit investigation of problems on its own initiative.

- The Standing Committee on Foreign Affairs of the Canadian Parliament (1975) called for elimination of the reference requirement; an extension of power to permit publicizing of all recommendations; and the assumption of enforcement powers.

- Dworsky (1972) cited a need for better definition of IJC authority (in terms of resource management rather than boundary disputes); improved communication with the Great Lakes Fishery Commission; and a shortening of study periods.

- Dworsky and Swezey (1974) called for a broadening of IJC functions through the creation of five boards: 1) air; 2) water quality; 3) lake levels; 4) navigation; and 5) a Great Lakes Operations Office. A Great Lakes Policy Unit, comprised of the commissioners and senior level board officials, would be established. The Commission itself would be comprised of eight full-time members with staggered and fixed terms, additional staff support; a mandate to conduct hearings and access to the court systems of the two countries.

  This approach would provide the IJC with the necessary policy making and administrative authority to carry out its coordinative responsibility; exercise a mediation function; free itself from treaty constraints; facilitate binational planning and program coordination; recommend long-range priorities for data collection and analyses to assist in the investigation, planning and construction of projects; the coordination of ongoing research; and a close working relationship to all relevant Great Lakes jurisdictions.

- Francis (1973) found that "the [International Joint] Commission has neither the authority nor the resources with which to undertake a planning function, much less to develop a program designed to attack the mismanagement of the boundary waters." Principles for change include a bilateral arrangement comprehensive in nature; structured to carry out certain policy, planning and management functions; and a capability to "overcome the incongruity between political and physical boundaries."

- Zile (1974) presented a three-step process for reform of the IJC: 1) grant lake level authority in a role other than that of harmonizing the various interests involved; 2) formally enlarge an open decision system to include citizen group interests; and 3) provide that members with the most input into the organization perform the "harmonization" function.

- The Science Advisory Board of the IJC (1979) recommended an anticipatory planning function, calling for: 1) U.S. and Canada confirmation of their expectation that the IJC advise them on unmet current or emerging problems; 2) a continuation of an anticipatory process for the IJC; 3) creation of a special panel or advisory board; 4) support for an integrated ecosystem management approach and its implementation; and 5) provision of an IJC information and analysis capability on a Basin-wide basis.

- The U.S. General Accounting Office (1982) recommended provision for formalized federal responses to IJC recommendations; continuity of U.S. leadership through five-year staggered terms; a restructuring of the Water Quality Board arrangement to ensure additional U.S. federal agency input; and the development of management plans and meeting arrangements to ensure a clear direction for U.S. federal agency input into the U.S. section of the IJC.

Institutional Strengths and Weaknesses

The analysis of the structure and operation of the International Joint Commission, in light of the Great Lakes institutional goals, objectives and parameters identified, yields the following principal strengths and weaknesses.

Strengths

1) The goals and objectives of the International Joint Commission, as presented in the Boundary Waters Treaty of 1909 and the 1978 Great Lakes Water Quality Agreement, are consistent with the broader Basin goals and objectives presented earlier in this chapter. In fact, the Treaty and Agreement are rightfully considered the farthest reaching and most insightful initiatives of their time and, in many respects, remain today as models for binational resource management.

2) The IJC maintains a unique role in Basin management, and by virtue of its longevity and availability to the two governments, provides an available and capable (if underutilized) institutional resource by which to focus binational attention on shared issues.

3) The provisions in the 1978 Great Lakes Water Quality Agreement, coupled with their mandated review, provide the IJC with an evaluative capability unequaled by any other Great Lakes institution.

4) The legal basis and formality of the IJC mandate is a firm one, given the legal/political stature of the treaty and agreement devices and the inherent incentives of the signatory parties to attend to their provisions (at least when it is politically expedient to do so).

5) The IJC's Basin boundary sensitivity, despite the limited authority exercised, has been a positive step in transcending political boundaries to address multi-jurisdictional issues.

6) The IJC's emphasis on equitable U.S./Canadian representation is a decided strength, as it is practiced in the areas of staffing and funding as well as membership.

7) The Commission's structure and process ensure that clear lines of accountability to the federal governments are maintained. Hence, all activities derive from and are pursued in support of the directives of the governments.

8) The breadth of IJC functions under the Great Lakes Water Quality Agreement is commendable; particularly the much needed emphasis upon

interpretation of water quality data, research needs and monitoring and surveillance requirements.

9) The IJC has demonstrable value as a consensus-building forum where members are North Americans first and Canadians and Americans second. Its quasi-judicial function; the availability of Article X for binding arbitration; and the extensiveness of its board and committee structure, despite their limitations, ensures its stature as the leading coordinative/deliberative binational body.

10) The reference device, despite its failings, provides the governments with a special studies capability for the range of issues under IJC purview.

11) The IJC's growing recognition and conceptual development of the principles of ecosystem management to Basin problems has brought a new level of sophistication to Great Lakes institutional efforts.

12) Through its designation of "Areas of Concern" and the pursuit of an associated Remedial Action Plan process, the IJC has demonstrated an ability to focus its efforts on those Basin issues with pronounced transboundary implications.

13) The IJC has long demonstrated a responsiveness and adaptability to the needs of the governments - when those needs have been articulated. The reference process has a demonstrated value in that respect. Further, the Commission's structure and process also ensure that it remains a vehicle of the governments rather than an institution with an independent mandate.

14) The IJC has enjoyed a continuing positive reputation for its technical expertise and the objectivity and reliability of the information provided.

15) An element of prestige is associated with an appointment to an IJC board or committee, and the Commission benefits substantially from the active work and dedication of these individuals. Many serve, in effect, as part of an "extended staff."

Weaknesses

1) While the unique nature of the IJC mandate precludes any substantial danger of duplicative efforts by other institutions, coordination is a weakness. Additional inter-institutional cooperation would provide mutual benefits and strengthen the overall Basin management effort.

2) The IJC's ability to respond promptly to emerging management needs is constrained by a rather laborious and time consuming reference process. While some flexibility in this area is provided by Great Lakes Water Quality Agreement provisions, the absence of a broad "standing reference" to initiate investigation of emerging issues - at some level - precludes a proactive posture. As a consequence, the IJC can be circumvented to address pressing issues (e.g., Niagara River Toxics Committee, Upper Great Lakes Connecting Channels Study).

3) The questionable status of Lake Michigan under the terms of the Boundary Waters Treaty has added an element of jurisdictional uncertainty to binational water quantity management efforts.

4) While state and provincial input into IJC activities is provided via board and committee membership, the IJC structure provides a hierarchical "top down" approach. State/provincial involvement in the development and renegotiation of the Great Lakes Water Quality Agreement, for example, has been lacking. This matter is accentuated at the sub-state/provincial level.

5) The nomination process for commissioners is a closed one, in that non-federal Great Lakes interests and the public in general are not involved in nomination, confirmation or open hearing activity. An inherent skepticism of appointees at the sub-federal level is an observed result. Further, the inordinate delays in appointments, attendant prolonged vacancies, and the lack of staggered terms have on occasion brought the work of the IJC's Washington and Ottawa offices to a virtual standstill.

6) The accountability of the IJC to the two governments has been impeded by the latter's historic unwillingness to formally acknowledge and respond to Commission recommendations. The virtual absence of feedback constrains both implementation of these recommendations and the IJC's ability to develop and implement a program of work sensitive to the needs of the governments.

7) Although the IJC enjoys more authority than other Great Lakes institutions, it is nonetheless an instrument of the governments and generally lacks the authority to do more than provide advice, recommendations and status reports to them.

8) Staffing for the IJC's Great Lakes Regional Office is modest at best and the budget has been virtually constant for the last five years. Further, time consuming and complex classification and administrative procedures, coupled with the frequency of commissioner vacancies, prolongs the decision making process and leads to staff vacancies and insufficient attention to prescribed programs and broader policy issues.

9) The IJC focus is on coordinative, advisory, recommendatory and monitoring functions and, although this focus lends it an inherent expertise in Basin-wide standard setting, regulatory matters and the oversight and direction of jurisdiction programs, it lacks the authority for any involvement in those areas beyond its limited quasi-judicial authority.

10) Although a public information function is central to the mandate of the Great Lakes Regional Office, once a pioneer in this area, recent years have seen a virtual absence in any such activity beyond conference planning and information inquiries. Further, substantive public input

into program activity (beyond board and committee appointments) has historically been sporadic at best.

11) Within the IJC framework, the Regional Office director maintains accountability to the Commission for programs and budgets, while the boards (i.e., Water Quality, Science Advisory) retain actual control over them. This arrangement has proven awkward and inefficient.

12) Beyond that pursued under the general auspices of Great Lakes Water Quality Agreement (e.g., Remedial Action Plan process, Great Lakes International Surveillance Plan), the IJC maintains no planning program focusing on the Great Lakes ecosystem and its long-term protection, use and development.

13) Although the Treaty and Agreement provide substantial flexibility in addressing the range of transboundary resource management issues, IJC involvement in such has often been constrained by a lack of political will exhibited by the two governments. The examples cited in #2 are of note.

14) Concerted efforts at fostering informal linkages with the range of institutions involved in Great Lakes management have been lacking, constraining the IJC's ability to enhance its own programs as well as raise its stature and positive image within the Great Lakes institutional ecosystem.

15) The inherent potential of the IJC as a Basin management tool is constrained by an historic reticence of traditional political jurisdictions (i.e., the two federal governments) to legitimize bi-national "experimentation" in resource management.

16) Despite past intentions and extended discussion of such, an anticipatory planning function has yet to be embraced and reflected in IJC program activity.

17) Despite its unparalleled importance in the Great Lakes management effort, the IJC retains a low recognition level. Even public entities with Basin management responsibilities exhibit only a limited understanding of the nature and extent of the IJC mandate. This limitation can adversely impact the IJC's ability to pursue that mandate.

18) Continued and concerted efforts to incorporate a socio-economic sensitivity into the range of IJC programs are lacking. Advances are being made, yet such considerations remain ancillary ones.

19) While IJC structure discourages its "capture" by any given interest group, its membership, appointment process and operational characteristics sensitize its programs to political developments at the U.S. and Canadian federal levels. This sensitivity is such that a change in government - in either or both countries - can bring IJC activity in Washington, DC and Ottawa offices to a virtual standstill or result in new program priorities and/or the termination of former ones. Program continuity (and therefore institutional effectiveness) is problematic.

Great Lakes Fishery Commission

Although established over thirty years ago, the Great Lakes Fishery Commission has been the subject of comparatively little institutional analysis. While this observation is generally applicable to all Great Lakes institutions (with the possible exception of the International Joint Commission), there are other contributing factors. The Fishery Commission undoubtedly possesses the most explicitly defined and specific mandate; one that lends itself to evaluation. These characteristics have provided it with a distinct niche in the institutional ecosystem, a clear focus and a sense of continuity in program operation. By the nature of its work it has assumed a relatively low profile. It has neither the mandate nor the aspiration to assume the lead role in addressing the full range of resource management requirements in the Great Lakes Basin. Yet, it contributes substantially to those efforts and possesses a number of structural and operational characteristics that warrant consideration and possible adaptation by other institutions.

The most recent and perhaps only in-depth outside analysis of the GLFC was conducted by the U.S. General Accounting Office in 1985. The GAO "found the GLFC has generally carried out its responsibilities effectively and contributed significantly to improving the Great Lakes fishery." The Commission's sea lamprey control efforts were identified as its "single greatest accomplishment." Operational strengths identified included its role as sponsor and facilitator (as opposed to manager); a research program with a demonstrated positive impact; an effective consensus building process, and a coordinative capability whereby, "...the parties are more aware of each other's concerns and less likely to act independently."

Perceived deficiencies included poor U.S. commissioner attendance at meetings in recent years; possible conflict of interest in the awarding of research contracts to those with Commission affiliation; lack of timely research results on contracts; and an excessive unused fund balance. In no cases were those matters found to have a debilitating adverse impact on Commission performance, nor did the GAO find "evidence that the U.S. was adversely affected by absenteeism" of commissioners. It was noted that provisions to appoint alternate commissioners "may be too cumbersome." Suggested operational adjustments included requiring request for proposals on large contracts; requiring research progress reports; applying unused funds against the next year's budgeted expenses and establishing a working capital fund.

Institutional Strengths and Weaknesses

At this point, it should be reemphasized that the following is an assessment of the institution's structural and operational characteristics in light of the overall Basin management goal and objectives presented earlier. It is not a performance evaluation examining programs in light of the institution's own goals and objectives.

Strengths

1) The goals and objectives of the Great Lakes Fishery Commission, as presented in the Convention on Great Lakes Fisheries, are consistent

with the broader Basin goals and objectives presented earlier in this chapter.

2) GLFC goals and objectives complement those of other Great Lakes institutions, and there are substantial areas of shared interest, particularly with the International Joint Commission.

3) The Fishery Commission mandate provides measurable goals and objectives, particularly in the areas of lamprey control; maintenance and enhancement of fish stocks; and dissemination of research results. This is a principal GLFC strength and critical institutional characteristic which is largely absent within other institutional efforts.

4) The convention device lends the GLFC legal standing and provides it with the stature and continuity necessary for the successful conduct of its work.

5) Although its concerns focus on a single resource - the fishery - the GLFC does maintain a Basin-wide orientation which transcends the limitations of the individual political jurisdictions.

6) The GLFC does provide for equitable U.S.-Canadian membership; each government possessing a single vote and being represented by a delegation of commissioners.

7) Although appointments are made only by the federal governments, representatives from state, provincial and private interests are also selected. Further, the various technical committees appear to ensure broad representation from the various levels of government and academia as well.

8) Through its lamprey control program, research program and coordinative activity, the Commission pursues fishery management functions which could not be undertaken efficiently through the numerous individual jurisdictions with fishery management responsibilities.

9) Technical committees and boards are comprised of numerous leaders in their field and, by virtue of their active interest and involvement in Commission deliberations, substantially strengthen the Commission program.

10) The conduct and coordination of fisheries research is a decided strength, as it provides the Commission with a capability to address/analyze emerging issues. Further, it places the Commission in the role of a forum and pool of expertise for fisheries research. It is able to direct and prioritize research via distribution of research funds.

11) While lacking in regulatory and enforcement authority, the Commission is empowered to develop and implement measures directed at sea lamprey populations.

12) While <u>comprehensive</u> planning for Basin resources is not within the purview of the Commission, the development (under the aegis of the

Commission) by the fishery agencies of the Joint Strategic Plan for Management of Great Lakes Fisheries is a significant accomplishment. The plan, signed by twelve fishery agencies, may well provide a model for application to other issues and other institutions.

13) The Commission structure and operation - primarily by virtue of its technical committees and boards - provide a coordinative arrangement which appears to involve and accommodate the interests of the range of public and private sector representatives.

14) The Commission's simple "consensus only" decision making approach is a sound one, as it requires a firm commitment on the part of both governments before an initiative moves forward.

15) Funds for research support and special studies are substantial in comparison to other Great Lakes institutions and, in conjunction with its coordinative role, provides the Commission with considerable influence in directing and prioritizing Great Lakes fishery re-search.

16) By its nature, management of the Great Lakes fishery is a transboundary issue, and the composition of the Commission and its committees ensures a binational as well as interstate focus.

17) The clarity and specificity of the Commission mandate ensures it a distinct niche in the institutional ecosystem and minimizes any disruption to ongoing institutional activity.

18) The nature of fisheries management requires the Commission to assume an anticipatory posture; the Joint Strategic Plan for Management of Great Lakes Fisheries provides the framework for doing so.

19) The Commission's forte is its ability to serve as a catalyst for interjurisdictional regional activity while taking every opportunity to credit its membership and cooperators for successes achieved.

20) The Commission - through its programs and research efforts - has pioneered the "ecosystem management" concept and explored its application in fisheries management.

21) The nature of the Commission's mandate encourages a long-term planning orientation. Such plans are less prone to pre-emption by short-term political considerations than those of other Great Lakes institutions. This is due to the Commission's charge as well an open-ended appointment process which de-politicizes - to an extent - Commission deliberations.

Weaknesses

1) Clearly, the principal weakness of the Fishery Commission in addressing the broad range of management issues is its limited mandate. By design, its focus is limited to fishery management considerations. Comprehensive Basin planning and management are not provided for.

2) The Commission lacks an appointment process that permits open nominations, legislative confirmation and public input throughout the selection/confirmation process. Further, the open-ended appointment process tends to buffer commissioner sensitivity to outside input and the federal governments, and limits the development of new ideas and initiatives which might be brought forward with a periodic change in membership or renomination process.

3) While the Commission does provide an "extension service" capacity to advise, educate or otherwise inform members and cooperators of relevant issues, this service does not presently extend to the broader interested public. Further, there is no formal public participation/information program incorporated into the Commission's process.

4) Informal linkages with other Great Lakes institutions warrant strengthening, as all share some interest in and responsibility for the management or promotion of the fishery.

5) The Commission's low profile and recognition level - particularly among the general public - may reduce or otherwise discourage a sensitivity and responsiveness to public/private sector interests beyond those of members and cooperators.

6) This low profile and recognition level, while desirable in some respects, can interfere with the building of institutional support, stature and credibility.

7) Even within the Commission's limited mandate, it appears that interests can be narrow. Broader issues which affect the fishery (e.g., water quality; coastal management; diversion/lake levels; health effects) have not, but could benefit from Commission involvement. Further, such

   involvement would strengthen sometimes rather tenuous ties with other Great Lakes institutions.

Great Lakes Commission

The Great Lakes Commission has long served the region as a coordinator and representative of the collective views of the eight Great Lakes states on a range of environmental, resource management and economic development issues. Yet, it was not until the early 1980's, with the formation of the Council of Great Lakes Governors, that the impetus developed for a careful and comprehensive analysis of its institutional capabilities. Prior to that time, such concerns were of a limited nature and did not result in substantive institutional change. For example, some institutional questions were raised throughout the 1955-68 time period as the Commission worked to secure membership from all eight states as well as Congressional consent. Additional discussions focused on the Commission's interface with the Great Lakes Basin Commission when the latter was formed in 1972.

A renewed interest in Basin issues at the gubernatorial level developed in the early years of this decade. With the formation of the Council, and attendant questions regarding duplication of effort and the relative effectiveness of the two institutions, attention was focused on the

structure and operation of the Commission. Three important initiatives have come forth since that time. The first was a Commission-prepared background paper presented at the Great Lakes Governors' and Premiers' meeting on Mackinac Island, Michigan in 1982. The paper, while limited to a series of questions and options to guide the rekindled interest in Great Lakes institutional design, does provide a foundation for further analysis.

In 1984, the Michigan delegation to the Commission submitted, for consideration, a discussion paper focusing on perceived inadequacies in the areas of image; role or function; agenda; structure; and meeting arrangements:

- Image - The delegation suggested that image problems resulted from widespread ignorance of the Commission's role; a widespread perception of ineffectiveness; and a lack of state support. Recommendations included additional emphasis on promotional/publicity efforts; an accounting of accomplishments; and the appointment of "highly competent and prominent commissioners and advisors."

- Role or Function - Problems cited included an excessively narrow perspective promoting individual state interests; an overly reactive posture; an unfamiliarity with the problems and policies of member states; an inordinate allocation of time "fine-tuning" resolutions; weak and compromising resolutions; and questionable performance of committee chairs. Recommendations included: a reassessment of regional priorities; seeking coalitions outside of the region and government; developing a pro-active posture; developing better linkages with national and regional governors' groups; focusing its resources on research; increasing reliance on member states for staff assistance; strengthening resolutions; and better coordinating the work and roles of committee chairs.

- Agenda - The delegation cited the lack of a formalized, ongoing priority setting process; found a focus "excessively oriented" toward the short term; and inconsistencies among member states in advocating their interests.

- Commission Structure - Problems identified included inadequate staff resources; an "unwieldy and excessively hierarchical" committee structure; delayed decision-making processes; and lack of Executive Committee familiarity with key issues. Recommendations to address these included: staff assistance by member states; streamlining the committee process; encouraging the executive director to make routine decisions; and appointing committee chairs to the Executive Committee in an advisory, non-voting capacity.

- Meeting Arrangements - Two problems were identified - the questionable timing and number of meetings, and the lack of active participation at those meetings. Moving the annual meeting to March (to provide for timely discussion of the federal budget); and efforts to attract more informed participants to meetings were recommended.

This discussion paper focused the states' attention on key concerns and did lead to some modest operational revisions (e.g., committee restructuring,

re-scheduling meetings). More importantly, however, it brought the question of the Commission's institutional capabilities to the forefront of regional deliberations.

The culmination (or perhaps continuation) of these efforts and the interest they aroused was a November 1985 commissioned "Study of the Relationship Between the Council of Great Lakes Governors and the Great Lakes Commission." Prepared by State Research Associates, the study responded to a February 1985 Council resolution noting "the potential for duplication of effort, inefficient use of public resources and public confusion over the identities of the two organizations." The Council further noted that "significant reforms in the structure and organization of the Great Lakes Commission would strengthen its abilities to address regional resource management issues."

Following a series of interviews with Great Lakes state and provincial officials which elicited a number of the institutional strengths and weaknesses identified in earlier chapters, the report presented and evaluated five options for improving the relationship of the two institutions of concern:

1) "Mothball" the Great Lakes Commission by phasing out programs or withholding dues payments; redirect state funding to the Council along with current staff resources.

2) Expand Council membership to include New York and Pennsylvania; establish it as Executive Committee of the Commission; merge/coordinate organizational resources of two institutions.

3) Restructure the Commission via appointment of all governors to state delegations; provide for gubernatorial membership on Commission's Executive Committee; keep Council in present form and use Commission where eight-state agreement is desired.

3a) Same as "3" except that governors would appoint top level staff to Commission: the same aides who serve on Council's Executive Committee. Each would serve as chairman of their state's Commission delegation. Co-location of Council and Commission staffs would be explored.

4) Negotiate a memorandum of agreement between the two institutions providing for clarification of roles; staff coordination and agenda setting.

An analysis of comparative advantages/disadvantages lead to the recommendation that option 3(a) be pursued. As of mid-1986, efforts in that direction were under consideration.

Institutional Strengths and Weaknesses

The analyses discussed above, although limited in scope, do highlight a number of the strengths and weaknesses in evidence when the structure and operation of the Commission is reviewed in light of the broader goals, objectives and institutional parameters presented earlier.

Strengths

1) The goals and objectives of the Great Lakes Commission, as presented in the Great Lakes Basin Compact, are consistent with the broader Basin goals and objectives presented earlier. They demonstrate, in fact, a firm understanding of the interrelationship between regional environmental protection and economic development requirements, and the public health and welfare criteria which provide the focus for their pursuit.

2) The Commission's broad mandate, coupled with its task force structure, provides a substantial degree of flexibility in focusing on emerging issues.

3) The Great Lakes Basin Compact, as a legal agreement among states and ratified by Congress, provides a firm legal basis for, and a sense of longevity and continuity to, the operation of the Commission.

4) By virtue of its membership, the Commission is sensitive to the resource management needs of non-Basin portions of Basin jurisdictions, and the impact of those needs in interstate priority setting exercises.

5) The Commission structure and operation provides for full accountability to member states. Responsiveness to the membership is demonstrated in those instances where decisions and directives are clear.

6) Although its authority is limited to "soft" management functions, the Commission mandate does provide for attention to a broad array of regional issues.

7) The Commission provides a forum for coordination among the eight Great Lakes states, with opportunities for involvement by federal (U.S. and Canadian), provincial and private sector interests.

8) The Commission has a demonstrated capability in monitoring and surveillance activity as it relates to public policy and legislative developments affecting the Great Lakes.

9) The Commission's potential capability as a regional advocate is significant, given its interstate coordinative, consensus building mandate and historical focus at the U.S. federal legislative and policy level.

10) The Commission's decision making process, which strives for consensus but provides for majority rule, is a sound one.

11) The technical expertise of the Commission is well recognized, as is the objectivity and quality of the research materials it prepares.

12) While the Commission lacks a fully integrated program recognizing the inseparability of environmental protection and economic development goals, it has demonstrated the capability to balance both concerns in its agenda setting.

Weaknesses

1) While the Commission's goals and objectives do complement those of other institutions, the issue of duplication in program efforts and related initiatives is a relevant one in terms of its relationship to the Council.

2) The goals and objectives of the Commission do not lend themselves to evaluation, as they are broad and can be difficult to measure (e.g., coordinating, assisting, advising, recommending). Hence, a benchmark for gauging institutional performance has not been available.

3) In strict terms, the Commission's geographic area of concern is limited to the U.S. portion of the Great Lakes Basin. Issues or problems originating in Canada (or by Canadian governments) which influence state interests are within its purview, but the Great Lakes Basin Compact limits Commission interaction with the federal and provincial governments of Canada.

4) Commission membership is limited to Great Lakes states and provides only a limited, indirect means for Canadian involvement. Involvement by U.S. federal agency representatives on an observer basis is provided for, but has historically been quite limited.

5) The appointment process for state delegation members is a closed one in that it is either fixed by law or provided for through gubernatorial or legislative appointments. There is no formal nomination, confirmation or hearing process which provides for broad input into the appointment exercise.

6) Staff responsiveness to directives of the membership is constrained by a frequent lack of clarity in Commission decisions.

7) The Commission is vested with no management functions beyond basic coordinative/information sharing/advocacy activities. It has not been employed to undertake "hard" management functions even in those instances where it might operate more efficiently/effectively on a Basin-wide basis than separate efforts of the various political jurisdictions.

8) While the Commission does receive state appropriations, they are limited, and timeliness in state dues-paying has been an issue. Even though other means of financing are permitted (e.g., grants, contributions), they have not been vigorously pursued.

9) Full participation and voting privileges are afforded even to those states in arrears on dues, thus eliminating a major incentive for timely contributions. Presently, only the chairmanship is forfeited for non-payment.

10) The inability of the Commission to draw substantially from member jurisdictions for active staff support is a decided weakness, particularly in light of the assistance received by other Great Lakes institutions.

11) The Commission does have a research coordination capability, but beyond periodic compilation of research activity in the region, exercises no coordinative or priority setting role.

12) An information "extension" service is provided for member jurisdictions and, on request, to others who make inquiries. However, there is no public outreach program that functions on a broad and continuing basis.

13) The Commission possesses no regulatory, enforcement or standard setting authority, nor has it had substantive involvement in coordinating or promoting such.

14) The Commission's planning authority has not been applied on a long-term comprehensive basis, focusing instead on short-term, issue-specific considerations.

15) An advocacy/lobbying function is central to the Commission's role, although general lack of effectiveness is widely perceived as a significant institutional weakness.

16) The Commission's role in the institutional ecosystem has become increasingly unsettled since the formation of the Council, and while this has not necessarily weakened the collective institutional effort, it has precluded the level of mutual benefits which might be realized under a close cooperative working relationship.

17) Linkages with other Great Lakes institutions do exist, but are informal and exercised only sporadically.

18) Authority under the Great Lakes Basin Compact is exercised selectively; some issues have historically received more attention than others. While this is appropriate in the sense that efforts must be targeted to stated priorities, it is unclear whether the Commission is fully aware of the range of, and flexibility under, its mandate.

19) The Commission lacks an anticipatory posture. Rather, it favors a reactive stance focused on U.S. federal legislative and policy activity.

20) The Commission, in its efforts to gain greater stature and a higher profile, actively seeks recognition of its accomplishments. While this can be a positive action, it can undermine institutional support if member jurisdictions are not rightfully recognized for their role in those accomplishments.

21) The Commission has long had a low recognition level among the general public and in some areas of the governmental arena. Media interest has been minimal. Misconceptions abound with respect to its goals and emphases. Within the Commission, little effort has been expended to publicize and clarify its efforts.

22) The Commission compares favorably with other institutions in its demonstrated ability to address both economic development and and

resource management concerns. However, the effort is more one of "balancing" competing interests than integrating them. Movement in the latter direction is required.

23) Member jurisdictions have, on the average, demonstrated a rather casual interest in, and attitude toward participation in Commission activities. The political will necessary for strong and continuing Commission leadership has been demonstrated only infrequently. In recent years, the majority of its membership has clearly preferred to vest its political energy in Council initiatives. The Commission has, in some cases, preferred to follow the Council's lead rather than exercise its own leadership capabilities.

24) The Commission program has not embraced the "ecosystem management" concept; preferring instead a focus on federal legislative and policy actions on a piecemeal and issue-specific basis.

25) The Commission has long had a decided interest in and orientation toward Great Lakes maritime issues, devoting a substantial amount of its energies in that direction. This has come at the expense of regional environmental and resource management considerations, prompting it to become widely characterized as an "economic development" agency.

Council of Great Lakes Governors

As the most recently established of the institutions of concern, the Council enjoys a stature, public profile and level of expectation that will long ensure the importance of its role in the Great Lakes institutional ecosystem. Its initiatives - such as the Great Lakes Charter - are indicative of its potential, and have generated a seldom observed excitement in Great Lakes issues by public and private sector interests alike.

As an institutional form, however, the Council has yet to be fully tried and tested. Its potential is clearly a function of the political will of its members and can therefore be tenuous. In the opinion of some, its operational strengths are countered by its structural weaknesses.

To date, the only analysis examining the Council's characteristics was that of the previously discussed "Study of the Relationship Between the Council of Great Lakes Governors and the Great Lakes Commission." While the focus of that study was clearly skewed toward the strengths and weaknesses of the latter, several findings concerning the Council were presented. The Council was lauded for: its ability to generate political and policy consensus on key regional issues; its ability to initiate programs and projects with multi-state applications; its political sensitivity; as a forum for discussion among the governors and premiers; and for maintaining an agenda-setting process sensitive to regional needs. The lack of full representation by New York, Pennsylvania and the Great Lakes provinces was an item of concern. Study recommendations, however, focused almost exclusively on GLC revisions and provided little guidance for future Council activity.

Institutional Strengths and Weaknesses

Presented below is a series of strengths and weaknesses suggested by examination of Basin goals and objectives in light of the Council's structural and operational characteristics. Though the process was constrained by the brief existence of the Council and the absence of past analyses, numerous key strengths and weaknesses did emerge.

Strengths

1) The goals and objectives of the Council, as presented in its bylaws, are consistent with the broader Basin goal and objectives presented earlier in the chapter. They are indicative of a firm understanding of the interrelationship between regional environmental protection and economic development requirements.

2) The Council's mandate permits it substantial flexibility in setting and pursuing its agenda; a flexibility ensured by its membership's standing as the chief executive officers of the Great Lakes states. Given the political will, actions can be forthright, decisive and effective.

3) The Council, again by virtue of its membership, has a demonstrated political sensitivity to region-wide (i.e., political jurisdiction) as well as Basin needs and priorities.

4) Representation from the private sector and sub-state/provincial levels, though limited, is provided through task forces and similar arrangements on an issue-specific basis.

5) As an instrument of the governors, the Council is fully accountable to its membership and responsive to its consensus decisions.

6) Although its authority is limited to "soft" management functions, the Council mandate does address a broad array of regional issues.

7) Although the state dues structure is modest at best and all states do not presently contribute, the structure is in place and outside funds are actively sought to augment contributions.

8) The Council benefits substantially from the active support and contribution of individual state staff resources; in this respect it serves as a "model" for other Great Lakes institutions.

9) The Council has demonstrated effectiveness as an information-sharing and consensus-building forum. As a dispute avoidance or conflict resolution mechanism it is untested, as issues selected for open consideration to date by the governors have not been fundamentally divisive. The committee and task force levels, however, have a demonstrated capability to address such matters.

10) While the Council lacks a comprehensive planning function, the Great Lakes Charter and Toxics Agreement initiatives represent significant policy planning efforts and suggest potential for continued, broadened efforts.

11) The Council's coordinative capability is a particular strength, as the institution's stature and influence (in and of themselves) provide an incentive for broad and active participation by the Great Lakes states and provinces.

12) Regional advocacy efforts, when pursued, have a demonstrated effectiveness by virtue of the influential nature of the Council membership acting in unison.

13) The Council has exhibited an expertise in targeting key regional issues for special studies.

14) While the Council is highly selective in attending to regional issues, its rationale for doing so is clear, and it approaches its task with a firm sense of its role and purpose.

15) The signing and implementation of the Great Lakes Charter demonstrates the Council's anticipatory capabilities, serving as a model for such to other Great Lakes institutions.

16) The Council performs the coordinator/catalyst role quite well, providing a "showcase" for its membership and crediting members for successes achieved.

17) The Council is effective in building support for its initiatives; support which is virtually guaranteed by virtue of its careful selection of issues; the stature of its membership; and its media appeal.

18) Political will is the driving force behind all Council activity, and though subject to future variation, has been substantial to date.

19) While the ecosystem approach is not an integral component of the Council program, it is recognized in the Charter and will likely be reflected in implementation of the Toxics Agreement and future environmental planning and management initiatives.

20) The Council has demonstrated sensitivity to both the environmental and economic characteristics of issues it has addressed, avoiding overt biases or "capture" by a given interest or interest group.

<u>Weaknesses</u>

1) While the Council's objectives complement those of other Great Lakes institutions, the issue of duplication in program efforts and related initiatives is a relevant one in terms of its relationship to the Great Lakes Commission.

2) The Council's goals and objectives do not lend themselves to evaluation, as they are broad and difficult to measure. A benchmark for gauging institutional performance has not been available.

3) The Council lacks the legal formality (e.g., compact, treaty) of other Great Lakes institutions, relying on a substantial but tenuous foundation of political will as its impetus and very existence.

4) Full membership is limited to the six westernmost Great Lakes states, thereby constraining the input of two additional states (New York, Pennsylvania) and two provinces (i.e., Ontario, Quebec), with a vested interest in management of the resource.

5) The Council is vested with no management functions beyond basic coordinative/information sharing/advocacy/policy activities. It lacks the authority to undertake "hard" management functions even in those instances where it might operate more efficiently/effectively on a Basin-wide basis than separate efforts of the various political jurisdictions.

6) While the Council does receive state appropriations, they are limited and all member states do not presently contribute. Further, full participation and voting privileges are afforded even to the state(s) in arrears on dues, thus eliminating a major incentive for timely contributions.

7) Staffing arrangements are overly conservative and unsettled. Two separate office locations are maintained and future arrangements are unclear. An extended lapse in executive director appointments was experienced. In-house technical expertise is limited. Staff retention has been a significant problem.

8) The Council provides an information "extension" service to member and cooperating jurisdictions, and on request, to others who make inquiries. However, there is no public outreach program that functions on a broad and continuing basis.

9) An open, public participation process has not been established for Council initiatives. The Great Lakes Charter process, for example, has been criticized for its "closed door" development.

10) While formation of the Council was undertaken in response to a demonstrated need, it is questionable as to whether an entirely new institution was required. Opportunities to adapt existing institutions (e.g., Great Lakes Commission) were not fully explored.

11) The creation of the Council resulted in some disruption of the institutional ecosystem; the Great Lakes Commission role has become increasingly unsettled. While this has not necessarily weakened the collective institutional effort, it has precluded the level of mutual benefits that might be realized under a close cooperative working relationship.

12) Linkages with other Great Lakes institutions have been established, but working relationships and cooperative efforts require additional strengthening.

13) Interactions with public and private sector interests beyond the state/provincial levels must be expanded to broaden sensitivity and responsiveness to the range of Great Lakes issues under the Council mandate.

14) An open planning and policy making process is presently lacking; agendas tend to be set with limited "outside" input and policy development pursued in a similar fashion.

15) The Council tends to approach its mandate on an issue-by-issue basis; further attention to the "ecosystem management" philosophy and its recognition of the interrelatedness of Basin uses and impacts is required.

CHAPTER NINE

SCENARIOS FOR INSTITUTIONAL REVISION: RECOMMENDATIONS AND RATIONALE

Introduction

The preceding chapter, through presentation of goals, objectives and organizational parameters for elements of the Great Lakes institutional ecosystem, serves a pivotal role in the transition from a descriptive analysis of present arrangements to an exploration of options to revise, replace or otherwise strengthen them. The review of collective and individual institutional strengths and weaknesses in light of those parameters was the principal vehicle of this transition.

In this ninth and final chapter, the culmination of all preceding discussion is reflected in the presentation of specific recommendations directed at advancing the Great Lakes management effort through structural and operational revision of its institutional arrangements. In so doing, the following is provided: summary statements of key findings; documentation of the need for institutional change; presentation of recommendations and rationale for institutional change under alternate scenarios; and an examination of the political implications of change under these scenarios. A discussion of continuing research requirements in this area is presented in an Epilogue.

The format for the presentation of recommendations for institutional change is reflective of the four principal alternate scenarios available:

1) A "status quo" scenario in which change evolves from within the institutional ecosystem in the absence of concerted "outside" manipulation;

2) An incremental approach which accepts the fundamental legitimacy of current institutional arrangements while pursuing limited operational and structural change toward a prescribed set of long-term goals.

3) A substantive change approach which also accepts the fundamental legitimacy of current arrangements yet seeks, through sweeping operational and structural revision, a substantially revised management framework; and

4) A dramatic single-step revision where the present institutional ecosystem (or at least a number of its components) is rejected in favor of a new and significantly re-directed institutional arrangement.

The objectives of each scenario are presented, accompanied by an assessment of political feasibility and the corresponding likelihood of implementation. Institution-wide and institution-specific recommendations are offered, their rationale presented and where appropriate, an implementation strategy defined. The comparative advantages/disadvantages of the alternate approaches are explained.

A Summary Perspective on the Structure and Operation of the Great Lakes Institutional Ecosystem

A summary perspective or point of reference for the consideration of the alternate scenarios can be drawn from the cumulative discussion of preceding chapters. Rather than reiterate that lengthy discourse, however, or focus on the minutiae associated with institution-specific concerns, a listing of findings is readily extracted to document the need for institutional change. The following are offered:

1) Present institutional arrangements are viewed as less than satisfactory by a substantial segment of those directly involved with them, as indicated via personal interviews and survey responses. Perceptions among the general public, aside from ignorance or indifference, indicate marginal satisfaction at best. As a consequence, present arrangements lack the intensity of interest and support necessary to realize their full potential.

2) Great Lakes institutions have evolved over time, each responding to a distinct set of events and perceived needs. None has a comprehensive, Basin-wide focus, nor is the collective effort designed or able to provide that focus.

3) None of the institutions examined has exercised all powers under its existing mandate, nor has a concerted effort been made to explore the potential benefits of close coordination and cooperative efforts.

4) When examined in light of the goals, objectives and organizational parameters for Great Lakes management identified in Chapter Eight, the individual and collective institutions, despite significant strengths, demonstrate structural and operational inadequacies which compromise their potential.

5) Despite significant inroads into acceptance of regional governance and the ecosystem management approach, Great Lakes management efforts remain largely in the hands of the traditional political jurisdictions, while regional institutions serve in a modest, underutilized and often uncertain capacity.

6) Historical attention to Great Lakes institutional design and evaluation has been sporadic at best, constraining the evolution of the regional management effort. As a consequence, technical and scientific capabilities in Great Lakes management are clearly outpacing innovation in public policy discourse and institutional design. "Crisis-response" tendencies are firmly entrenched; anticipatory/proactive postures have been resisted.

7) A review of the institutional ecosystem, and in particular its regional institutions, finds compatible goals yet a management system lacking a common focus.

These and other findings arising through the course of the study justify the development of alternate scenarios and associated recommendations.

Prior to presentation of these recommendations, however, a critical point warrants emphasis. Institutional inadequacies cannot be "legislated away" simply through the creation of a regional institution or alteration of its operational and structural characteristics. Rather, successful pursuit of Basin goals and objectives, however measured, demands an institutional arrangement with a sensitivity toward the Basin's environmental, economic and social needs and the political support and will of those in leadership positions. When present, political will can transcend even the most restrictive institutional form. When absent, even the most innovative form can become impotent. While operational and structural characteristics can serve as inducements for political support of a given institutional effort, they provide no guarantees. Hence, the "human factor" in determining institutional success remains a great variable.

Scenario One: Preserving the "Status Quo"

The scenario suggested here pertains to the long observed "natural" evolution of the institutional ecosystem; evolution influenced and directed by a natural progression of events and issues as opposed to concerted "outside" manipulation of the institutional structure. The theory is that these events and issues, as they arise, will sensitize existing institutions to unmet needs and induce an appropriate compensatory response. Advocacy of the "status quo" approach is an endorsement of the existing institutional ecosystem and a vote of confidence in its ability to sense, adapt to and address emerging issues. As such, this scenario rejects the notion that manipulation of structural and operational characteristics of a given institution should take place as one component of a "grand design" for the entire institutional ecosystem. Therefore, recommendations to that end are deemed inappropriate.

Endorsement of the "status quo" can be soundly rejected on the basis of earlier discussion. Three principal points warrant consideration. First, and very simply, historical observation leads one to the conclusion that institutional evolution in the absence of a focus or common rationale may be little more than a re-positioning of individual institutions without moving the collective institutional effort forward. Second, the "environment" in which Great Lakes institutions operate is not conducive to a positive evolutionary process. The enduring federalism philosophy; the self-preservation instincts and inertial tendencies of existing institutions; the experimental nature of regional management; the absence of benchmarks for institutional assessment and design; historically modest levels of political will; and divergent philosophies among the political jurisdictions are among those factors which discourage unaided institutional evolution from taking place in such a manner that substantial progress is observed. Third, the sheer magnitude of the regional management task - in terms of resource use and political, social and economic considerations -

can be an insurmountable one in the absence of a reasoned strategy for effecting institutional change.

Even now, in an era of increasing attention to, and concern over the adequacy of Great Lakes institutions, institutional change is driven more by issue-specific needs and political considerations than by thorough assessment and understanding of Basin management goals and objectives and the means to achieve them. These observations provide the basis for rejecting the status quo scenario and investigating alternate scenarios in which gradations of manipulation are employed to reconcile Basin goals and objectives with the institutions designed to pursue them.

Scenario Two: An Incremental Approach to Institutional Change

This scenario accepts the fundamental legitimacy of existing institutional arrangements and advocates a series of modest operational and structural revisions to bring those arrangements in line with the Basin management goals and objectives presented earlier. Such revisions are those which can be implemented with a relative minimum of political investment, economic cost and time delay.

Presented below are recommendations for the individual and collective Great Lakes institutions of concern. Drawing largely from Chapter Eight discussion of institutional strengths, weaknesses, goals and objectives founded on research embodied in earlier chapters, these recommendations are accompanied by a statement of rationale and an indication of implementation opportunities and constraints likely to be encountered.

Recommendations - The Collective Institutional Effort

1) Endorse a common set of goals and objectives for the use, management and protection of the resources of the Great Lakes Basin. The prescribed mandates of the four regional institutions of concern, while diverse, are generally complementary and supportive of a common (although unarticulated) set of goals and objectives. The joint preparation of such a set of goals and objectives, followed by formal recognition and endorsement by all jurisdictions with a Great Lakes management role, would constitute both a symbolic gesture of shared commitment as well as a practical foundation for future cooperative action. The goals and objectives statement presented in the preceding chapter is suggested as a framework.

Such an action, given its non-binding status and inevitable "least common denominator" nature, can be expected to be politically acceptable. In a sense, this action parallels the Great Lakes Charter approach, although having a broader focus and seeking regional institutions as well as political jurisdictions as signatories.

The key to implementation will be a lead institution or group of individuals willing to spearhead the effort; the Council of Great Lakes Governors may be the appropriate choice. Securing the interest and active support of the two federal governments will be a significant yet necessary challenge.

2) Prepare a biennial "State of the Great Lakes" report under the joint authorship and concurrence of Great Lakes institutions and their member jurisdictions. Cooperatively prepared, this report would constitute a definitive annual statement on the status of the resource, current programs and priorities, problem areas and accomplishments, and an action agenda for the following year and beyond. Individual plans of institutions would be specified and have a common focus, addressing the previously recommended "common set of goals and objectives for the use, management and protection of the resources of the Great Lakes Basin."

   The report (and report development process) would provide its contributors with an opportunity to approach resource management goals from an integrative perspective reflecting the variety of institutional mandates and goals in the Basin. Further, over time it would provide a comprehensive benchmark for assessing progress and revising programs accordingly.

   This initiative would not supplant institution-specific annual reports now prepared, but provide an overview for integrating the totality of such information under shared goals for management of the resource. The report development process would be undertaken by the collectivity of regional institution directors as part of an on-going coordinative process.

3) Establish a framework for information exchange and joint action through the conduct of an annual Great Lakes Policy Summit. The institutions of concern, in lacking a formal framework for information exchange and joint action, have failed to take full advantage of their common interests and pool their resources, as appropriate. This should be remedied with two actions. The first is holding an annual meeting among Great Lakes institution directors and senior staff to identify their respective priority concerns for the upcoming year, share work plans, explore cooperative opportunities and address any duplication, overlap or overlooked program areas. The second is the scheduling of joint meetings between the institutions of concern. Each institution should plan, on a rotating basis, to hold a joint meeting with another once each year.

   Modest yet sporadic advances in these areas have been made in past years; an indication of the political feasibility of fully implementing this recommendation. An initial summit meeting of the institutions' officers and key staff is needed to open discussion and establish a process for membership endorsement and subsequent planning of the joint meetings. This initial summit, as a major event, could be used as a "signing ceremony" for the previously suggested common set of goals and objectives.

4) Establish a regional information collection, storage and retrieval system. Each of the institutions of concern has its own areas of special expertise, and its resources (e.g., staff, data base, library) in those areas are of tremendous potential value to other institutions and the region in general. Access to and knowledge of availability are the key constraints. A computer-based inventory of available materials - even in a rudimentary form - would improve inter-institutional

accessibility to the specialized "in-house" libraries and holdings of the individual institutions. Such an inventory will be of increasing value as staff resources are challenged by limited budgets; broadening, multi-disciplinary issues; and time limitations for research.

Collaboration among the institutions to establish such a system would appear to be without serious obstacle. The principal factors may be the extent to which their respective computer systems are compatible and their ability to agree on the form and substance of the information system.

An organizational meeting of the information officers of the various institutions would constitute the necessary first step in examining the feasibility of such a system. Discussions among the technical staff and policy officials of the respective institutions would be required to operationalize the system.

5) Create a framework to monitor and coordinate Great Lakes research activity; identify and prioritize needs; and allocate responsibilities. While each institution has some coordinative role in this area, a single Basin-wide system accommodating multi-disciplinary interests is lacking. As a consequence, multiple statements of "priority" research needs are in circulation at any given time. A standing committee or council with broad membership drawn from academia, government and the private sector is required. Further, that assemblage must be aware of the variance in research mandates among the various Great Lakes-related entities and exhibit the stature and credibility needed to influence research patterns.

   Aspects of this framework are presently in place through the International Association for Great Lakes Research and the Council of Great Lakes Research Managers under the auspices of the International Joint Commission. Further, the proposed Great Lakes Amendment to the U.S. Clean Water Act recognizes this need in its provision for a Great Lakes Research Office within the National Oceanic and Atmospheric Administration. At present, however, the framework is not complete and lacks the ability to perform the needed functions.

   This prioritization and coordination effort is best undertaken within a multi-institutional framework, perhaps with a single coordinative entity such as a Sea Grant Program, the Great Lakes Sea Grant Network or a reconstituted Council of Great Lakes Research Managers.

6) Inter-institutional support for a Great Lakes Information Referral Center. The lack of active public information services among the institutions of concern contributes to their generally low public profile and attendant public confusion over their respective responsibilities and capabilities. Further, fragmentation of authority precludes the existence of an active centralized source for directed inquiry. All Great Lakes institutions would benefit from support of a Great Lakes Information Referral Center. Modestly staffed and funded via these institutions as well as academic and foundation grants, the Center would base its services on the previously referenced regional information, collection, storage and retrieval system. Fielding calls

from any source from citizen inquiries to private firms or government agencies, the Center would respond to the inquiry directly or refer the caller to the appropriate source.

This Center could be modeled in part after a service of the same name supported by the Great Lakes Basin Commission and the Michigan Sea Grant Program in 1979-80. That service met with some success, although disbanded before it was able to fully establish itself. Support for such an effort is likely, although willingness to commitment funds will be questionable among the institutions of concern. Foundations and academic institutions are likely sources, at least initially. Such a Center is most appropriately housed within an academic or non-profit organization (e.g., The Center for the Great Lakes; Great Lakes Sea Grant network) with strong ties to, and direction provided in part by the regional Great Lakes institutions and their member jurisdictions.

7) Establish a "Great Lakes Office" or its equivalent in all Great Lakes states, provinces and relevant federal agencies. Advancements in focusing jurisdictional attention on Great Lakes issues have been demonstrated in Michigan and New York, and other states (e.g., Ohio) are considering such an office. The Great Lakes Program Offices in U.S. EPA and Environment Canada have played positive roles at the federal level in this regard as well. It is recommended that the remaining jurisdictions establish such an office and use it for both intra- and inter-jurisdictional coordination and policy-making purposes.

8) Increase involvement of nongovernmental organizations in various coordinative and policy development efforts. The four governmental institutions of concern, in assessing their own collective capabilities, should determine those areas in which nongovernmental organizations can make a substantive contribution. Examples include: use of the International Association for Great Lakes Research for policy and socio-economic as well as scientific research pursuits; The Center for the Great Lakes for coalition-building and special studies; Great Lakes Tomorrow and Great Lakes United for public education and participation; and various industry associations for soliciting industry contributions/reactions to policy development initiatives. One means to pursue this opportunity is through nongovernmental sector involvement in the Great Lakes Policy Summit recommended earlier, and thereafter in any subsequent coordinative activity.

9) Establish a "Visiting Scholar" program in all institutions of concern. The Great Lakes institutional ecosystem will thrive only through the infusion of new ideas and initiatives, and perspectives from those who are relatively new to it. For this reason, a "visiting scholar" program should be instituted within each institution. A one or two year "endowed chair" should be established, permitting outstanding academic, business or public officials to contribute their talents to the Great Lakes management effort.

In many instances, existing staff resources could be allocated to provide for such. Further, this type of function would expect to draw foundation and corporate donor interest.

10) Designate inter-institutional liaisons as a means to strengthen linkages. The Great Lakes policy community is, in many respects, a rather small one, and significant overlap is found in the membership, advisors and cooperators of the various institutions. Each institution would be well served by identifying individuals with a dual designation and appointing them as liaison between the two. So designated, they would serve as coordinator and contact to ensure that each institution is well informed of the other's activities and opportunities for cooperative effort.

Several members of the Great Lakes policy community presently serve in such a capacity on an informal basis; support for formalizing such an arrangement is expected to be readily achieved. It would be incumbent upon staff directors to identify such individuals and secure their cooperation as well as the approval of the membership.

11) Formalize an Interagency Personnel Agreement process to facilitate staff exchange among Great Lakes institutions and state/provincial/federal agencies. To varying degrees, Great Lakes institutions are subject to problems of staff turnover, staffing size limitations and sensitivity to the interests and needs of their membership. To better utilize the pool of Great Lakes expertise, strengthen inter-institutional ties and promote professional development, an exchange program between and among the regional institutions and relevant federal, state and provincial agencies is recommended. For example, a state could allocate a staff person to the Great Lakes Commission for a given project, or an IJC staff member could join the Fishery Commission staff on a temporary basis to work on fishery/water quality issues.

Such a program could be modeled in part after that sponsored by the Great Lakes Basin Commission in 1979-80, where GLBC fund allocations to the states could be accepted in funds or "in-kind" (i.e., personnel) contributions. Properly designed, such a program could be instituted on a substantial scale at nominal cost.

Recommendations - The Individual Institutional Effort

A. International Joint Commission

1) Conduct a major, periodic review of the terms of the Boundary Waters Treaty and Great Lakes Water Quality Agreement in light of current and emerging binational management needs. A review of the Treaty, including an assessment of its current and potential application, as well as the need and desirability of its amendment or renegotiation should be undertaken in the near term and periodically thereafter, perhaps every three years. The intent is to ensure that IJC efforts are targeted at critical issues; that Basin jurisdictions (and in particular the federal government) are fully aware of that potential; and that its ability to provide for a response to emerging Basin problems and issues is periodically assessed. A similar arrangement for the Great Lakes Water Quality Agreement is advisable; perhaps a more frequent and open version of the Agreement review anticipated for 1986-1987.

Such a review should be sponsored by the federal governments and involve state and provincial participation, but be conducted with outside assistance to ensure a broad and objective review. The National Research Council/Royal Society of Canada review of the Agreement in 1985-86 provides a useful model.

2) Broaden and strengthen the Council of Great Lakes Research Managers. Established under the auspices of the IJC's Science Advisory Board in 1983, the Council is designed as a forum for the exchange and coordination of research information among research agency and institute directors in the Great Lakes Basin. Further, it is the missing link between Science Advisory Board recommendations and their potential application. Broadening its limited membership and strengthening or initiating activity in the areas of research coordination, inventory and prioritizing would assist the IJC in focusing its own research related activities, as well as those of other institutions, agencies and academic units in the Basin. The Science Advisory Board should take immediate action to provide the Council with the membership, authority and resources necessary to fully develop its potential.

3) Revitalize the Great Lakes Regional Office's Public Information Office and pursue an aggressive outreach program. Although the Great Lakes Water Quality Agreement calls for a public information function within the Regional Office, the program has been de-emphasized in recent years and lacking in staff continuity. Further, the outreach element is more aptly described as a response-oriented activity than an initiatory one. A strengthened and aggressive program is needed to raise the Commission's public profile, more effectively educate its constituents and provide an avenue for citizen input into the programs and activities of the Commission. Support for a revitalized program must be voiced in the Commission's Washington and Ottawa offices, as the Regional Office can exercise at best only limited discretion in initiating the effort.

4) Streamline committee structure and process and relate more directly to Commission priorities. The committee structure under the Science Advisory and Water Quality Boards has grown unwieldy over time and, in some instances, the relationship of committee activities to Board priorities and overall Commission responsibilities has come into question. A recent action by the newly appointed co-chairmen of the Science Advisory Board to abolish all committees in preparation for a new structure as a positive step, provided that the new structure is implemented with due speed; continuity with respect to ongoing efforts is safe-guarded; the new structure is founded firmly on the Commission's mandate; and former members are retained, as appropriate, to provide some sense of continuity to preceding efforts.

A comprehensive review of the board and committee structure is recommended, with consideration given to the replacement, consolidation, elimination or modification of current arrangements.

This review should include a careful examination of the Science Advisory and Water Quality Boards; their mandate; relationship to the Commission and each other; their membership; past performance and future direction. Careful attention should be paid to the concerns highlighted in the 1985 National Research Council/Royal Society of Canada review of the Great Lakes Water Quality Agreement.

5) Improve timeliness of report and study preparation. Commission effectiveness and credibility are compromised by an arduous and time consuming process for issuing reports and special studies. The length of the reference process - from development to reporting stages - has been highlighted as a particular concern. While time delays associated with certain studies may, on occasion, be unavoidable, inordinate delays have been observed. Careful attention to information needs, resource requirements and the array of other obstacles and requirements in the earlier stages of such efforts will assist in timely issuance of reports.

   Addressing this matter will require action at both the federal level (e.g., an expedited reference process) and the IJC board and staff level (e.g., priority setting and resource allocation efforts).

6) Formal presentation of Commission findings and recommendations. The Commission process calls for transmittal of IJC studies and annual reports to the two federal governments for review and possible action. The lack of a formal presentation "event" involving high ranking federal officials, however, provides little impetus for federal agency reaction. Further, formal written responses to IJC recommendations are rarely received.

   Establishing a formal presentation meeting on at least an annual basis should be considered as a means to promote federal agency coordination of, and reaction to relevant recommendations. An open meeting with media coverage would be desirable. Arrangements for such would appropriately be made by members of the U.S. and Canadian sections of the Commission.

7) Assume a lead and aggressive role in the development and application of the ecosystem management concept. With the signing of the Great Lakes Water Quality Agreement of 1978, the Commission formally recognized and endorsed the ecosystem management concept and established a framework and vehicle for its application. Given this, it is recommended that the IJC assume an aggressive, leadership role in developing the concept and working with other regional institutions and Basin jurisdictions in the interest of broadening its use and application.

   Such an effort would be an appropriate assignment for a specified committee of the Science Advisory or Water Quality Board, with a broad-based, multi-disciplinary representation.

8) Broaden and expand the planning function with a special emphasis on longer-term anticipatory planning. Commission planning can and should be expanded substantially under the present terms of the Agreement and Treaty. The Commission's present data collection and analysis capability provides the foundation for such. Of particular value is the longer-term, anticipatory planning capability demonstrated by the Commission in its recently issued Great Lakes Diversion and Consumptive Uses Study. Carefully targeted to key issue areas and pursued with board or committee oversight, Commission planning studies could have a substantial influence in the direction of state, provincial and federal Great Lakes policy.

The Commission, in conjunction with its Science Advisory and Water Quality Boards, is well-advised to review the Agreement, Treaty and Board mandates to determine the opportunities and needs for focused planning activity and the means by which it can be pursued.

9) Review staffing and budgetary needs in the Regional Office and assess overall organizational requirements. The adequacy of the staffing and budget levels of the Commission's regional office has long been questioned in light of the responsibilities it is charged with under the Great Lakes Water Quality Agreement. Inordinate delays in filling staff vacancies have been of concern as well. An assessment of such is needed, as is a subsequent decision (if appropriate) to secure additional funds or otherwise re-allocate existing resources to priority needs.

Also of concern are organizational issues relating to the relationship between the boards and the office director and the overall level of accountability of the regional office to Washington and Ottawa offices. Such a review should be undertaken in conjunction with the Treaty/Agreement review process called for earlier.

10) Prepare and maintain an inventory of institutional responsibilities and program activity under the terms of the Great Lakes Water Quality Agreement. In cooperation with the state, provincial and federal governments, the Commission should maintain an updated document which identifies and describes state, provincial and federal responsibilities (implicit or explicit) under the Agreement; relevant laws, programs and intergovernmental arrangements; staffing and funding levels; and any related information describing the framework for, and commitment of agency resources to the provisions of the Agreement. Such a document would serve as a valuable reference source as well as providing a vehicle for assessing individual and collective agency commitment to the Agreement. On the U.S. side, the federal-state consultation and interaction involved in compiling the document could serve as an informal counterpart to the activities pursued under the Canada-Ontario Agreement. Preparing the inventory can be justified under the terms of the Agreement and would best be pursued as an activity under the Water Quality Board with principal input from the U.S.

EPA Great Lakes National Program Office and the Environment Canada Great Lakes Program.

11) Explore alternate dispute avoidance and resolution techniques. When the two governments are unable to reach a decision on a divisive issue under the Agreement, they lack well-defined alternatives to the strictures of the binding arbitration function embodied in Article X of the Boundary Waters Treaty or the provisions of the Hague Convention. Yet, such disputes are increasingly likely to arise as pressing transboundary issues emerge. Negotiation, conciliation, fact-finding and related techniques should be developed and made available through the Commission as a "first line" approach to avoiding or resolving disputes. Such techniques would provide a welcome alternative to the more rigid and politically unacceptable approaches and would allow the discussion to proceed under the Commission "umbrella."

Development and application of these techniques will require the concurrence and support of the Commission through the governments. Amendment of the Treaty or Agreement would not be mandatory, as existing provisions provide the necessary basis.

12) Develop and apply the socio-economic component of ecosystem management to activity under the Agreement. The Commission has long demonstrated an interest (although often latent) in the socio-economic aspects of Great Lakes water quality management. Indications of this are seen in the committees of the Science Advisory Board (e.g., Societal Aspects Committee), the direction of Commission-funded investigations and the interests of the Commission as expressed in reports and special studies to the governments.

This emphasis must be strengthened and integrated into all aspects of the Commission's studies and related activities if ecosystem management is to be practiced in its true form. To do so, such a committee must be maintained and its interaction broadened with other disciplines represented on Commission committees. Further, board and staff selection should be pursued to ensure adequate representation of socio-economic considerations.

B. Great Lakes Fishery Commission

1) Establish a public information function and outreach program. The nature and specificity of the Fishery Commission mandate provides the institution with a readily definable public clientele - sport and commercial fishermen principal among them. Yet, the Commission's low profile and lack of a public education/involvement program compromises its potential and hinders full development of a potentially substantial base of support.

A staff-coordinated public information program, drawing on the expertise of cooperating agencies, should be established by action of the Commission. A periodic newsletter should be considered as an element of this program. An active outreach component would

serve as both a public education tool and a vehicle for soliciting public input into the programs and deliberations of the Commission. A public advisory committee is an option as well.

Provided that such a program is carefully targeted and draws upon cooperating agencies for assistance, it is expected that it could be implemented with limited staffing and budgetary resources and without a substantial re-allocation of Commission priorities.

2) Periodic formal review of the Convention on Great Lakes Fisheries and related Fishery Commission programs. While a one-time review of such was mandated in Convention language and a number of program-specific audits and internal analyses have been conducted, a formal periodic review is in order. Conducted every 3-5 years as an "internal audit," for example, this review would serve as a check on the scope, direction and effectiveness of Fishery Commission programs and bring to light any needed revisions to these programs or the Convention itself. Further, it would provide the opportunity to assess programs in view of emerging issues and fisheries-related efforts underway by other regional institutions and state/provincial/federal agencies.

The review would be initiated by the Commission itself, coordinated by staff with input from cooperating agencies and individuals as well as user groups, and culminate in a public presentation. Properly designed, this internal audit function could be incorporated into the Fishery Commission program with only a modest increase in demands on staffing, time and budget constraints.

3) Heighten profile of, and expand annual meeting program. To broaden its public profile and secure a formal federal government response to its recommendations, the Commission should consider heightening the profile of its annual meeting. An expanded format featuring formal presentation of, and response to Commission recommendations would be appropriate, as would informational briefings and research reports by academic researchers and by fisheries agencies at all levels of government. Opportunities for dialogue with the general public would be appropriate as well.

Instituting such a format can be undertaken at the discretion of the Commission, as the Convention requires an annual meeting but makes no stipulation as to its format and content.

5) Strengthen linkages with the International Joint Commission and explore opportunities for cooperative action. While linkages do exist in terms of a formal liaison arrangement, and coordination at the program level is observed, the complementary nature of the institutions' mandates indicate that opportunities for cooperative action are substantial. Through periodic meetings of senior staff and joint meetings of the two Commissions, such opportunities should be identified and pursued. Issue areas to be focused on might include, among others: toxic contaminants in the fishery; impacts of lake level fluctuation on the fishery; water quality and habitat management.

This initiative should follow internal Fishery Commission discussion and decisions regarding a broadened interpretation of its mandate, as recommended above.

6) Maintain support for socio-economic research and application in an ecosystem management setting. The Fishery Commission should foster its growing reputation for, and support of research into the social and economic aspects of fishery management and more generally, resource management. This support, through grants for research and symposia, has had a demonstrated impact in developing the socio-economic dimension of ecosystem management. Continued emphasis in this area, coupled with efforts to involve a broader range of resource managers, scientists and policy makers is recommended.

C. Great Lakes Commission

1) Institute periodic comprehensive review of Commission programs in light of Great Lakes Basin Compact provisions. In a fashion similar to the IJC and Fishery Commission recommendations presented earlier, the Commission should adopt a policy calling for periodic comprehensive view of its programs in light of its mandate as presented in the Basin Compact. Conducted internally (i.e., by member states) every three years, such a review would serve to 1) inform (or remind) member states of compact provisions, 2) assess the scope and direction of current Commission programs, and 3) determine and act on dormant capabilities as necessary. The review could also be used to assess the adequacy of compact language and provide a means for suggesting amendments, when and if necessary.

Establishing a review policy could be promoted by the Executive Committee and approved by the full membership. A special committee could be appointed for a finite term at the beginning of each review cycle.

2) Establish a priority-setting process for Commission activity and a system of accountability to ensure adherence. A formal and procedurally explicit priority-setting process involving all member states should be instituted on an annual basis. This process would culminate in the adoption - at the annual meeting - of an explicit set of priority concerns for the upcoming 12-month period, the mechanisms to address them (e.g., task force), and a set of measurable objectives. Revisions/ amendments could be considered at the semi-annual meeting, if necessary, as that meeting would be used to monitor and report on progress and adjust strategies. Upon formulation of a prioritized action agenda, the chairman of each state delegation would sign the document, which would thus become a matter of record and Commission policy. The chairman would also be required to submit an annual report documenting his state's contribution to meeting priorities set and commitments made the preceding year.

As with the periodic program review recommendation, establishing this process would require the approval of the membership and a designated authority (e.g., Executive Committee) to oversee. The

accountability aspect would remedy a long-standing problem of unclear priorities and charges of Commission unresponsiveness brought by state members.

3) Clarify the Commission-Council of Great Lakes Governors' relationship through detailed study and a subsequent Memorandum of Understanding. If the two institutions are to co-exist without substantial structural and operational revision, a clarification of roles, responsibilities and interrelationships is necessary to remedy what is best described as an untenable situation. A follow-up to the State Research Associates' study is recommended to explicitly identify regional program needs, allocate responsibilities between the two institutions and define cooperative arrangements. A Memorandum of Understanding outlining their respective roles in generic fashion (e.g., advocacy, legislative tracking, research coordination, policy development) should be jointly approved and serve as a guide for each in program development and pursuit of initiatives.

   Based on existing characteristics and capabilities, it is advised that the Council serve primarily in a broad agenda setting, consensus building and policy-making role. The Commission, while assisting in these functions as well, would focus its efforts primarily toward implementing such policies, providing technical assistance and advice to the states and the Council, and maintaining program coordination, data collection, issue research and legislative monitoring capabilities. The Commission should be considered, at least under current arrangements, as a preferred "institutional home" for maintaining programs under the Great Lakes Charter and Great Lakes Toxic Substances Control initiatives. Regional advocacy, promotional activity and federal agency/Congressional liaison should be shared but closely coordinated functions.

   The Memorandum of Understanding should be prepared via a special task force comprised of GLC state delegation chairmen and the Executive Committee of the Council.

4) Secure active and sustained participation (non-voting) from provincial and U.S./Canadian federal agencies. The Commission should make a concerted effort to secure participation of a designated observer from Ontario, Quebec and each U.S./Canadian federal agency with an interest in Great Lakes management matters. These individuals should be invited to participate in or observe all Commission functions, provide information and liaison services, and voice agency concerns and ideas for consideration by the Commission. Cooperative state/provincial/federal initiatives should be pursued as appropriate (e.g., data collection programs, research coordination).

   This recommendation can be addressed through the expansion and reactivation of the Commission's Technical Advisory Committee on Research and Development (established in 1982), addition of federal and provincial representatives to task forces or formation of a separate arrangement.

5) Improve effectiveness of advocacy efforts by funding a Washington-based staff person. A full-time, Washington-based Commission lobbyist position should be created to improve the effectiveness (i.e., impact) of Commission positions. Historically, the Commission has had only a limited presence at the federal level and follow up on its many resolutions and position statements has been questionable and in some instances, nonexistent.

This staff person could work out of the Washington office of the state chairing the Commission and would be responsible for legislative tracking, liaison and advocacy. The individual would be fully accountable to the Commission and report to the Executive Director and Chairman. Funding for the position could, at least initially, be drawn from the substantial reserve funds left to the Commission upon termination of the Great Lakes Basin Commission.

6) Initiate program development function as means to augment limited state appropriations. The Commission should make full use of compact provisions providing broad discretion in securing operating funds. To augment modest state appropriations, consideration should be given to securing (on both a project specific and general operating basis) foundation grants and corporate donations. Prospective requests should be formulated by staff, as appropriate, and presented to the Executive Committee (or a newly created committee) for approval prior to submittal.

An appropriate first step would be the designation of a Commission committee or task force on development and the formulation of guidelines and policy for pursuing "outside" funding.

7) Amend Bylaws to suspend voting privileges for states in arrears on dues. Suspension of voting privileges for non dues-paying states should be considered an inducement for timely state appropriations. This is a more viable option than any legal recourse which might be taken under compact provisions. Such a measure would provide a deterrent to the historical tendency of some states to go into arrears, and would therefore reduce budgetary and fiscal planning uncertainties.

8) Encourage active state involvement in the issue identification, research and analysis process. Commission effectiveness and the relevance of its programs should be strengthened by abandoning the present process in which issue development is largely staff responsibility and commissioners and advisors serve largely in a reactive mode. A more formalized issue identification and screening process - in which the states are principles and the staff is secretariat - should be instituted. (See recommendation on priority-setting process.)

Further, the Commission should consider an "in-kind" contribution system in which each member state would allocate a designated amount of staff time to work with counterparts and Commission staff in the identification, research and analysis of issues. This involvement should include the preparation of Commission member (as

opposed to staff) authored reports, issue papers and resolutions. To augment a limited staff, state commissioners and advisors should also be used extensively to represent the Commission at Congressional hearings, conferences, etc.

The limited level of involvement (and expectations of) state delegations in day-to-day Commission process should be considered a priority concern and receive concerted attention, in open forum, at a Commission meeting.

9) Replace present research compilation activities with a broader regional research and water planning coordination program. The Commission should serve as an information clearinghouse and coordinator for the range of Basin-related research and planning activity undertaken or sponsored by member states. As such, it would provide the information needed for member states to collectively determine Basin research needs; promote consistency of approach in the development of state water plans; develop positions on federal research funding proposals; provide a screening device for potential issues; and others.

A standing committee or task force with representatives from each member state should be established for this purpose. Commission staff should serve as secretariat and provide liaison to the inter-institutional research coordination body recommended earlier.

10) Revise or expand staffing arrangements to provide a public information/extension service. To strengthen its stature, credibility and recognition level, as well as make full use of its technical expertise and knowledge base, the Commission should develop and staff an aggressive public information/extension program. Such a program should include a regularly scheduled newsletter with broad distribution; outreach activities, including business, citizen group interaction and media relations; and support for and involvement in the Great Lakes information referral service recommended earlier.

11) Formalize a public involvement process to assist in shaping and implementing Commission programs. Nongovernmental participation in Commission activity should be broadened and formalized to assist in raising and screening issues for potential Commission consideration; to serve as a sounding board for prospective actions; and to assist in disseminating decisions and associated information.

Two approaches should be investigated. The first is a public advisory committee comprised of nongovernmental delegates appointed by member states. The second is a similar committee, but appointed by the Commission as a whole on a Basin-wide basis rather than seeking equal representation from each state. All major Great Lakes user and interest groups should be represented. Further, a portion of each Commission meeting should be allocated to a report of this committee and the opportunity for any other interested individual to make a statement or otherwise address the Commission.

Such a committee can be established by action of the Commission under the terms of the compact, provided that it be advisory in nature.

12) Assume, in some form, the Great Lakes Basin Plan process initiated by the Great Lakes Basin Commission. The Commission should pursue its Basin planning mandate provided for in Article I of the Compact yet largely ignored in favor of more reaction-oriented approaches. A policy planning approach - such as that reflected in the issue-specific elements of the now dormant Great Lakes Basin Plan -should be adopted. These elements, laying out policy statements approved by the Commission, would serve as non-binding guidance to the states, as well as being available for consideration by federal and provincial agencies or nongovernmental Great Lakes interests.

Properly devised, this new orientation would require only minimal alteration of current staff process, provided that state involvement become more extensive. This policy planning process would be a valuable means to reorient a historic Commission focus on resolution writing and occasional position papers.

13) Develop a new profile emphasizing that the Great Lakes Commission is an extension of the states and not an independent entity. The fact that the states are the Commission and the staff its secretariat must be re-established to ensure the active interest and support of member states in Commission activities. Some states have long regarded the Commission as a quasi-autonomous, distinct entity rather than a state forum. To some, the staff became synonymous with the Commission and the states but a third party observer and an occasional participant.

Characterizing the Commission in its proper light - as an organization of the states - should be pursued through the following:

a) Heighten Commission profile by presenting its actions and accomplishments as those of the membership as opposed to the staff;

b) Involve commissioners, advisors and other state representatives in day-to-day Commission efforts, including research, report and issue paper preparation, resolution writing and preparation and presentation of testimony.

c) Increase reliance on Commission members to serve as organizational spokesmen; and

d) Per an earlier recommendation, establish a system of expectations and accountability to ensure that individual state participation is active and contributory.

Commitment to this new profile for the Commission will require a collaborative, staff and member state effort on a continuing basis across all program areas.

14) Move from "balancing" of economic development and environmental concerns to integrating them. The Commission should reject any tendency to categorize issues as either economic development or environmentally oriented, addressing them separately in committees or task forces with a similar division of commissioners/advisors to attend to them. Rather, a multi-disciplinary, multi-perspective approach should be pursued; an ecosystem approach in which all ramifications of a Commission decision - environmental and economic - can be reviewed. While the consensus building process - at least in the initial stages - will be more divisive, it will also be more insightful and sensitive to Great Lakes management objectives.

This integrative approach can be pursued through careful issue definition; drawing from broader member state interests in task force appointments; and developing a checklist of questions to guide discussion and ensure that parochial tendencies are set aside in favor of broader Basin considerations.

15) Revitalize and heighten political profile and influence through commitment of state leadership and staff resources. Member states should commit to the active participation of designated commissioners (or top advisors) throughout the Commission's activities. Reliance on mid or lower level agency representatives for all activities beyond information gathering/coordination efforts should be avoided. Further, designated commissioners should provide an active liaison/advocate function for the Commission within their state. Revitalizing the Commission's political profile demands membership representation with the knowledge and authority to make decisions with confidence on behalf of the state.

Responsibility for addressing this recommendation lies with the individual state delegations, although the Commission should also consider bylaw/policy actions to ensure that member states fulfill their commitments with conviction. A more restrictive proxy arrangement is one alternative to encourage active, high level representation.

16) Pursue new image to shed "special interest" reputation. The Commission must shed its special interest (i.e., commercial navigation) reputation if it is to function as a viable institution for the broad range of resource management concerns in the Basin. Whether deserved or not, this reputation has compromised potential cooperative opportunities with other interests (governmental and nongovernmental) and in some cases encouraged alienation or confrontation. While attention to commercial navigation concerns is a most appropriate function, Commission activity should be apportioned more equitably among the Basin's other interests, as specified in the Compact.

The Commission should re-evaluate its charge with this in mind and examine other areas and opportunities for promoting the informed use and management of the lakes. The compact/program review process recommended earlier would provide an appropriate vehicle. Further, the Commission should initiate an outreach program (also

discussed earlier) to improve its image by dispelling any misconceptions; clarifying its mandate and investigating opportunities to broaden its emphasis. Particular attention should be paid to the nongovernmental environmental community, which has historically had limited association with the Commission.

Developing a new image, as with developing a heightened profile (discussed earlier) will require the continued commitment of staff and member states, as well as concerted external activity (e.g., media relations, interest group liaison). Given present state attitudes toward the Commission, such an effort would be a viable one, with success dependent upon the extent of political support behind it.

D. Council of Great Lakes Governors

As with all other "incremental" recommendations presented in this section, those for the Council are designed to complement and be pursued in concert with those for other institutions. This point is particularly important in light of the substantial similarities between Council and Great Lakes Commission mandates. In several cases, recommended program and coordination-oriented initiatives directed at the Commission could be addressed by the Council if the former chose not to act on them.

1) Clarify the Council-Great Lakes Commission relationship through detailed study and a subsequent Memorandum of Understanding.

(See Great Lakes Commission recommendation #3)

2) Grant full membership status to New York and Pennsylvania and associate membership status to Ontario and Quebec. Such an action would confirm the Council's commitment to a Basin-wide and binational resource management approach and formalize a relationship that has developed throughout its water-related activities. It is an essential requirement for immediate action if the Council is to realize its substantial potential. As an organization that addresses broad policy issues in a largely non-confrontational and consensus building manner, it is unlikely that the broadened membership would adversely influence any goals or objectives presently held by the six-state membership.

Implementing this recommendation will require some discussion among the present membership and a change in Bylaws and Articles of Incorporation.

3) Develop a long-term program plan to add specificity to goals presented in Articles of Incorporation. The Council, through a Program Development Committee or some variation thereof, should prepare a multi-year program plan for addressing priority issues. Such a plan would not only assist the Council in determining its own organizational needs and evaluate progress, but provide other institutions with an indication of direction and an opportunity to plan their activities accordingly. Further, it would provide a framework for the longer term initiatives now underway, including

the Great Lakes Water Management Program under the Great Lakes Charter and the implementation of the Great Lakes Toxic Substances Agreement.

4) Stabilize funding base and staffing/office arrangements. The Council must foster a sense of permanence in its organizational structure if it is to establish itself as a driving force for regional cooperation and promotion over the long term. The present modest funding/staffing base must be evaluated in light of the long-term program plan recommended above. It is suggested that a single, non-rotating Council office be established to ensure continuity of staff and services. With regard to staffing, it is further recommended that member states consider staff support in the Council office as an "in-kind" contribution to augment the modest size of the present staff. Finally, it is recommended that the Executive Director be an appointee of the Executive Committee as opposed to the Council Chairman, and continuity in that position be encouraged irrespective of chairmanship changes.

5) Use Great Lakes Charter as a model for other future elements of a Basin management plan. The Great Lakes Charter should serve as the prototype for subsequent related initiatives on a range of regional issues. The Council should consider these initiatives as elements in an ongoing Basin Plan Process, and commit to continuing development of such a plan. Elements should be pursued in order of priority with Council and staff capabilities in development and implementation a primary consideration. This process should be closely coordinated with activities of the Great Lakes Commission and pursued cooperatively to the extent possible.

   Committing to this process is a substantial long-term decision warranting extended discussion of Council goals, objectives, organizational resources and inter-institutional relationships (present and potential). Such a discussion and subsequent decision, however, is needed if the benefits of the Great Lakes Charter process are to be realized in the broader range of resource management needs. Further, the sensitivity of the Charter and accompanying Council report to ecosystem considerations is significant and should be applied in broader fashion.

   An investigation of this function must be pursued in light of GLC recommendations to ensure that planning efforts are cooperatively pursued or allocated to one or the other.

6) Open up Council process to permit broader input into program and policy development activity. The Council should avoid the "closed door" Charter development approach which excluded non-member input throughout all but the final ratification stage. While task force and working group sessions need not be restructured into a form of public hearing, periodic opportunities for input should be budgeted into key segments of all initiatives.

While an open policy such as this may engender additional debate and discussion, it may also serve to garner support for a given initiative and its implementation after adoption.

7) Expand promotional role to serve as principal spokesman and advocate for region. The Council should make maximum use of its membership stature and inherent media appeal in serving as the region's principal spokesman and advocate. While the more technical program activities are best pursued by Council task forces and committees, the Council membership - through regularly scheduled and well-publicized meetings, signing ceremonies and related activities - should publicize and promote the region and the cooperative activities of its jurisdictions. A presence in Washington, D.C., either in lieu of or in conjunction with the GLC is a necessity.

8) Develop dispute avoidance and resolution techniques for use in addressing potentially divisive regional issues. While the Council is appropriately focused on issues amenable to consensus during its early years, its future focus should also turn to one of addressing the more divisive issues equally in need of resolution. Consideration should be given to the use of the Council as the forum for resolution of issues among high-level state officials.

   This future role should be considered as the long-term program planning recommended earlier proceeds. Dispute avoidance and resolution techniques should be developed under the auspices of the Council at that time.

9) Sponsor study of institutional requirements for long-term oversight of charter implementation and related future initiatives. The Council must act on its own finding that the institutional requirements for Charter implementation do not presently exist. A study should be undertaken to identify those requirements and determine whether a present institution should be revised accordingly or a new institution or framework set in place. Special attention should be given to the current and potential Council-Great Lakes Commission interrelationship and the opportunities therein.

   Such a study should be commissioned in the near future to ensure that momentum under the Charter is maintained.

10) Expand public information capabilities. Due to the Council's growing profile in the region and its involvement in issues of broad concern (e.g., water diversion, toxic contamination), a staff level capability to respond to inquiries and maintain an information outreach program is essential. Instituting such a program is recommended, as is linking it clearly to other inter- and intra-institutional programs recommended earlier. Some form of public advisory committee should be considered as well.

11) Conduct periodic review of Council programs in light of mandate. As recommended for other institutions, a periodic review (perhaps every three years) should be conducted by the membership to

1) reexamine mandated responsibilities; 2) assess the scope and direction of current programs; and 3) determine and act on dormant capabilities, as necessary.

This review could be mandated via Bylaw revision or adoption of a policy statement to that effect.

Scenario Three: Substantive Revision of Present Institutional Arrangements

As noted, the "incremental change" recommendations presented under Scenario Two are predominantly operational adjustments of a comparatively minor nature. Because most can be implemented within existing arrangements with a relative minimum of institutional disruption and political debate, they do hold great promise. They are therefore offered as the necessary first steps in strengthening the Great Lakes institutional ecosystem.

There is, however, a second tier of institutional concerns that transcends operational issues and questions instead the more fundamental structural framework of this institutional ecosystem. For even when a given institution or set of institutions is fully operational and meeting any established efficiency/effectiveness criteria vis-à-vis stated goals, the performance is for naught if those goals are misdirected or insensitive to resource management needs.

Scenario Three recommendations accept the fundamental legitimacy of current arrangements but recognize that some sweeping (and perhaps politically controversial) operational and structural revisions are in order as we move toward a substantially revised regional management framework.

The following recommendations, to be considered after (or as) Scenario Two recommendations are initiated, seek also to bring current institutional arrangements in line with the goals, objectives and organizational parameters outlined earlier.

Recommendations - The Collective Institutional Effort

The recommendations for incremental change in this area, as indicated, advocate stronger linkages between regional institutions and the joint pursuit of basic information gathering, prioritization and program coordination functions. Bolder initiatives are needed as well, recognizing that such incremental changes cannot address the more substantial inadequacies associated with present regional resource management efforts. The following are recommended for consideration.

1) Establish a U.S. counterpart to the Canada-Ontario Agreement to formally and explicitly recognize U.S. state/federal responsibilities in Great Lakes management. While the role of the states in Great Lakes management has historically been a significant one, their standing vis-à-vis the federal interest has been poorly defined and of questionable equity. For example, the states have lacked a direct voice in negotiation of the binational Great Lakes Water Quality Agreements, while assuming a large responsibility for meeting the U.S. commitment. Further, the "new federalism" philosophy has returned many programs (but few dollars) to the

region, where states bear implementation responsibilities under federal laws.

A U.S. counterpart to the Canada-Ontario Agreement is needed to formalize federal/state relationships under the Great Lakes Water Quality Agreement in terms of implementation as well as review/ amendment/renegotiation efforts. Specification of the state role will assist in assessment of budgetary needs, provide a benchmark for evaluating efforts and guide the development of interstate arrangements to meet expectations embodied in the federal/state agreement.

Support for such is best initiated among the states in consultation with U.S. EPA in the interest of preparing a mutually acceptable statement of agreement.

2) Establish a Great Lakes Environmental Endowment Fund for use by regional institutions and political jurisdictions with Great Lakes management responsibilities. As an alternative to accommodating uncertain and often dwindling budget allocations for Great Lakes management activities, the region's political jurisdictions - at all levels - should consider support for an endowment fund to provide continuity and expansion of regional programs. Supported through various means (e.g., environmental penalties and fines, resource use royalties, assessments, private and foundation grants), the fund would be targeted at critical regional issues and serve to sustain inter-jurisdictional efforts (e.g., Basin-wide monitoring, planning, research) historically beset by funding difficulties.

Great Lakes state and provincial primacy in fund administration is preferred to ensure that priority regional needs are met. Some form of federal sanction is desired, however, in order that the fund might be the recipient of fines, penalties or other assessments originating at the federal level. It is emphasized that such a fund be used to supplement, as opposed to subsidize or replace existing funding sources for resource management programs and regional institutions.

The Council, Commission and/or Great Lakes Environmental Administrators would be appropriate forums for developing and pursuing the idea, with state, provincial and perhaps federal legislation required to operationalize such a fund.

3) Negotiate a new international Great Lakes Agreement which broadens the Water Quality Agreement focus and recognizes state/provincial roles. The signing of the Great Lakes Charter and subsequent state/provincial concurrence on the principles of a Great Lakes Toxic Substances Control Agreement has demonstrated a breadth of binational, state/provincial cooperation that goes far beyond water quantity/ quality concerns alone. To more fully acknowledge the "ecosystem approach" to Great Lakes management and secure a greater degree of formality and commitments to these recent (as well as future) agreements, the federal governments, in consultation with

Basin states and provinces, should work toward an international Great Lakes Agreement incorporating water quality, quantity and all other ecosystem elements considerations into a single document, and vesting similarly expanded authority in the Great Lakes Regional Office of the International Joint Commission. Such an Agreement should be negotiated to retain and expand upon the strengths of the 1978 Great Lakes Water Quality Agreement while accommodating water quantity and other related considerations as well. Agreements at the state/provincial level should be maintained concurrently to cover those arrangements not appropriately included in the international Great Lakes Agreement where signatories include the federal governments.

The 1986-87 mandated review of the Great Lakes Water Quality Agreement of 1978 provides a convenient and most appropriate opportunity to initiate discussion of this recommendation.

4) Conduct an operational merger of the Council of Great Lakes Governors and Great Lakes Commission which safeguards the integrity of the Great Lakes Basin Compact yet integrates resource-related programs of the two institutions. This recommendation warrants special and detailed attention given the present emphasis and concern over Council-Commission interrelationships (a current arrangement generally believed to be untenable) and the substantial yet unrealized potential suggested by alternate arrangements.

The review of mandates, structure, operation and demonstrated capabilities of the two institutions (See Appendix A) provides the analytical perspective and basis for the recommended arrangement. It is clear that, despite similar mandates, both institutions have distinct strengths and weaknesses. To adequately address Basin management issues, they "need" each other; yet this need has to date been unfulfilled. The Council, for example, enjoys a political profile, media appeal and influence well beyond the Commission's demonstrated capability. Conversely, the Commission has a level of technical expertise and broad-based coordination and legislative monitoring unmatched by the Council.

Based on these observations of similar mandates and mutual interdependence, some of the more commonly expressed alternatives for institutional revision can be rejected. For example:

- "Mothballing" the Great Lakes Commission while keeping the compact intact but dormant would serve no justifiable purpose, as the Council would have to assume many present and essential Commission functions. Inefficiency is the only apparent outcome.

- If the Council was abolished, and with it an avenue for direct gubernatorial participation in Basin issues, the management effort would revert to "business as usual" with the Commission - a source of long-standing dissatisfaction with several states and an arrangement which, in and of itself, compromises Basin management potential.

- o Maintaining both institutions with stronger ties is an improved option, and might include efforts to co-locate staff and vest policy direction in a single Executive Committee. Yet, such a step would appear to be based more on political realities (i.e., what can be done) then on Basin management needs (i.e., what should be done). Even now, with a tremendous overlap in commissioners, advisors and cooperators between the two, coordination and cooperative action is clearly inadequate.

In terms of positive, incremental change, the recommended action (as noted earlier) is to recognize areas of potential overlap, define the universe of Basin management needs; and subsequently allocate and coordinate functions through a comprehensive Memorandum of Understanding. Then--and only then--should co-location and uniformity of Executive Committee membership be considered. These should not be viewed as solutions in and of themselves, but as a means to implement the Memorandum of Understanding and the solutions embodied within it.

In terms of substantive change, an operational merger of the two institutions is recommended, premised on the idea that: the Great Lakes Basin Compact must be maintained in some form; gubernatorial involvement must be sustained; and technical and coordinative capability must be provided for. The following measures should be taken:

a) Consolidate the two institutions and their present programs into a single one, renamed the "Great Lakes Basin Commission" or "Great Lakes Council" or some other acceptable name to demonstrate a merger and avoid confusion with either of the existing institutions.

b) Using the existing Great Lakes Basin Compact as the institutional base, amend it to limit institutional membership to the governors themselves. Allow each member (i.e., governor), to appoint a five-member delegation authorized to represent him and cast his vote. Delegates would include the directors of the State Departments of Natural Resources and Transportation; one member each from the House of Representatives and Senate; and a member at large.

c) Approve Bylaws placing strict limits on the use of proxies and requiring that a majority of a state's delegation (in the absence of the governor) be present for that state's voting privilege to be exercised.

d) Consolidate Council and Commission staffs in a permanent office of this "new" institution and establish a permanent field office in Washington, D.C.

e) Integrate the present functions of both institutions into the new one as a minimum initial effort, subsequently broadening them per recommendations presented earlier (e.g., Basin planning, standard setting).

f) Expand the funding base by substantially raising membership dues and securing alternate funding sources. Expand staff size

accordingly and make liberal use of "in-kind" state services (e.g., interagency personnel agreements).

g) Provide for a chairmanship on a two-year, rotating basis, with the head of the delegation from the "chair state" serving as chairman of the Executive Committee, comprised of the gubernatorially designated delegates.

h) Organize expanded staff into sections which include, among others, technical support and research; advocacy/public relations; policy and program development; Basin planning and interstate liaison.

Once the structure is in place and the institutional programs and services outlined, every effort should be made to secure provincial membership, federal agency cooperation, and broadened programs and authority per the recommendations presented earlier.

This arrangement, patterned in part after the Delaware and Susquehanna River Basin Commissions, and drawing from other arrangements as well, would consolidate resources, reduce institutional complexity and provide a more integrative approach to Basin management.

Recommendations - The Individual Institutional Effort

A. International Joint Commission

Recommendations for substantive change are directed at previously identified structural and operational weaknesses and generally fall into five categories: federal/state/provincial relations; scope of authority; membership/appointment process; functions and organizational resources. They are presented below as steps which preserve the basic premise of the Boundary Waters Treaty and International Joint Commission while providing for substantive revision. Most would require revisions to the Treaty itself or, at the minimum, a departure from current Commission policy or procedure.

Federal/State/Provincial Relations

1) Require a formal federal government response to Commission recommendations. The Commission is empowered only to offer advice and recommendations to the two federal governments; there exists no reciprocal requirement for responses to those recommendations. Historically, responses have been sporadic at best and the absence of such a requirement has provided the federal governments with a means to ignore or delay consideration of pressing issues. A mandatory response process, preferably through a public forum, is recommended to strengthen federal accountability on Great Lakes issues and heighten the impact of Commission actions. Establishing such a requirement is best achieved via specific language in an amended Boundary Waters Treaty or Great Lakes Water Quality Agreement but can be achieved through a statement of intent or policy issued by the federal governments as well.

2) Secure high-level state and provincial representation in all appropriate Commission functions and formalize a state and provincial role in the negotiation, amendment or interpretation of all binational agreements formulated or administered by the Commission. The Commission, in consultation with the U.S. Department of State and the Canadian Department of External Affairs, should formulate policy providing Great Lakes states and provinces with a substantial and well-defined role in all matters which directly or indirectly impact state and provincial responsibilities in Great Lakes management. Such policy should provide a substantive state and provincial role in any effort to review, amend or re-negotiate the Great Lakes Water Quality Agreement or any related future agreement. In turn, the states and provinces should acknowledge the importance of Commission deliberations by directing high-level officials to participate in them.

3) Specify regulatory and enforcement functions of the federal governments under the terms of the Boundary Waters Treaty, Great Lakes Water Quality Agreement and any future agreements. While the Treaty and Agreement set forth standards and criteria for binational Great Lakes management, specific references to regulatory and enforcement mechanisms for these standards and criteria within each government are not provided. Specification of such through Treaty and/or Agreement revision, exchange of notes or other formal expression of policy is recommended as a means to establish a system of accountability and a benchmark for assessing progress.

Scope of Authority

4) Extend the Commission's quasi-judicial powers to other areas, including Great Lakes water quality considerations. Through Treaty revision, grant the Commission standing authority to rule on binational water quality disputes, direct federal resources toward specified Areas of Concern, and approve/deny applications for Great Lakes water uses where such use may have substantial water quality or other environmental implications in the boundary waters.

5) Negotiate a new international Great Lakes Agreement which broadens the Water Quality Agreement and recognizes state and provincial roles.

(see recommendation #3 under preceding discussion)

6) Grant the Commission broad standard-setting authority for Great Lakes water quantity, quality and related environmental considerations. Through Treaty revision and expanded use of the Agreement device, grant the Commission standing authority to set binding minimum standards to guide Basin management efforts of the two federal governments and state/provincial jurisdictions.

7) Extend Commission authority to all boundary water tributaries and include Lake Michigan in the definition of such. Recognizing that Great Lakes tributaries are an integral component of a single, binational ecosystem and that Lake Michigan is hydrologically

indistinguishable from Lake Huron (a recognized "boundary water"), the Boundary Waters Treaty should be amended to extend Commission authority over them.

8) Establish a "consistency requirement" mandating federal, state and provincial governments to demonstrate consistency with extant Commission plans, standards or guidelines when publicly funded projects or water uses with substantial Great Lakes impacts are proposed. Modeled after the consistency provisions in U.S. federal coastal zone legislation and commonly seen in local development ordinances, the consistency requirement would strengthen Commission influence in the orderly development and management of the lakes.

9) Expand the Commission's monitoring function to provide oversight and coordination of federal initiatives. The Commission should be granted an oversight and coordinative authority to strengthen federal accountability to, and vigorous pursuit of the terms of the Great Lakes Water Quality Agreement and related future agreements. Such authority would provide an incentive presently lacking under current arrangements.

10) Ensure federal responsiveness to Commission-generated Great Lakes research priorities. Through a revised Water Quality Agreement or other binational arrangement, the federal governments should embrace a policy promoting consistency between Commission-generated research priorities and the Great Lakes research agendas of appropriate agencies and federally-supported institutions.

11) Formalize a means for direct interaction between the U.S. and Canadian Commissioners and the broader range of federal, state, provincial, local and non-governmental interests in the Basin. The Commission should establish a procedure to enhance accessibility to Commissioners during program development and priority setting processes, during the actual conduct of its studies and after findings and recommendations have been formulated. Periodic public hearings at the "field level" throughout the Basin should be held, and expanded opportunities provided for public interaction and discussion during business meetings of the Commission. Other options include establishment of a public advisory committee and/or broadened representation on boards and committees.

Membership/Appointment Process

12) A new appointment process for Commissioners should be established to ensure uninterrupted, capable and responsive leadership for the Commission. Dissatisfaction in some sectors has long been expressed with respect to the political nature of appointments, extended vacancies, limited accessibility and perceived unresponsiveness. While these concerns may, in some cases, be overstated, a revised appointment process and membership arrangement would strengthen the Commission's leadership and, hence, resource management capabilities. The following actions are recommended:

a) An open nomination/appointment process providing the community of Great Lakes interests with input into the selection of prospective Commissioners;

b) Staggered appointments and specified, longer terms to provide continuity of leadership despite changes in administrations;

c) Full-time (or increased) appointments for all commissioners;

d) The formulation of basic criteria for screening candidates and providing an appropriate diversity of representation in each section.

These revisions should be reflected in an amended Boundary Waters Treaty or terms of operation for the Commission, as appropriate.

Functions

13) The federal governments should grant the Commission a "standing" or "open" reference to provide for a continuing, comprehensive Basin planning function. The Commission is an appropriate institution to assume and expand upon the Basin planning function once undertaken by the Great Lakes Basin Commission. Such a function should be co-ordinated through the Regional Office under the auspices of a new board or committee, with broad inter- and non-governmental representation, capable of integrating the disparate, issue-specific activities under the Commission's present program.

Special emphasis should be placed on long-term anticipatory planning, as the Commission is the regional institution best suited - both structurally and politically - to undertake such a function. A progress report on the planning process should be prepared periodically by the appropriate board or committee in addition to the planning documents themselves. This function, of course, should complement and be coordinated with any Basin planning function undertaken by the other regional institutions of concern.

14) The Commission's reference requirement, as it now stands, should be revised in favor of one which provides the Commission with a degree of autonomy in selecting appropriate study topics itself, or choosing to act on a reference request without the concurrence of both governments. While attention to jointly referred issues should remain a priority, the Commission should not be constrained from addressing other critical issues which, for political or other reasons, do not enjoy the support of both governments. This flexibility is essential if the Commission is to embrace a pro-active, anticipatory planning process.

15) Provide the Commission with a research mandate and expand its capability to support outside research. The role of the Regional Office, largely limited to one of monitoring and coordination, should be expanded to provide even a modest in-house research capability to support and respond to its present programs and stated research priorities. Further, the adequacy of funding levels to

support outside research-related efforts through the Science Advisory and Water Quality Boards should be assessed in light of present programs and needs as well as emerging issues and prospective new programs and responsibilities (per other recommendations).

16) Secure explicit recognition of, and a statement of federal commitment to, the Great Lakes Water Quality Agreement through new or amended U.S. federal legislation. The Great Lakes Water Quality Agreement is not explicitly referenced in any existing U.S. federal legislation, although measures to that effect have been put forward. Such recognition is needed to further formalize and strengthen the U.S. commitment to the provisions of the Agreement. Support for appropriate legislative language is warranted.

17) Through restructuring of boards and committees, balance the standing emphasis on dispute resolution and management considerations with added focus on the resource itself. The Commission should consider alternate models for board and committee structure which focus its work more directly on the resource of concern. The "lake committees" approach adopted by the Great Lakes Fishery Commission, or some variation thereof, should be considered. For example, the work of the Commission's socio-economic and ecological considerations committees could be integrated into a single committee where a interdisciplinary approach is focused on a certain Basin resource (e.g., water, air) or the collectivity of resources within a sub-basin.

Staffing/Funding Arrangements

18) A thorough review of organizational requirements in the Commission's Great Lakes Regional Office should be undertaken in light of present and prospective responsibilities, and appropriate adjustments made. Current staffing levels are appropriately viewed as only marginally adequate in addressing prescribed functions. Funding is modest as well, with pronounced limitations, for example, in funds for research and conference support through the Water Quality and Science Advisory Boards. An objective, outside assessment of organizational requirements should be undertaken to determine present needs as well as those associated with the assumption of additional or revised functions per the recommendations contained herein.

B. Great Lakes Fishery Commission

Recommendations for substantive change in the structure and operation of the Great Lakes Fishery Commission are limited in number when the present arrangement is examined in light of the parameters for institutional design presented earlier. Three principal reasons are identified. First, unlike the other regional institutions of concern, the Fishery Commission has a limited and quite specific mandate - one that precludes it from becoming a "lead" institution in comprehensive regional resource management with any semblance of its present structure and operation. It was neither designed for such nor has the aspirations for assuming such a role. Hence, proffering a series of recommendations for extensive revision is

inappropriate. Rather, the focus is better placed upon means by which it can more efficiently and effectively address its given, albeit limited, mandate.

Second, the review of the Fishery Commission's role in the Great Lakes institutional ecosystem indicates that what it does, it does well. It appears that the several incremental revisions recommended earlier address the great majority of institutional weaknesses identified and capitalize upon opportunities to strengthen linkages with other elements of that institutional ecosystem.

Third, this review indicated that much can be learned from the identified strengths of the Fishery Commission's structure and function (e.g., measurable goals and objectives; broad representation and active participation; planning capability; committee arrangements; research support). It is clear that it is better to incorporate these strengths into other institutions than attempt to broaden the Fishery Commission into something it was never intended to be.

There are, however, several rather substantive revisions which the review indicated would complement the incremental revisions recommended earlier. They are as follows:

1) Review present funding arrangements to ensure equitable and adequate U.S.-Canadian contributions. The Fishery Commission's funding arrangement stipulates that the U.S. and Canada contribute to its support on a 50/50 ratio for administration and general research and a 69/31 ratio for sea lamprey control and research. This latter ratio represents the historic commercial catch of whitefish and lake trout between the two countries. Because of this ratio, a reduction in one government's allocation would require a similar reduction in the other's. While these arrangements have not been a significant problem in the past, the funding formula should be reviewed and possibly revised to more accurately reflect the two governments' interest in the fishery, as well as to provide either with the option of providing additional funds (beyond a minimum required share) to support Fishery Commission work. Further, a careful review of funding needs should be conducted, and appropriate adjustments made, in light of emerging needs and the increasing importance of the fishery to the Basin as a natural and economic resource.

2) Revise appointment process to broaden representation, set finite terms, open up the nomination process and establish basic criteria for screening candidates. Various levels of dissatisfaction have been expressed over time with regard to matters such as the Fishery Commission's narrow perspective on fishery management, marginal U.S. commissioner attendance at meetings and the open-ended appointment process which may constrain the introduction of new ideas and emphases which accompany periodic membership turnover. While these matters were not found to be of widespread concern during the interview and survey process, there is cause for considering the following:

a) An expanded number of commissioner positions to permit broader representation among public agencies and user groups;

b) Finite and staggered appointments to provide continuity of leadership despite changes in administrations;

c) The formulation of basic criteria for screening candidates (in those instances where not designated by official position) and providing an appropriate diversity of representation in each section.

d) An appointment process requiring federal legislative confirmation of appointees.

These measures would strengthen internal operations while broadening representation and public profile.

3) Expand programs and revise Convention, if necessary, to broaden mandate beyond production-oriented fisheries concerns. The Fishery Commission should consider broadening its interests and program activity to address other resource issues which affect the fishery but have broader significance in ecosystem management as well. These areas may include, among others, water quality, coastal resources, diversion and lake levels; aquatic habitat; and human health considerations. In addition to strengthening the basis of its own programs, such an effort would be a valuable contribution to the programs of other regional institutions and provide an opportunity for cooperative activity.

Initial consideration of such might best be pursued at the committee level (e.g., Board of Technical Experts) and subsequently brought forward as the theme or central focus of an annual Commission meeting for discussion and an implementation plan.

These revisions, although not calling for a comprehensive Basin management function for the Fishery Commission, will benefit its current programs and their contribution to the collective institutional effort.

C. Great Lakes Commission

As established earlier, the Great Lakes Commission mandate - through provisions of the Great Lakes Basin Compact - is a broad one with the potential to address Great Lakes management in a comprehensive, Basin-wide manner. For this reason, a number of substantive structural and operational steps (some calling for a dramatic departure from present practice) are recommended to better position the Commission to address the institutional parameters developed earlier.

The recommendations presented below are particularly applicable should the Commission and Council remain separate and distinct entities rather than undergoing the operational merger suggested earlier. Should such a merger occur, however, such recommendations would remain appropriate, although modification to some may be necessary to accommodate the attributes the Council would bring to such a consolidated arrangement.

Again, it is emphasized that these recommendations are presented as necessary measures to achieve Basin management needs, while recognizing that political and operational considerations may pose substantial obstacles.

1) Secure U.S. and Canadian federal legislative approval of a compact amendment providing for full provincial membership and extending Compact jurisdiction throughout the Great Lakes/St. Lawrence Basin. A comprehensive, Basin focus cannot be achieved until co-equal state and provincial participation is realized, as envisioned when the Compact was adopted by the states in 1955. Efforts to secure ratification of the necessary amendment should be supported. Once achieved, operational adjustments within the Commission structure can be undertaken to ensure that the states retain all coordinative and advocacy functions in which provincial participation may not be necessary or appropriate. Similar arrangements could be made with respect to the provinces. Distinct state and provincial caucuses within the Commission structure could be established for that purpose.

2) Provide the Commission with broad standard-setting authority across Basin jurisdictions and require those jurisdictions (states and provinces) to adhere to a "consistency requirement". Through Compact revision, the prospective state-provincial Commission membership should be empowered to exercise a consensus-driven standard setting authority over the resource management areas stipulated in the Compact. Under this arrangement, the membership would commit to establishing consistent standards within their individual jurisdictions.

   A variation on this arrangement, focusing specifically on water quality, was pursued in the late 1960s by the Commission membership, but dropped after extended debate and the signing of the Great Lakes Water Quality Agreement of 1972. It is recommended that such an approach be reconsidered in light of present and anticipated needs.

3) Standardize commissioner appointments across member jurisdictions. To ensure consistent representation and level of expertise across all member jurisdictions, a standardized appointment process should be established. It should provide for a minimum of five commissioners per jurisdiction, these being the director of the Department of Natural Resources (or its equivalent); director of the Department of Transportation; a member of the House or Assembly; a member of the Senate; and a gubernatorial appointee. Consideration should also be given to expanding state delegations by a member or two to provide for additional gubernatorial appointees to represent the public-at-large.

   This measure will strengthen the knowledge base of the collective Commission membership and increase its use as a forum for coordination and interaction among those of similar position in the various jurisdictions. Enacting the measure will require amendment of Compact language in most of the states. If the size of state

delegations to the Commission is to be increased beyond five, amendment of Congressionally ratified Compact language would be required as well.

4) Enact strong measures to ensure high-level (i.e., Commissioner) representation at Commission meetings. Standards outlining expectations and participation requirements of commissioners should be adopted by the Commission to avoid the long-observed tendency toward delegation of all responsibilities to lower level agency staff often lacking authorization to suggest or react to major new initiatives or policy positions which arise during meetings. One of many options which might be adopted would require a quorum of a state's delegation to be present at a Commission meeting for that state to have full voting privileges. Limitations on the use of proxies might also be established, such as requiring they be in writing, received by the Commission prior to the meeting and limited to one or two per state delegation for any given meeting.

   These standards or policies could be incorporated into Commission Bylaws through action of the membership.

5) Initiate a process for formal presentation of resolutions and position statements to the Congress and federal agencies. The long-standing but largely ineffective practice of transmitting packets of resolutions, with little follow-up, to target agencies and members of Congress should be replaced with a more intensive, personalized approach. Soon following scheduled meetings of the Commission, a formal presentation of the adopted resolutions and policy statements should be scheduled in Washington, D.C. for agency and Congressional representatives, as well as other interested groups and the media. Follow-up from the Commission office and the (recommended) Washington-based lobbyist would be pursued on individual issues.

6) Reinstate the Great Lakes Basin Plan process initiated by the Great Lakes Basin Commission and subject all Basin jurisdictions, including the federal government, to a consistency requirement. Although existing language in the Compact provides for a planning function (at least in the U.S.), amendments would be required to expand that function Basin-wide and require Basin jurisdictions to demonstrate consistency with the plan when contemplating publicly-funded initiatives or approving private initiatives in relevant areas. Canadian concurrence at the provincial and federal levels would be necessary as well. If pursued with vigor, this planning process would make significant inroads toward integrated management of the Great Lakes system.

7) Expand the funding/organizational resource base by increasing, as appropriate, member jurisdiction dues, acquiring project-specific grants and acquiring "in-kind" services from member jurisdictions. The present dues structure must be revised if any recommended, as well as existing, functions are to be fully undertaken. A realistic assessment of present arrangements must be made and revisions pursued. Further, each member jurisdiction should commit at least

a half-time equivalent technical/policy position to work solely on regional issues under the purview of the Commission.

While the still-substantial funds transferred to the Commission at the closing of the Basin Commission can be drawn upon to support expanded activities, such an arrangement is but temporary. A scheduled increase in state dues put into effect in recent years is modest and clearly inadequate in light of these expanded activities. Thus, even to maintain existing activities, once Basin Commission funds are exhausted, consideration of this recommendation in the near future will be required.

8) Expand and reorganize staffing arrangements to better address current and recommended functions. As presently constituted, staffing arrangements accommodate the coordinative, information gathering, secretariat and analytical components of the Commission's operation. Other functions, however, require additional emphasis, including advocacy, media relations, public sector liaison, program development and Basin planning, among others. To an extent, it appears that capabilities of the staff are not translated into actions or products that receive recognition and response beyond those individuals associated with the Commission. Actions to be considered include a reordered (and ideally expanded) staffing arrangement to provide a public information/media relations officer, a Basin Plan manager, task force secretary(ies), research manager, data base manager, and a full-time Congressional relations/lobbyist. At the minimum, three additional staff members would be required to adequately address present and recommended functions.

D. Council of Great Lakes Governors

Recommendations for substantive change within the structure and operation of the Council require several introductory observations. First, as the newest of the Great Lakes institutions of concern, the Council remains in its formative stage; functions have not become fully routinized or the role in the Great Lakes institutional ecosystem fully developed and defined. Hence, to pass judgment or advocate wholesale revision at this point in time is both premature and of speculative benefit to the overall Great Lakes management effort.

Second, it is recognized that any effort to revise Council structure or operation must be pursued in light of revision efforts directed at the Great Lakes Commission. As vehicles of the states with related missions, consideration of recommendations for revision of the two are inextricably linked.

Third, it is recognized that the Council, despite its broad mandate, has chosen to focus quite selectively on but a few key issues at any given time (e.g., Great Lakes Charter, toxics agreement) as opposed to seeking a comprehensive role which embraces the totality of Basin resource management issues and functions. To do so (as in the case of the Fishery Commission) would entail substantial structural and operational change well beyond original intentions when the institution was established.

As indicated earlier, the "operational merger" of the Council and Commission is the preferred means of effecting substantive change in the present Council composition (see discussion earlier in this chapter). Should the Council and Commission remain separate and distinct entities, necessary resource management functions will need to be allocated appropriately to ensure that the Basin needs are addressed.

Given such a scenario, and assuming that the Commission recommendations presented earlier are pursued, there are but a few substantive revisions for the Council recommended at this time beyond the incremental revisions presented earlier.

1) Grant full membership status to the provinces of Ontario and Quebec as well as all Great Lakes states. Provincial membership would fully acknowledge the already integral involvement of the premier and ministry representatives in the programs of the Council. Further, it would strengthen state/provincial relations by placing all heads of state on a co-equal basis. Within this revised membership structure, separate state and provincial caucuses would be available to address domestic issues as they arise.

   This arrangement should be examined and guided by a special Council Task force. It would require amendment of the articles of incorporation.

2) Enact consistent state and provincial legislation formally recognizing and voicing support for the Council and its mission. To broaden political support for Council activity and provide a means to ensure continuity despite change in administrations, state and provincial legislation should be enacted to formally recognize the Council. A task force should be formed to draft appropriate model legislation and include in it any provisions to amend and strengthen the current mandate and operations, per recommendations presented herein and others that may emerge from task force discussion.

3) Increase the staff and funding base substantially and internalize coordination and implementation of all Great Lakes Charter, Toxics Agreement and future initiatives. While capabilities presently exist to develop and secure approval of such agreements, the Council has recognized that it is not presently structured to provide necessary follow-up on a continuing basis (e.g., maintenance of a computerized data base under Charter provisions). Hence, if the Council and Commission remain separate entities or otherwise fail to enter into a Memorandum of Understanding detailing allocation of related functions, organizational resources within the Council must be expanded. Options to be pursued include substantially increased membership dues, aggressive grantsmanship at federal and foundation levels, and special legislative appropriations on a project specific basis. In-kind contributions, such as interagency personnel agreements with member jurisdictions, should be pursued as well.

It must be emphasized that these measures are designed to strengthen as opposed to fundamentally change the Council, assuming the substantial recommendations for the Great Lakes Commission are pursued. If the Commission, through inaction or policy decision, chooses to reject those recommendations, the Council should seek to pursue them itself, adapting them as needed.

Scenario Four: Dramatic Single Step Revision

The final point on this continuum of institutional change is that of dramatic, single step revision; the elimination of the present institutional ecosystem in favor of a new and significantly different one. In presenting this scenario, it is assumed that the four Great Lakes institutions of concern are disbanded, as are all other Basin-oriented arrangements (e.g., agreements, memorandum of understanding; binational work groups). Political and organizational constraints are set aside; a free hand at institutional design for Basin management in a binational, system of federalism is provided.

In reality, of course, such an action is neither politically feasible nor operationally sound. However, if the institution designed serves as the embodiment of desired characteristics for Basin management, it can serve as a useful (and heretofore nonexistent) benchmark for guiding and evaluating less dramatic revisions.

Presented below in outline form is such a "benchmark" institution, accompanied by a rationale for the characteristics selected. The design seeks to accommodate the institutional goals and parameters outlined earlier and reflects the discussion and findings associated with the literature review, personal interviews, survey effort and analysis of present institutions and generic institutional forms. The reader will note that the documented strengths of existing institutions are reflected in the design, complemented by new elements. For purposes of discussion, this "ideal" institution will be termed the "International Great Lakes Basin Commission," (IGLBC)

Goals and Objectives

The goal of the IGLBC, stated earlier in a different context, is "To enhance the public health and welfare of Basin residents through the restoration and maintenance of the integrity of the Basin ecosystem; the orderly development and management of its resources for sustainable and equitable use; and common stewardship via binational, public-private sector partnership." Corresponding objectives, as presented in Chapter Eight, relate to Basin planning and management; resource development and promotion; and intergovernmental relations.

Institutional Structure

The IGLBC would be established under the terms of a binational treaty arrangement in which state, provincial and federal jurisdictions are afforded co-equal authority in the drafting, negotiation and execution of treaty provisions. Supporting federal-provincial and federal-state

agreements would be maintained to detail and formalize domestic relations for each of the signatory countries.

This arrangement (or some variation thereof) received strong support in personal interviews and the survey effort, while its legitimacy from an institutional standpoint was confirmed in the analysis of generic institutional forms.

Membership

Membership would be comprised of the eight Great Lakes states, two provinces and two federal governments. Commissioners would include the appropriate governors and premiers, as well as the U.S. secretaries and Canadian ministers responsible for federal departments and ministries with a Great Lakes management responsibility.

Each Commissioner would be served by a delegation of up to five members providing technical support and advisory services as well as acting on behalf of the Commissioner, as authorized. Each delegation would be served by a Commissioner-appointed chairman. In the case of the States, the delegation would be comprised of those individuals listed earlier (e.g., directors - Departments of Natural Resources and Transportation; members - State House and Senate; and a gubernatorial appointee selected from the local government or private/citizen sector). A modified arrangement for the provinces would be established. At the federal level, delegation members would include senior personnel responsible for Great Lakes programs as well as one at-large member selected from the local government or private/citizen sector by the appropriate Commissioner.

Each member jurisdiction would be afforded one vote in all deliberations. Meetings of the entire membership would operate on a consensus basis, with provisions for majority rule if consensus is unattainable and prompt resolution required.

Such an arrangement would provide for broad jurisdictional representation, decision-making authority and a balance between political impact and technical/managerial expertise. The "at-large" members, in that they can be appointed from outside government, will ensue a broader user/interest group representation.

Geographic Scope

The scope of authority would include the five Great Lakes, the St. Lawrence River, and all connecting channels and tributaries. On the land side, the focus would be on the drainage Basin of the Great Lakes/St. Lawrence River system.

This designation would remedy the jurisdictional limitations imposed by the Boundary Waters Treaty and fully recognize the primacy of hydrologic (i.e., systemic) considerations over political jurisdictional ones.

Management Functions

The IGLBC would be authorized through the binational treaty to pursue the following functional areas: data collection and analysis; research/issue analysis; advisory and extension services; regulation and enforcement; arbitration/conflict resolution; Basin planning; monitoring and surveillance; interagency coordination; public participation and education; advocacy; policy development and impact assessment.

Guidelines for the implementation of each functional area would be established, recognizing the existing responsibilities of member jurisdictions. For example, regulation and enforcement functions would provide for IGLBC standard-setting authority consistent (at the minimum) with current federal law and an enforcement mechanism tied in with those of member jurisdictions.

Resource Focus

The IGLBC resource focus would be broad-based, but oriented specifically toward water and related land resources, including areas such as Great Lakes water quantity and quality; coastal zone management; aquatic resources; air quality; land use planning, etc. At the minimum, coordination; monitoring and surveillance; data collection and analysis functions would be ongoing for all areas, with policy development; issue analysis; advocacy and related special services undertaken to address a pressing problem or issue.

Level of Autonomy

By virtue of its membership, the IGLBC would be intrinsically sensitive to and reflective of the management preferences of the collective jurisdictions. However, the treaty language would provide for a level of autonomy not presently enjoyed by membership-based regional institutions in the Great Lakes Basin. The management functions detailed earlier would be pursued as a matter of course, and the institution's staff would have the authority to initiate special studies and investigations (at some level) even in the absence of consensus approval by member jurisdictions. Policy development, advocacy activities and other major initiatives would require consensus agreement. One area of authority of particular consequence would be a binding arbitration function available to resolve disputes between member jurisdictions upon joint referral.

Intra-Institutional Arrangements

Within the IGLBC, a caucus structure would be established to permit separate deliberations among the state, provincial and federal (U.S. and Canadian) membership. Each caucus would have selected semi-autonomous powers and would control a portion of the total IGLBC budget for its own use (e.g., research projects, coordination meetings), should the concurrence of the remaining membership be lacking or inapplicable for a given issue. The caucus arrangement, for example, would permit differences of opinion among various levels of government to be formulated, aired and perhaps subjected to the arbitration/conflict management function called for earlier.

Each of the four caucuses would have the discretion to set up its own operating/decision-making structure within the overall limits of the IGLBC power.

This caucus arrangement is essential if the IGLBC is to successfully integrate Basin management functions while acknowledging the strong currents of federalism in both countries and accommodating differences of opinion and process among the various levels of government. It is adapted in part from the state caucus component of the now defunct Great Lakes Basin Commission operation.

Committee Arrangements

A series of standing committees, comprised of one delegate from each member jurisdiction, would be established in key functional areas, including:

- Finance and Administration: Budgeting; personnel; office management; contracting and related matters; operational policies.
- Basin Planning: Development and maintenance of Basin Plan.
- Program Coordination: Intra-institutional relations and program coordination across member jurisdictions.
- Information/Advisory Services: Data collection and analysis; library and record maintenance; intra-institutional research and advisory services.
- Extension Services: Public relations; information dissemination; public/community/private sector relations; education programs and public participation; arbitration/conflict resolution.
- Special Studies: Oversight of special studies and investigations of priority concern.
- Policy Development: Development, maintenance and dissemination of all policy; advocacy programs and public/private sector relations; negotiation of all intergovernmental agreements and memoranda.

Others would be added, or those above consolidated or adapted, to respond to institutional requirements over time. Each standing committee would designate issue-specific task forces, as needed, to address current issues of concern. Committee assignments would entail a two year term, with the chairmanship alternating between Canada and the U.S. and the federal and state/provincial levels.

Staffing Arrangements

The IGLBC would be headquartered in an appropriate Basin jurisdiction near the Canada-United States border, with field offices in Ottawa and Washington, D.C. Staffing at field offices would focus primarily on extension, information acquisition, policy dissemination and advocacy functions, with the balance of functional activity pursued at the headquarters office.

Staffing arrangements would be generally categorized in the same manner as committee arrangements (see above), and include both permanent staff and a substantial contingent of member jurisdiction and "outside" personnel assigned on various loan programs. Staff size would be a function of need but anticipated to be substantially larger than any of the four Great Lakes institutions of concern at present. Collectively, the staff would exhibit a multi-disciplinary character, have substantial experience at the political jurisdictional level prior to assuming an IGLBC position, and have a commitment to (or incentive for) a long-term association with IGLBC. The Chairman would serve at the pleasure of the IGLBC on a six-year appointment, alternating between a U.S. and Canadian citizen. The Vice Chairman would be drawn from the membership on a rotating basis and would be the head of the delegation of a given jurisdiction.

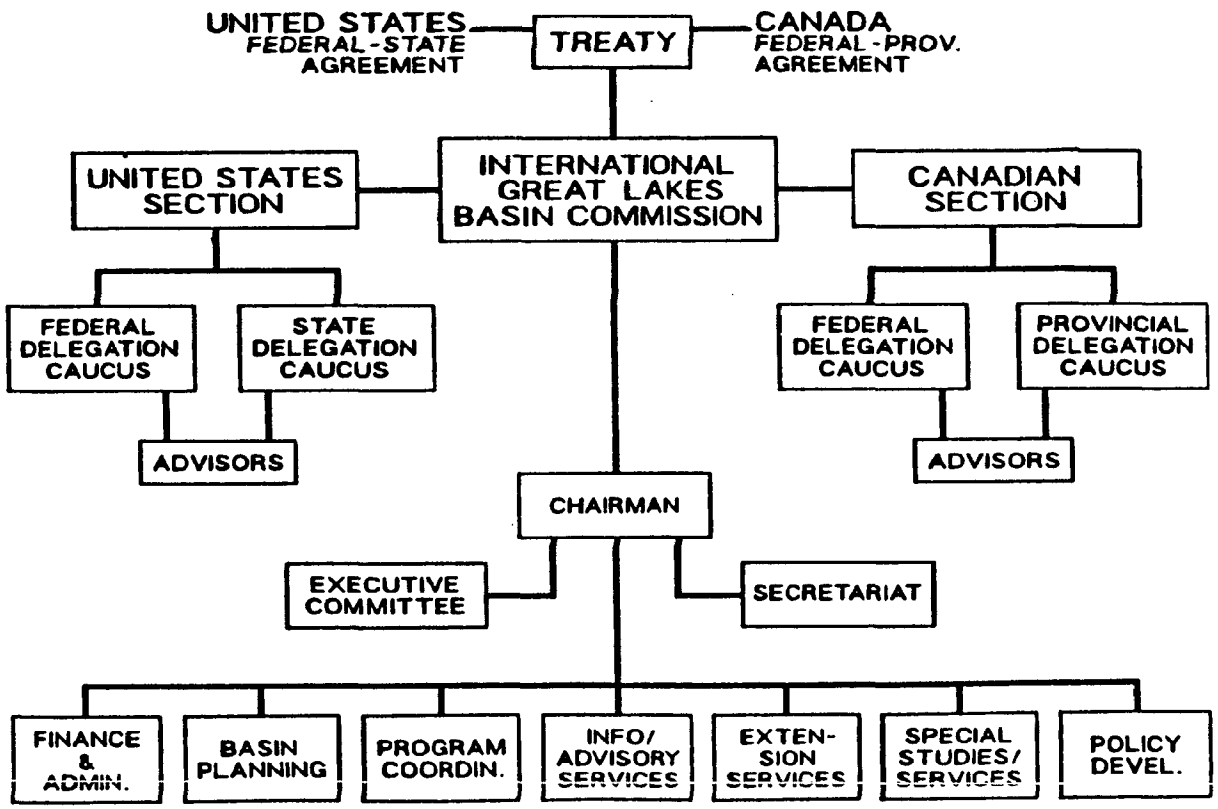
Financing

Principal financing mechanisms for the IGLBC would include annual and co-equal appropriations from the two federal governments and a similar arrangement (at a lesser but proportionate level) at the state-provincial level. Where possible, multi-year commitments would be arranged to ensure program continuity. Special study and project specific activity would be funded through jurisdictional appropriations or grants (governmental/foundation) aside from the annual appropriation process. Finally, the IGLBC would draw from a Great Lakes Endowment Fund financed by foundation grants, individual and corporate donors, and an agreed upon percentage of penalties and fines assessed in the Basin for environmental and resource management violations. Such an arrangement would diversify the funding base and provide for growth and flexibility in institutional development.

The institutional arrangement discussed above is presented in organizational chart form in Figure 5. It should be emphasized of course, that additional detail is warranted and special attention to the incorporation of the operational parameters presented in Chapter Eight is essential. As presented, however, the arrangement reflects many of the key institutional characteristics identified in the course of the study, and as such, is of value as a benchmark in assessing institutional change on a more modest scale within observed political and organizational constraints and the evolving set of Basin management requirements.

Figure 5

ORGANIZATION OF A HYPOTHETICAL
"INTERNATIONAL GREAT LAKES BASIN COMMISSION"



A Strategy for Implementing Scenario Recommendations

As presented, Scenarios One through Four offer alternatives for securing institutional change ranging from a "status quo" approach characterized by unplanned, reaction-oriented change to a comprehensive approach where current arrangements are rejected in favor of a substantially different and carefully devised institutional device. The former has been discredited as compromising the evolutionary potential of the Great Lakes institutional ecosystem. The latter is found to be a desirable benchmark for guiding institutional change, but as a radical depar-ture from the status quo, of questionable merit as a goal in the near or even longer term.

Learning from past experience (Scenario One) and articulation of goals in the "ideal" sense (Scenario Four), a staged implementation process for Scenarios Two and Three is recommended. The incremental changes embodied in Scenario Two, beyond their intrinsic value as positive steps, serve to position the various Great Lakes institutions - and the political jurisdictions they serve - for the more substantive revisions recommended in Scenario Three. The desired framework is in place and the necessary steps to achieve it carefully charted. The critical element is a matter of nurturing and focusing the political will and sustained commitment for positive change.

EPILOGUE

TOWARD A RESEARCH AGENDA FOR CONTINUED INSTITUTIONAL ANALYSIS

In documenting the importance of institutional considerations in providing for the protection, development and management of the resources of the Great Lakes Basin; Chapter One discussion alluded to the historic and chronic deficiency in related research. While the explanation for the dearth of research activity will not be reiterated, it is important to note that the need has never been greater. The "window of opportunity" for institutional change is indeed open wide at the present time (for reasons stated earlier), but without the necessary institutional research, this opportunity may be misdirected, compromised or altogether lost.

This examination of alternate institutional arrangements seeks to ease this deficiency with detailed study of regional (i.e., multi-jurisdictional) institutions for Great Lakes management and the means to strengthen them through structural and operational revision. Yet, they constitute but one element of the institutional ecosystem; other aspects of the federal system for binational Basin governance are deserving of attention as well.

Presented below is a descriptive listing of a number of related areas of institutional research designed to complement and build upon that presented herein. Importantly, research such as this will contribute not only to a presently modest research base, but provide the support and direction for implementing many of the recommendations presented earlier:

1) Regional institutions are a critical element in the federal system for binational Basin governance, yet by no means the only element. A broad examination of the federal system for water resources management - in the U.S. and Canada - is needed to document trends, assess implications for the Great Lakes, and determine how regional, multi-jurisdictional institutions can best position themselves to accommodate such change.

2) The nongovernmental organization has rapidly assumed a prominent role in Great Lakes management, not only as a governmental "watch dog" but as a means to assume vital functions (e.g., coordination, special studies) once undertaken by public institutions. Additional investigation of this evolving role and its potential for strengthening the institutional ecosystem even in an age of declining public funds is of paramount importance.

3) This study, because it focused primarily on structural and operational considerations, must be supported with an examination of <u>process</u> considerations. This is a matter of moving from the issue of <u>what</u> innovations must be implemented to <u>how</u> they must be implemented. For example, while an environmental standard-setting

authority for regional institutions is recommended, further examination of the scope and procedural aspects of such authority is warranted. Thus, it is recommended that additional attention be paid to the process whereby the various scenario elements are applied in the institutional ecosystem.

4) As discussed, the key to positive institutional evolution is found in the use of intra-institutional means to measure success, evaluate performance and carry out necessary revisions. The study documented the importance of such and recommended means to establish the proper institutional environment to nurture such evolution. Further attention must be paid to specific evaluation mechanisms and techniques for application at the intra- and inter-institutional level.

5) As indicated in the discussion of generic institutional forms for regional resource management, much can be learned from the multitude of in and out of Basin institutions presently or formerly in operation. Expanded case study analyses of those generic forms with some applicability to Great Lakes management needs are warranted.

6) Great Lakes Basin governance demands the reconciliation (or perhaps accommodation) of two substantially different federalisms. The characteristics of U.S. and Canadian systems of government with respect to resource management are distinct, as are overall political trends that influence them. Further research - conceptual and applied - in examining this system of binational federalism is warranted.

7) Implicit in the study is the assumption that significant environmental problems and resource management needs do exist in the Great Lakes Basin. Yet, beyond discussion of survey results, they are not examined in detail. To ensure that the recommendations for institutional revision are responsive to these problems and needs, a "test" is needed. A specific issue (e.g., transboundary air pollution, diversion, Basin research priority setting) should be selected and reviewed in light of these recommendations to ensure that its various dimensions can be adequately addressed within the revised institutional framework.

8) Researchers as well as policy officials have been guilty of "thinking small" with regard to institutional change. Political reality is indeed an important consideration in institution building, but should not constrain creative thought. Scenario Four should be developed and discussed in additional detail, as should other creative suggestions for substantive change.

9) The "new federalism", in passing programs and responsibilities on to lower levels of government, has accentuated the role of sub-state/provincial entities - long regarded as the "forgotten citizens" in the community of Great Lakes management interests. This statement applies to non-governmental entities and the private sector as well. Yet, these various sectors provide the foundation for

comprehensive Basin planning and management. Additional attention to the role and potential of these sectors in the broader Basin management arena is long overdue and perhaps never more critical than at present.

10) The Title II river basin commission system - and specifically the Great Lakes Basin Commission - have been the focus of little study since their demise in 1981. Yet, that system provided the most comprehensive regional planning and coordination mechanism to date in the United States. Further, the "ideal" institutional arrangement described within this study, despite its unique characteristics, has striking similarities to the Great Lakes Basin Commission structure and operation. Thus, it is recommended that additional research be focused on the Title II commission arrangement, its strengths and weaknesses, and its applicability to present and emerging needs.

In closing, it is recognized that any presentation of findings, recommendations and research priorities has only limited value unless fully and aggressively pursued by the community of Great Lakes decision makers and opinion leaders. It is therefore recommended that these individuals, both individually and collectively, carefully consider study recommendations in the interest of forging a strengthened institutional arrangement responsive to the myriad management needs of the Great Lakes Basin.

APPENDIX

A: A DETAILED REVIEW OF SELECTED INSTITUTIONS FOR GREAT LAKES MANAGEMENT

B: SURVEY QUESTIONNAIRE FORM

APPENDIX A

A DETAILED REVIEW OF SELECTED INSTITUTIONS FOR GREAT LAKES MANAGEMENT

In keeping with the study methodology, the universe of institutions and institutional arrangements addressed in Chapter Three was reviewed in detail in the interest of selecting those for in-depth analysis. The criteria used were as follows: institutions that are public entities; have defined structural and operational characteristics; possess a mandate for resource management; are multi-jurisdictional in nature; are presently in operation; and possess at least the potential to examine issues from what has come to be known as an "ecosystem" perspective. In brief, the institutions selected for further analysis were those which appeared to hold some promise - in either their existing or a revised form - as viable mechanisms through which to pursue comprehensive management of the resources of the Great Lakes Basin.

The institutions within this classification were determined to be the International Joint Commission, the Great Lakes Commission, the Great Lakes Fishery Commission and the Council of Great Lakes Governors. The sequential review of their respective roles in Great Lakes management serves as a further step in attaining the study's ultimate goal; the design of institutional arrangements capable of managing the resource in a manner responsive to the collective needs of the region's jurisdictions and their residents. By comparing the characteristics of these four institutions to a set of "desired" or "ideal" characteristics (presented in Chapter Eight) a benchmark for determining institutional change is established.

Toward this end, each of the four institutions was reviewed to gain an understanding of goals and objectives; mandate; functions; enabling legislation; structure and operation; institutional resources; selected programs, products and accomplishments; linkages with other components of the Great Lakes management framework; and developmental history.
This descriptive background is followed by a comparative analysis of selected structural and programmatic characteristics of these institutions.

International Joint Commission

A. Overview

The International Joint Commission (IJC) is a permanent bilateral body created under the auspices of the Boundary Waters Treaty of 1909 to prevent disputes relating to boundary water usage and to settle questions arising along the "common frontier." The Commission provides the framework for binational cooperation on questions relating to water and air pollution and the regulation of water levels and flows.

The Commission undertakes three principal functions:

1) Quasi-judicial. The Commission approves or disapproves applications from governments, companies or individuals for obstructions, uses or diversions of water which affect the natural level or flow of water on the other side of the international boundary.

2) Investigative. The Commission investigates questions on matters of difference along the common frontier, undertaking references which are presented to the Commission by the two federal governments. In such cases, the Commission reports to the governments the facts and circumstances of the issue, as well as recommendations for action. These recommendations are not binding; the governments decide whether or not the Commission's recommendations will be acted upon.

3) Surveillance/Coordination. The Commission monitors and coordinates the implementation of recommendations accepted by the governments. The Commission also monitors compliance with Orders of Approval for structures in boundary waters.

The IJC has specific Great Lakes responsibilities under the Great Lakes Water Quality Agreement of 1972 (amended in 1978). The 1978 Agreement calls for the two parties to the Commission to "restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem." This effort is undertaken via efforts to "make a maximum effort to develop programs, practices and technology necessary for a better understanding of the Great Lakes Basin Ecosystem and to eliminate or reduce to the maximum extent practicable the discharge of pollutants into the Great Lakes System."

The technical studies and field work required to carry out the Commission's functions along the U.S.-Canadian frontier are performed by 28 binational advisory boards, the members of which are appointed by the Commission and are generally drawn from government agencies.

The three U.S. members of the Commission are appointed by the President with the advice and consent of the U.S. Senate. The three Canadian members are appointed by the Governor in Council in Canada. The Commission includes U.S. and Canadian co-chairmen who serve in their positions on a full time basis.

The Commission maintains professional staffs in Washington, D.C., Ottawa, Ontario, and Windsor, Ontario. The latter (Great Lakes Regional Office) was established in 1973 to assist in fulfilling the provisions of the Great Lakes Water Quality Agreement.

B. Mandate

The IJC mandate is derived from its enabling legislation, the 1909 "Treaty Between the United States and Great Britain Relating to Boundary Waters, and Questions Arising Between the United States and Canada." The preface to the treaty recognizes that the two countries are

> "...equally desirous to prevent disputes regarding the use of boundary waters and to settle all questions which are now pending... along their common frontier, and to make provision for the adjustment and settlement of all such questions as may hereafter arise...."

The treaty and its associated Rules of Procedure (adopted in 1912 and amended in 1964) specify as the focus for this mandate several categories of water: boundary waters; upstream transboundary waters; waters which are tributary to boundary waters; and downstream boundary waters.

C. Functions

As noted in the overview, the Commission's three principal functions include quasi-judicial, investigative and surveillance/ coordination powers.

The quasi-judicial function is derived primarily from Articles III, IV, VII and X of the aforementioned Boundary Waters Treaty of 1909. The first three of these articles empower the IJC to rule on requests, or "applications" to divert, obstruct or otherwise use the boundary waters in such a manner that the levels and flows of those boundary waters are affected. (It is noted, however, that the IJC was not used by the governments in securing approval of the Long Lac or Ogoki diversions, nor the Lake Michigan diversion at Chicago. The latter, as it involved Lake Michigan - not a boundary water under treaty definition - was not subject to IJC authority for that reason. An exchange of notes was used to gain approval for the Long Lac and Ogoki diversions).

Orders of Approval are issued for those applications found acceptable in light of criteria reflected in the Boundary Waters Treaty and the associated Rules of Procedure. Article X, which has never been invoked, grants the IJC a binding arbitration function relative to any question or set of questions the two governments wish to refer.

The Commission's investigative function is derived primarily from Article IX, providing for the examination and promulgation of recommendations on any difference arising along the common boundary jointly referred to the Commission. This oft-invoked article is advisory in nature; acceptance and implementation of resultant recommendations is at the sole discretion of the two governments.

The surveillance/coordination function is derived perhaps most directly from Article VI, but is germane to the aforementioned articles as well. The IJC monitors compliance with the terms and conditions of its Orders of Approval, and at the request of the governments, monitors and coordinates the progress of the programs that were recommended to and implemented by the governments. This is the predominant function of the IJC's Great Lakes Regional Office in Windsor, Ontario, established upon signing of the U.S.-Canada Great Lakes Water Quality Agreement in 1972.

D. Enabling Legislation

Signed on January 11, 1909, the international Boundary Waters Treaty established the International Joint Commission and charged it with the administration of the Treaty's provisions. A brief synopsis of the Treaty is provided below, highlighting those elements of particular significance for Great Lakes resource management.

Preface. The opening statement characterizes the treaty as a mechanism for the prevention and resolution of problems arising along the common frontier of the two countries.

Preliminary Article. The physical jurisdiction of Treaty provisions is defined as all boundary waters; upstream transboundary waters; waters which are tributary to boundary waters; and downstream boundary waters.

Article I. Navigation of boundary waters, as defined, is agreed to "forever continue free and open for the purposes of commerce..." for both countries. Each country retains the right to manage the use of its portion of these navigable waters, while committing to equitable treatment of all users.

Article II. Both governments agree to retain "exclusive jurisdiction and control" over the use and diversion of boundary waters within their respective jurisdiction. In the event that such use or diversion inflicts injury to the other country, however, that country shall be entitled "to the same legal remedies as if such injury took place in the country where such diversion or interference occurs."

Article III. All future "uses, obstructions and diversions" that affect the natural level or flow of the boundary waters are subject to approval by the International Joint Commission.

Article IV. The approval requirement articulated in Article III is extended to include obstructions "in waters flowing from the boundary waters or in waters at a lower level than the boundary in rivers flowing across the boundary." A water quality element is introduced as well; boundary waters "shall not be polluted on either side to the injury of health or property on the other."

Article V. An allocation formula providing for U.S. and Canadian diversions from the Niagara River for hydropower purposes is established such that "the level of Lake Erie and the flow of the stream shall not be appreciably affected." The diversion limits established within the article specifically exclude decisions relating to "the diversion of water for sanitary or domestic purposes, or for the service of canals for the purposes of navigation. (Note: provisions in the article setting U.S. and Canadian diversion levels were terminated by the Canada-United States Treaty of February 27, 1950.)

Article VI. Both governments agree to an apportionment scheme for the St. Marys and Milk rivers and their tributaries for purposes of irrigation and power.

Article VII. The International Joint Commission is established, comprised of six commissioners: three appointed by the President and three by the Governor in Council of Canada.

Article VIII. The International Joint Commission is granted jurisdiction over all cases involving the use or obstruction or diversion of the waters of the international Great Lakes. Recognizing the equality of access to the boundary waters, preference of use is established as follows: "1) uses for domestic and sanitary purposes; 2) uses for navigation ... and 3) uses for power and for irrigation purposes." In exercising its jurisdiction, the Commission is empowered to render decisions conditional upon "the construction of remedial or protective works" or other means of "suitable and adequate" protection of the interests on either side of the boundary.

This article further establishes a "majority rule" arrangement for rendering Commission decisions, and requires separate reports on a given issue when the Commission is evenly divided. An effort will subsequently be made by the governments to adjust the question or matter of difference and present such to the Commission for further consideration.

Article IX. Both governments agree that relevant questions or matters of difference arising between them shall be referred to the Commission "for examination and report." The Commission is authorized to examine the "facts and circumstances" associated with the referral and develop "such conclusions and recommendations as may be appropriate." A joint report to both governments is made when determinations are approved by a majority of the Commissioners. Separate reports are called for when a minority position exists or when the Commission is evenly divided.

Article X. The Commission is empowered with a binding arbitration function in cases consented to by the U.S. Senate and the Governor General in Council. In those instances where the Commission is equally divided or cannot otherwise render a decision, the governments are directed to vest such authority in an umpire selected in accordance with the Hague Convention of 1907.

Article XI. All decisions, joint reports and related documents are transmitted to and filed with the U.S. Secretary of State and the Governor General of Canada.

Article XII. A procedure for establishing Commission staffing, meeting logistics and funding arrangements is presented.

Article XIII. In addition to special arrangements specifically outlined in the Treaty, Commission jurisdiction is established over "any mutual arrangement ... expressed by concurrent or reciprocal legislation on the part of Congress and the Parliament of the Dominion."

Article XIV. The process for Treaty ratification is established, with approval required by "the President of the United States of America, by and with the advice and consent of the Senate thereof, and by His

Britannic Majesty." The Treaty is to remain in force for five years and thereafter can be terminated upon twelve months' written notice by either government.

The article further sets out the understanding that the terms of the Treaty shall not be construed as affecting or changing existing territorial or riparian rights in either country.

The U.S.-Canada Great Lakes Water Quality Agreement, signed in 1972 and amended in 1978, was an outgrowth of an increasing binational recognition of shared water quality concerns. The Agreement provided the impetus for the establishment of the Great Lakes Regional Office of the International Joint Commission, and an array of related water quality programs. The Agreement is generally recognized as second only to the Boundary Waters Treaty in historical regional significance. The original agreement, signed in 1972, was hailed by Mitchell Sharp, then Canada's Minister of External Affairs, as "the most far reaching ever signed by two governments in the environmental field." Russel Train, Administrator of the U.S. Environmental Protection Agency, further noted that the Agreement was "unprecedented in scope" and a model to be emulated at the international level (Bilder 1971).

The 1972 Agreement established Basin-wide water quality objectives, addressed specific concerns, and secured a binational commitment to pollution control programs. The Agreement further granted the International Joint Commission a range of responsibilities in water quality data collection, analysis and dissemination; water quality surveillance; monitoring of program performance; coordinating programs of the two countries; and providing advice and recommendations to the governments in the interest of attaining stated water quality objectives. This initial Agreement established the IJC Great Lakes Water Quality Board, Great Lakes Science Advisory Board, and the Great Lakes Regional Office in Windsor, Ontario. The latter was charged with provision of administrative/technical support for the two boards.

The 1978 Agreement, while reaffirming the basic tenets put forth by its predecessor, established more comprehensive and stringent water quality objectives. The focus shifted from point source clean-up of pollutants to a new ecosystem approach with a strong emphasis on nonpoint pollutants and toxic contaminants. A summary of its provisions follows:

Article I. Definitions of terms used in later articles are presented.

Article II. The purpose of the Agreement is set forth: the governments are to "restore and maintain the chemical, physical and biological integrity of the Great Lakes Basin ecosystem." This is to be done via efforts to "develop programs, practices, and technology necessary for a better understanding of the Great Lakes Basin ecosystem and to eliminate or reduce to the maximum extent practicable the discharge of pollutants into the Great Lakes system." Associated policies charge the governments with the "virtual elimination" of persistent toxic chemicals from the Basin ecosystem; multi-jurisdictional financial assistance for the construction of publicly owned waste treatment

works; and the development of "coordinated planning processes and best management practices."

Article III. A series of general objectives are set forth, calling for the maintenance of Great Lakes water quality that does not adversely affect aquatic life or waterfowl, avoids "unsightly or deleterious" pollutants, does not produce toxic or harmful conditions, or otherwise interfere with "beneficial uses."

Article IV. A series of objectives are adopted, specifying "the minimum levels of water quality desired in the boundary waters of the Great Lakes System." (Annex 1 of the Agreement sets forth the specific terms.) The two governments are to keep these objectives under review, ensuring that pollutant loading rates "protect the integrity of the ecosystem over the long term."

Article V. The two governments are charged with the development of water quality standards and regulatory measures consistent with the general and specific objectives set forth in the Agreement. They are further directed to ensure consistency at the state and provincial levels.

The two governments are further requested to reflect in their research programs the research priorities identified by the International Joint Commission and its Science Advisory Board. Mechanisms for "appropriate cost-effective international cooperation" are to be developed as well.

Article VI. The two governments are directed to conduct a range of programs and other measures to meet the general and specific objectives outlined in the Agreement. These include: pollution from municipal sources; pollution from industrial sources; inventory of pollution abatement requirements; eutrophication; pollution from agricultural, forestry and other land use activities; pollution from shipping activities; pollution from dredging activities; pollution from onshore and offshore facilities; maintenance of a joint contingency plan for hazardous polluting substances; persistent toxic substances; airborne pollutants and surveillance and monitoring.

Article VII. The powers, responsibilities and functions of the International Joint Commission vis-à-vis the Agreement are specified. They include the "collation, analysis and dissemination of data and information" regarding Great Lakes water quality, the Agreement's general and specific objectives, and the programs designed to meet them. The Commission is further empowered to tender relevant advice and recommendations to the two federal governments, the states and the provinces; to assist in coordinating activities under the Agreement; and to assist in and undertake research in support of the Agreement.

Article VII also establishes a biennial reporting requirement to the two governments and authorizes the IJC to work through the Water Quality and Science Advisory Boards in the interest of addressing the terms of the Agreement.

Article VIII. The Great Lakes Water Quality Board is established as the principal advisor to the Commission; the Science Advisory Board is established to "provide advice on research to the Commission and to the Water Quality Board." The Great Lakes Regional Office is established "to provide administrative support and technical assistance to the two boards."

Article IX. Submission and exchange of water quality information between the governments and their jurisdictions is provided for.

Article X. The two governments agree to consult on the recommendations in Commission reports and take appropriate actions, which might include the adoption or modification of objectives, the modification or improvement of programs and/or the amendment of the Agreement.

The two governments further agree to conduct a comprehensive review of the Agreement following the third biennial report of the Commission.

Article XI. In the interest of fully implementing the Agreement, the two governments agree to seek the appropriation of necessary funds, the enactment of necessary legislation, and the cooperation of state and provincial governments.

Article XII. The integrity of the Boundary Waters Treaty is upheld; no terms of the Agreement "shall be deemed to diminish the rights and obligations of the governments as specified in the treaty."

Article XIII. Amendment of the Agreement and/or its Annexes is provided for via exchange of notes or letters between the two governments.

Article XIV. The Agreement is to remain in force for a five-year period and thereafter until one party terminates the Agreement upon twelve months' written notice.

Article XV. The 1972 Agreement is superseded by the language in the 1978 Agreement.

The twelve annexes associated with the articles of the Agreement are briefly summarized below:

Annex 1. Specific water quality objectives are established for a number of persistent and non-persistent toxic substances, as well as "other" substances (i.e., dissolved oxygen, pH, nutrients and tainting substances). Physical, microbiological and radiological objectives are also established.

Annex 2. Limited use zones are to be identified, delineated, assessed and continuously reviewed. The criteria for such are presented, and the Commission's role in their designation is specified.

Annex 3. A series of goals for phosphorus control are presented "to minimize eutrophication problems and to prevent degradation with regard to phosphorus in the boundary waters of the Great Lakes System." A

series of structural and nonstructural programs are established to reduce phosphorus input; and acceptable future phosphorus loads are specified (by sub-basin).

Annex 4. Principles and programs for the prevention of discharges of oil and hazardous polluting substances from vessels are set forth.

Annex 5. Principles and programs governing the discharge of vessel wastes are set forth.

Annex 6. The U.S. and Canadian Coast Guards are committed to review, consult and study to ensure that pollution from shipping sources is controlled to maintain and improve Great Lakes water quality.

Annex 7. A Subcommittee on Dredging is established under the Water Quality Board to review existing dredging practices; develop compatible guidelines and criteria; maintain a register of significant projects; and encourage the exchange of technological and environmental research.

Annex 8. A series of principles, programs and measures are set forth to assist in the development and adoption of regulations governing oil and hazardous material discharges from onshore and offshore facilities.

Annex 9. The U.S. and Canadian Coast Guards, in the interest of ensuring a "coordinated and integrated response" to pollution incidents, are charged with maintaining the 1974 Joint Canada-United States Marine Pollution Contingency Plan for the Great Lakes.

Annex 10. The two governments agree to maintain lists of 1) toxic substances known to have adverse effects on the Great Lakes system; and 2) those potentially having such effects. The latter list is to be prioritized to facilitate transfer of substances to the former, as appropriate. The criteria and procedures for listing these substances are set forth; the lists themselves appear in Appendices 1 and 2 of the Annex.

Annex 11. A joint surveillance and monitoring program is established to assess compliance with jurisdictional water quality control requirements; achieve general and specific objectives; evaluate water quality trends and identify emerging problems.

Annex 12. A series of principles are set forth to guide the development of regulatory strategies for controlling or preventing the input of persistent toxic substances to the Great Lakes. Programs designed to eliminate such inputs are identified, including monitoring and research, early warning system and human health programs.

The 1978 Great Lakes Water Quality Agreement concludes with terms of reference for the Great Lakes Water Quality Board, the Great Lakes Science Advisory Board and the Great Lakes Regional Office. (Each is described in the following discussion of IJC structure.)

Together, the Boundary Waters Treaty of 1909 and the 1978 Great Lakes Water Quality Agreement provide the "enabling framework" for the Great Lakes

management activities of the International Joint Commission. As will be discussed, the Commission has, and does exercise considerable latitude within this framework in pursuing its mandate.

E. Structure and Operation

The International Joint Commission is characterized by an extensive and complex structure utilizing boards, committees, subcommittees and task forces. These various groups, which number almost thirty, are involved in a range of control, investigative and advisory activities. Members are generally drawn from the range of governmental and academic institutions in the Great Lakes region.

As noted, the Commission itself is comprised of six individuals: Three Canadians appointed by the Governor in Council and the balance Americans appointed by the President with the advice and consent of the Senate. All serve at the pleasure of the appointee; fixed terms have not been established. The U.S. and Canadian sections are both served by a full-time chairman, while other Commissioners serve on a part time basis.

With respect to Great Lakes management, the operations of the IJC are carried out largely through three organizational structures: 1) boards created under the Great Lakes Water Quality Agreement; 2) control boards addressing water levels and flows; and 3) advisory boards and reference groups established in support of issue-specific concerns.

The Water Quality and Science Advisory Boards were formed pursuant to Article VII of the Great Lakes Water Quality Agreement of 1972. Both are responsible for assisting the IJC in pursuit of water quality objectives under the Agreement. The former, a 20-member board comprised of federal, state and provincial representatives (10 U.S., 10 Canadian) advises the IJC on all non-research matters, specifically the status of programs and activities required to meet Agreement objectives. The latter, of similar size and representation, advises on research and scientific matters. Both boards make extensive use of committees, subcommittees and task forces in the performance of their duties. Their agendas are generally broad and flexible, but oriented specifically within the context of the Agreement and its associated programs.

A series of boards of control have been established pursuant to the Commission's oversight and approval authority for "uses or obstructions or diversions ... affecting the natural level or flow of boundary waters" (Boundary Waters Treaty of 1909). Four such bodies presently exist in the Great Lakes Basin: the International Lake Superior Board of Control; the International Niagara Board of Control; the International Niagara Committee; and the International St. Lawrence River Board of Control. These bodies, comprised of equal numbers of Canadian and U.S. members, oversee Great Lakes levels and flows in their jurisdictions, develop and implement flow regulation plans, and maintain and operate flow control structures. Their members are appointed by the IJC Commissioners, who retain final decision-making powers in the event of an impasse among board members.

A series of advisory boards and reference groups have been established by the Commission to assist in addressing specific issues or facilitating special studies. These have included, among many others, the Pollution from Land Use Activities Reference Group (PLUARG); the International Great Lakes Levels Advisory Board; and the International Great Lakes Diversions and Consumptive Uses Study Board.

As noted earlier, the Commission's operation is driven by its three principal functions: quasi-judicial, investigative and surveillance/co-ordination. Historically, these functions have been employed in a reactive mode, such as ruling on applications for obstructions, use and diversions of water affecting levels and flows, or undertaking references presented by the two governments. This pattern has been altered somewhat in recent decades with the increased frequency of rather open-ended references providing some opportunity for pro-active attention to issues of concern. References relating to transboundary air pollution and water quality management are cases in point. The signing of the Great Lakes Water Quality Agreement further provided the Commission with a vehicle for pursuing broad resource management functions.

Throughout the evolution of the Commission's structure and operations, it has remained a vehicle of the two governments and is fully accountable to them. Aside from its quasi-judicial authority ruling on applications and control measures relating to levels and flows, the Commission is empowered only to make recommendations to the two governments and pursue surveillance and coordination functions in support of those actions the governments choose to implement.

F. Institutional Resources.

The Great Lakes Regional Office maintains an annual budget of approximately 2.4 million dollars shared equally between the United States and Canada. The office maintains a professional staff of fifteen, with an equal number of support personnel. All are organized into five sections: Water Quality Board Secretariat; Science Advisory Board Secretariat; Support Services; Information Services; and Administrative Services. Staffing arrangements and funding levels have remained relatively stable over the last several years. The professional staff is comprised largely of chemists, biologists, and physical scientists. The Washington, D.C. and Ottawa offices are budgeted annually at approximately $1.5 million each; both estimate that at least half of their institutional resources are directed at Great Lakes concerns.

G. Selected Programs, Products and Accomplishments.

The Water Quality Board develops a budget identifying those activities it does not carry out itself. Examples include: assessment of Areas of Concern; developing priority lists of chemicals; computer inventories; developing surveillance plans; developing water quality indicators; inter-laboratory studies; and various workshops. Funding levels are set at approximately $120,000.

The Science Advisory Board conducts workshops and lets contracts in areas such as research review; modeling; development of aquatic ecosystem

objectives and indicators of ecosystem health, and implementing the ecosystem management approach. Funding levels are set at approximately $80,000 per year.

A sampling of ongoing and recently completed programs include a report to the governments on Great Lakes Diversions and Consumptive uses; a study of "Limited Regulation of Lake Erie" to reduce flooding and shoreline erosion; conduct of a Transboundary Monitoring Network Workshop; co-sponsorship of a workshop on "Implementing the Ecosystem Approach"; development of the Great Lakes International Surveillance Plan (GLISP); secretariat and support for the Boards; monitoring and coordination of federal government activities under the Great Lakes Water Quality Agreement; a major new initiative to examine lake-level induced problems along the Great Lakes shoreline; a variety of special project initiatives and reports; and others.

Through its regional office, the International Joint Commission published a biennial Water Quality Board Report; Science Advisory Board report; a newsletter (FOCUS); and a series of Board and Committee reports on issues of concern to the governments. Since the establishment of the Office, well over 100 publications on Great Lakes water quality and land use impacts on water quality have been issued.

H. Linkages

By virtue of its mandate and committee structure, the International Joint Commission maintains both formal and informal linkages with most other components of the institutional framework for Great Lakes management. Linkages with the federal governments are clearly the most developed, as the Commission serves as a vehicle for coordinating the cooperative approach of these governments to issues along the U.S.-Canadian frontier. Federal agencies with direct and pronounced involvement include the U.S. Department of State: the U.S. Environmental Protection Agency: Environment Canada and the Canadian Department of External Affairs.

The Commission's linkage with institutions extends to the regional level as well. An IJC staff person serves on the Great Lakes Commission's Technical Advisory Committee on Research and Development, (although it is presently dormant). The IJC shares a number of state and federal cooperators with the Great Lakes Fishery Commission and on occasion undertakes with it joint sponsorship of projects. Interaction with the Council of Great Lakes Governors is limited, although communication on projects of mutual interest is maintained. This interaction is expected to increase as implementation of the Council's Toxics Agreement moves forward. The IJC has long maintained a presence, if not a high profile, in interacting with other regional organizations in a less formal manner as well, including meeting attendance, staff interaction and related cooperative efforts.

State/provincial linkages have been forged at two levels: through the appointment of state and provincial personnel to IJC boards and committees, and through the conduct of programs these jurisdictions are required to pursue in the interest of satisfying commitments under the Great Lakes Water Quality Agreement.

Linkages at the sub-state/provincial and nongovernmental levels are somewhat more tenuous but nonetheless present. Representatives from industry and academia are found on the Commission's boards and committees. Further, the Commission's public information and related outreach activities do provide a link to these sectors, although the linkage is more one of information transmittal than open and sustained dialogue.

I. Developmental History

The origin of the International Joint Commission, in a most fundamental sense, is found not in a Great Lakes Basin-specific concern or event, but in the maturation of U.S. relations with its North American neighbor over resource development issues. This maturation process, which began in earnest in the final decades of the nineteenth century, formed a backdrop for a series of precipitous events which lead to the signing of the international Boundary Waters Treaty of 1909 and the subsequent establishment of the International Joint Commission (Dworsky 1974).

Although binational resource management in the Great Lakes Basin (and, in fact, along the entire U.S.-Canadian frontier) is a phenomena of the twentieth century, treaties and agreements on issue-specific concerns date back to the late 1700s, most of which concerned resolution of disputes over geographic boundaries. The Rush-Bagot convention of 1817 was significant in that it focused specifically on the Great Lakes, limiting naval armaments in those waters. Subsequent decades saw the signing of a series of treaties addressing mutual navigation rights and related issues (Piper 1967). The issue-specific approach characterizing these early treaties, however, proved unacceptable in light of development-induced water management problems that reached critical levels at the turn of the century. As Dreisziger (1983) explains:

> "...by that time new problems were emerging in connection with the development of common water resources, problems that required solutions through the establishment of rules of water use, as well as an international agency to apply them. Unfortunately, this need was recognized only gradually, and the implementation of a general settlement of the issue was even slower due partly to the cumbersome nature of Canadian-American diplomatic intercourse at the time, and partly to the caution and often downright reluctance of statesmen on both sides of the boundary."

Over this same time period, these emerging U.S.-Canadian water management problems paralleled related concerns at the U.S.-Mexican border. In fact, the latter concerns were a major impetus for the introduction of a resolution "urging the appointment of a commission to act with Mexico and Canada to settle conflicting rights on international streams" (Dworsky 1974).

Specifically, four events (or sets of events) which coalesced at the turn of the century are largely responsible for the early negotiations and institutional structures which lead ultimately to the international Boundary Waters Treaty of 1909 and the International Joint Commission:

1) Great Lakes Water Quality Problems and Attendant Diversion Controversy. Consumptive use of Great Lakes waters for domestic and manufacturing purposes was, by the latter decades of the nineteenth century, a long-standing and relatively non-controversial resource use. During the 1890s, however, this perception was altered with the proposal for, and subsequent operation of the Chicago Drainage Canal. The Canal, with the assistance of a control structure, permitted the diversion of significant quantities of Lake Michigan water through the Chicago River and eventually into the Mississippi watershed for purposes of relieving near-shore water pollution problems that threatened Chicago's water supply intake and caused substantial cholera and typhoid outbreaks. While reversing the flow of the river effectively reduced the magnitude (or at least the location) of the water quality problem, it raised a potential water quantity (i.e., lake level) problem; other Great Lakes states and Canada were concerned that the diversion would lower lake levels to the point that navigability would be endangered. This issue, which was litigated for decades (through the 1960s), was an early indication of a need for a formalized mechanism for joint U.S.-Canadian consultation on issues of shared concern.

2) Hydropower Generation. The last two decades of the nineteenth century witnessed a flurry of interest in massive hydropower generation development plans, the preponderance of which focused upon the St. Marys River at Sault Ste. Marie and the Niagara River. In fact, between 1886 and 1894, the New York legislature granted no less than seven charters to development companies - an action which not only over-committed existing flows on the Niagara, but threatened the very existence of Niagara Falls and its various multiple uses (Dow 1914). Parallel responses to the perceived threat emerged in New York and Ontario; officials of the Queen Victoria Niagara Falls Park in Ontario and the State Reservation at Niagara Falls in New York actively and cooperatively fought the hydropower development proposals. The latter also initiated a campaign for instituting measures to restrict Niagara River diversions. This campaign, a lengthy one with few initial payoffs, was an important influence in laying the groundwork for the Boundary Waters Treaty of 1909.

3) Irrigation. The St. Marys-Milk river basin, encompassing an area along the Alberta-Montana border, was the sight of ongoing irrigation disputes which began in the last decade of the 1800s and continued for some time thereafter. Irrigation schemes brought forth by both countries evoked controversy and suggested the need for a mechanism to avoid or otherwise address disputes over water resource uses with transboundary implications. This controversy was responsible for the establishment of the International Waterways Commission in 1905; the immediate predecessor to the International Joint Commission.

4) Navigation. A long established interest in developing the Great Lakes system's potential for waterborne trade was revitalized in the late 1800s with the promotion of a number of ambitious schemes for manipulating that system to accommodate present and projected

transportation needs. An International Deep Waterways Association was formed in the early 1890s to advance one such scheme: a scheme designed to improve Lake Erie harbor facilities by damming its outlet and raising its water level. This and related schemes, given their transboundary implications, further highlighted the need for a binational consultative and water resource management mechanism. This need was championed by groups such as the Lake Carriers' Association, which as early as 1902 called for the establishment of an international commission to oversee navigation system development.

Collectively, these four issue areas provided the incentive that ultimately gave birth to the International Joint Commission. As Dreisziger (1983) explains, "... at the time the two countries possessed no rules - no institutional means of coordinating these plans, that is to implement water development in Canadian-American river basins in a manner consistent with the general interests of the two countries. Obviously, this situation had to be remedied."

The aforementioned International Waterways Commission (IWC) was the culmination of this concern and the predecessor to the International Joint Commission. Established by concurrent legislative action rather than by treaty, the IWC was comprised of three Canadian and three U.S. members "whose duties it shall be to investigate and report upon the conditions and uses of the waters adjacent to the boundary line.... including all the waters ... whose natural outlet is by the River St. Lawrence to the Atlantic Ocean" as outlined in the Rivers and Harbors Appropriation Bill of 1902. Although limited to an advisory role and only temporary in nature, Carroll (1984) explains that the IWC was the originator of several important concepts endorsed by both countries, including: "equitable distribution of water between the two countries and the paramountcy of navigation to all other uses after domestic supply needs were met." Further, establishment of the IWC "allowed the emergence of a forum that could speak clearly and forcefully in favor of a comprehensive and permanent solution of the issues at hand" (Dreisziger 1983). Among others, the IWC issued reports on the Chicago Drainage Canal, the regulation of Lake Erie water levels and hydropower development at Niagara Falls. It was its involvement in the latter issue - and the nature of the attendant negotiations - which led participants to support the creation of a permanent binational commission with broadened authority.

As originally conceived, the authority of this body (i.e, the International Joint Commission) was to be extensive. George C. Gibbons, a Canadian member of the IWC, and George Clinton, his counterpart on the U.S. side, drafted a treaty in 1907 which would have provided the proposed IJC with broad advisory, investigative and decision-making authority on a range of transboundary issues. Although well received on the Canadian side, the U.S. Department of State found the draft treaty to be overly "far reaching;" an intrusion into its traditional domain in international relations. Following the introduction of a Department of State-authored alternative and subsequent extensive negotiations, a compromise was reached in the form of the international Boundary Waters Treaty of 1909. U.S. Secretary of State Elihu Root and Prime Minister Sir Wilfrid Laurier are credited with the

drafting of the treaty and the subsequent establishment of the International Joint Commission.

By virtue of its longevity and stature as the principal vehicle for U.S.-Canadian consultation on resource-based transboundary issues, the IJC has undergone a dramatic evolution since its creation in 1912. Maxwell Cohen (1977), former chairman of the Canadian section, has astutely categorized four distinct stages of this evolution: 1) shaping the work of the IJC (1912-1942) through development of the IJC role, references, and orders of approval; 2) the "great works" period (post World War II) dominated by developmental concerns (e.g., sewage treatment plant construction); 3) the shift from Orders of Approval to References (post 1956); and 4) the emergence of an environmental perspective (1960 to date). The latter stage is of particular interest from a Great Lakes perspective, as it entailed an increased focus upon transboundary water and air pollution issues in the Great Lakes Basin, diversion and consumptive use concerns and, in general terms, an increased sensitivity toward ecosystem management needs of the Basin. This latter stage also saw the signing of the Great Lakes Water Quality Agreements, the establishment of the Great Lakes Regional Office and the attendant broadened IJC role in Great Lakes resource management activity.

Great Lakes Commission

A. Overview

The Great Lakes Commission is an interstate compact commission comprised of gubernatorially appointed and legislatively mandated representatives of the eight Great Lakes states. Established by joint action of the Great Lakes Governors in 1955 and granted Congressional consent in 1968, the Great Lakes Commission seeks "to promote the orderly, integrated, and comprehensive development, use and conservation of the water resources of the Great Lakes Basin" (Article I, Great Lakes Basin Compact). Objectives associated with this overall goal, as stated in the Compact, include:

"1. To plan for the welfare and development of the water resources of the Basin as a whole as well as for those portions of the Basin which may have problems of special concern.

2. To make it possible for the states of the Basin and their people to derive the maximum benefit from utilization of public works, in the form of navigational aids or otherwise, which may exist or which may be constructed from time to time.

3. To advise in securing and maintaining a proper balance among industrial, commercial, agricultural, water supply, residential, recreational, and other legitimate uses of the water resources of the Basin.

4. To establish and maintain an intergovernmental agency to the end that the purposes of this compact may be accomplished more effectively."

The Commission pursues this broad mandate via three principal functions: 1) information sharing among the Great Lakes states; 2) coordination of state positions on issues of regional concern; and 3) advocacy of those positions on which the states agree.

The Commission addresses a range of issues involving environmental protection, resource management, transportation and economic development. A committee and task force structure, in which Commissioners and Advisors from all states participate, is the vehicle for identifying and developing issues, and subsequently recommending the adoption of positions by the full membership. Federal and provincial observers participate, but do not vote, in all Commission activities.

The Great Lakes Commission is the only Great Lakes organization with a statutory mandate to represent the collective views of the Great Lakes states. As such, the Commission's structure, program and staff is determined by, and solely accountable to, its member states. The Commission is based in Ann Arbor, Michigan.

B. Mandate

The Great Lakes Commission's mandate is embodied in the goal and objectives statements presented in Article I of the Great Lakes Basin Compact (see "overview" discussion).

C. Functions

The Great Lakes Commission, by virtue of the provisions of the Great Lakes Basin Compact, is empowered to pursue a range of functions consistent with its mandate. These functions are defined in only the broadest sense in the Compact itself and, hence, have evolved over time on the basis of interpretation by the parties to the Compact. The three broad functional areas (identified earlier) are presented below in additional detail.

1) Information Sharing. The Commission serves as a clearinghouse for Great Lakes-related information of interest to its member states and other governmental entities, interest groups, organizations and individuals in the region. Although diverse, such information is generally oriented toward pertinent state and federal legislative, policy and program initiatives, impending Congressional actions, and resource-based problems and opportunities in the region. This information-sharing function serves two essential functions. First, it provides a formalized network for information exchange and education among Basin jurisdictions and other interested organizations and individuals; it promotes a regional consciousness and identity. Second, this function serves as a vehicle for early identification of regional issues warranting further consideration and subsequent action by the Commission.

2) Coordination of State Positions on Issues of Regional Concern. The Commission identifies issues of potential regional concern, prepares and disseminates descriptive and/or analytical materials, facilitates discussion of such issues and, if appropriate, selects and implements collective actions. In so doing, the Commission

functions as a "forum" in which the universe of regional issues is screened, reduced to a prioritized subset, and subjected to intensive review by the member states.

3) Advocacy of Positions. A third principal function of the Commission is to advocate those positions on which a majority of the member states agree. The Commission has historically been oriented toward a resolution format for its policy positions, augmenting such with prepared testimony and related correspondence. Advocacy efforts have been targeted primarily at the federal level, including the Great Lakes Congressional Delegation, pertinent House and Senate committees/subcommittees, and pertinent federal officials.

D. Enabling Legislation

Established by the Great Lakes Governors in 1955 and ratified by Congress thirteen years later, the Great Lakes Basin Compact provides for the creation of the Great Lakes Commission as the oversight and implementation entity for its provisions. A synopsis of those provisions follows:

Article I. The purpose of the Compact is articulated; the goal statement and associated objectives are set forth. The Great Lakes Commission is established to ensure that "the purposes of this Compact may be accomplished more effectively."

Article II. The eight riparian Great Lakes states are deemed eligible as parties to the Compact. The Compact enters into force when the legislatures of any four Great Lakes states enact appropriate legislation. (Article II also provides for full, voting membership of the provinces of Ontario and Quebec, although P.L. 90-419, the legislation granting Congressional consent to the Compact, expressly prohibits this; allowing only informal cooperation between the Great Lakes states and provinces.)

Article III. The Great Lakes Basin is defined as "Lakes Erie, Huron, Michigan, Ontario, St. Clair, Superior, the St. Lawrence River.... all natural or man-made water interconnections between or among them," and all waters "which comprise part of any watershed draining into any of said lakes."

Article IV. The operational framework of the Compact is established. The Great Lakes Commission is to be comprised of not less than three nor more than five commissioners from each member state, with each state entitled to three votes. Each state is granted the discretion of determining the appointment process for its delegation to the Commission. Policy decisions and related actions require the affirmative vote of "a majority of the votes cast from each of a majority of the states present and voting." Article IV further establishes protocol for election of officers, selection of staff, office maintenance and reporting procedures.

Article V. Financial support of the Commission is set forth, stipulating that "costs shall be allocated equitably among the party states in accordance with their respective interests."

Article VI. The powers of the Commission are set forth, establishing it as a fact finding and recommendatory body. The provisions permit the Commission to study any aspect of the Basin's water resources and its attendant "development, use and conservation." The Commission is further empowered to recommend programs and policies to any U.S. governmental agency with jurisdiction in the Great Lakes Basin, and to cooperate with them in domestic and binational water resource management efforts. It is explicitly stated that "no action of the Commission shall have the force of law in, or be binding upon, any party state."

Article VII. Each state party to the Compact agrees to consider Commission recommendations associated with: 1) stabilization of lake levels; 2) combatting pollution, beach erosion, floods and shore inundation; 3) uniformity of navigation regulations (within the states' constitutional powers); 4) proposed navigation aids and improvements; 5) coordinated approaches to protecting the fishery, wildlife and water resources of the Basin; 6) suitable hydroelectric power developments; 7) control of soil and bank erosion; 8) diversion of waters from and into the Basin; and 9) other measures consistent with Article VI.

Article VIII. The Compact is binding upon a party state until such time that the state repeals its statute providing for membership. The withdrawal is effective six months after notice of the action is "officially communicated in writing" to the governors of the other party states.

Article IX. This article provides that the Compact provisions be "reasonably and liberally construed," and establishes the severability of any parts of the Compact declared to be unconstitutional.

As ratified by Congress on July 24, 1968, this article of the Compact explicitly excludes Congressional consent to those Compact provisions providing for Canadian provincial membership or a formal role for the Great Lakes Commission in relations with Canada. Related language explicitly recognizes that Congressional consent to the Compact will not impact the integrity of the Great Lakes Basin Commission, or any agency of the United States and its treaty-making powers. It further reserves the right for Congress "to alter, amend or repeal" the consent legislation.

E. Structure and Operation

The framework for the structure and operation of the Great Lakes Commission is set forth in the Great Lakes Basin Compact and further defined in the organization's bylaws, the latter having been approved December 3, 1962 and subsequently amended on numerous occasions.

As a vehicle for collective state action on regional issues of mutually acknowledged concern, the Commission structure provides for equality of

state membership. Each state delegation - which can vary from three to five members - is granted three votes on any matter coming before the Commission. Furthermore, Commission bylaws provide for uniform assessment of annual state dues, and provide for equitable state representation on standing committees.

The Commission structure, while establishing explicit procedures for its deliberations, grants maximum flexibility and discretion to the party states in their individual approach to Commission business. The Compact permits each state to determine the composition of its delegation; the variance among appointment processes is pronounced. In all cases, at least one Commissioner from each state is appointed directly by the governor. Beyond this, we find some states with a legislative emphasis; others with an executive branch (state agency) emphasis; and yet others with a gubernatorial appointee emphasis or some combination thereof. The state delegations have full discretion in the appointment of advisors to the Commission and the designation of proxies to serve in a member's stead.

The Great Lakes Commission's operating structure reflects a rather formal hierarchy historically reliant upon standing committees. An executive committee comprised of the chairman and the vice-chairman of the Commission and a single commissioner from each member state is the principal oversight authority and is empowered to make interim policy decisions between meetings of the full Commission. The chair/vice-chair positions are of one-year duration and determined by vote of the Commission membership.

The Commission has historically functioned via standing committees of which there were originally five: 1) Seaway, Navigation and Commerce; 2) Water Resources; 3) Shoreline Use and Recreation; 4) Fisheries and Wildlife; and 5) Environmental Quality Control. With the exception of periodic ad hoc arrangements, this basic committee format remained essentially in place until 1982. At that time, a significantly revised structure was instituted, reflecting (in part) a need to respond to the closing of the Great Lakes Basin Commission by accommodating selected program areas once pursued by the Basin Commission. The revised structure provided for a Natural Resources Management Committee (Subcommittees on Water, Land and Air) and a Transportation and Economic Development Committee (Subcommittees on Great Lakes/Seaway and Related Transportation, Economic Development and Promotion). A non-voting Technical Advisory Committee on Research and Development comprised of state, provincial, federal and academic representatives was established a year later to broaden and formalize the Commission's information network.

As designed, the subcommittees and the Technical Advisory Committee on Research and Development were responsible for initial identification and screening of potential topics for Commission consideration. Research and analysis were conducted as the topics "filtered-up" to the Committee level, at which time proposed Commission position statements were formulated for consideration by the full Commission.

Rising dissatisfaction with what was perceived to be a rather awkward and overly hierarchical system culminated in abandonment of the standing committee structure in March 1985. In its place, the Commission instituted a task force approach to specific action items and granted the Chairman

broad discretion in the establishment, charge and membership of such. Task forces have included those on Economic Analysis and Policy; Lake Levels, Flooding and Shoreline Erosion; Soil Erosion and Sedimentation; Water Project Funding; and others.

F. Institutional Resources

The Great Lakes Commission presently operates on an annual budget of approximately $350,000, comprised of state dues payments and carry-over from remaining state funds upon closure of the Great Lakes Basin Commission. State dues are presently $30,000 per year, reflecting a gradual increase from $21,000 several years ago. Drawdown of the GLBC reserve funds is expected to continue for several years until exhausted. Present staffing arrangements provide for four professional staff, three support staff and occasional part-time assistance. Professional staff have a resource management and economic development policy orientation.

Prior to closure of the Basin Commission, GLC funding was significantly more modest, drawn virtually exclusively from state dues and supporting a staff of approximately one-half the present size. Budget levels and staffing arrangements have been relatively stable since 1982.

G. Selected Programs, Products and Accomplishments

Program activity is presently focused in the areas of economic development, resource management and environmental quality. An Economic Analysis and Policy Task Force is focusing on various aspects of tourism and outdoor recreation; international trade (steel industry); agriculture; federal funds flow and public finance; and industrial change and technology. A Lake Levels, Flooding and Shoreline Erosion Task Force is examining high lake level impacts and alternate solutions, as well as overseeing the preparation of a lake levels brochure. A Soil Erosion and Sedimentation Task Force has been formed to review and examine funding patterns for soil erosion and sedimentation control in the Basin, incentive systems and emerging longer term concerns. The Commission also maintains active legislative review, advocacy, data compilation, information sharing, coordination and special study efforts to address the needs of the member states.

Specific initiatives and accomplishments of late include cooperation with the Federal Reserve Bank in the preparation of The Great Lakes Economy, a statistical overview of the Great Lakes states; secretariat support to the Council of Great Lakes Governors' Water Resource Management Committee; presentation of testimony to the Canadian Parliament on proposed Canadian Coast Guard user fee legislation; testimony to the Merchant Marine and Fisheries Committee, U.S. House of Representatives, on cross-lake and Seaway trade shipping issues; reports on lake levels; agriculture issues; soil erosion and sedimentation; the steel industry; water quality data base development for implementation of the Great Lakes Charter; and others.

Publications include the bi-annual Great Lakes Research Checklist, the GLC Bulletin, a newsletter and periodic special studies on topics of interest.

H. Linkages

The formal linkages of the Great Lakes Commission with other institutions and levels of government are reasonably extensive in theory, although in practice, they are underutilized and focused primarily at the state level. The closure of the Great Lakes Basin Commission in September 1981 provided the impetus for increased GLC interaction with U.S. federal and provincial agencies. Non-voting federal and provincial advisors were appointed and a Technical Advisory Committee on Research and Development was established with broad membership. With a few notable exceptions, however, federal and provincial appointees have had a passive observer role; active participation and initiatory activity has been minimal.

At the regional level, the Great Lakes Commission linkages might best be characterized as informal coordination and periodic, program/ issue-specific interest. International Joint Commission meetings and hearings are attended by GLC staff and members on occasion, and GLC advocacy activities relating to diversion/consumptive use, water quality and Great Lakes Water Quality Agreement issues entail staff interaction. An IJC staff representative serves on the (now dormant) GLC Technical Advisory Committee on Research and Development. In recent years, a GLC staff person has served on an IJC committee, and GLC commissioners/ advisors have on occasion been appointed to IJC boards or committees.

In the first two decades of its existence, the Great Lakes Commission was very actively involved in fishery management issues and a vocal supporter of programs under the auspices of the Great Lakes Fishery Commission. Although the support for such programs continues, the GLC has shifted its earlier focus and now maintains a rather peripheral relationship to the Fishery Commission. Interaction is limited primarily to periodic mutual attendance at meetings and occasional cooperative involvement on issues of particular significance. The strongest linkages exist at the staff level, encouraged in part by the geographic proximity of the two offices. A recent GLC chairman served also as a presidentially-appointed Commissioner of the GLFC; but the arrangement did not strengthen linkages significantly. Beyond this, the committee members and advisors for each commission overlap very little.

The emergence of the Council of Great Lakes Governors in 1982 brought with it a structure of "ready-made" linkages. Not only do the mandates of the two entities bear significant resemblance, but the key state participants in each organization are, in many cases, one and the same. For example, seven of the eight members on the Council's Task Force on Water Diversion and Great Lakes Institutions also serve as GLC commissioners or advisors. In fact, it is generally acknowledged that the linkages are overly strong. Recent meetings of the GLC, for example, have entailed discussion and debate centering around key regional issues and the relative merits of GLC and/or Council involvement in pursuing them. The debate has added an element of inertia to the GLC decision-making/policy process. This and other concerns have prompted a Council-initiated and Council/GLC-funded study of this interrelationship and means to revise, streamline or otherwise strengthen it via organizational re-structuring.

Linkages at the state and private sector level are the best developed within the GLC organization. All eight Great Lakes states are generally active participants in Commission programs and the Commission structure has provided a useful mechanism for interstate information sharing, policy development and advocacy. The Commission has long nurtured a relationship with the maritime community and is perhaps best known for its advocacy activities on behalf of the Great Lakes transportation system and its user groups.

I. Developmental History

The origin of the Great Lakes Basin Compact can be traced to the Midwestern District meetings of the Council of State Governments in the early 1950s. As plans for the St. Lawrence Seaway progressed and development of the Great Lakes resource accelerated, the Midwestern District meetings became increasingly oriented toward the problems and challenges of this development. Because the Midwestern District included several states with lesser interests in these matters, the Great Lakes states were moved to explore alternate coordinative mechanisms. The State of Michigan lead the effort; enacting legislation in its 1954 session authorizing the Governor to enter into a compact with the seven other Great Lakes states and the Province of Ontario. The proposal envisioned an interstate organization with broad fact-finding, investigatory and recommendatory powers. The Commission established by the compact would have powers to consider all problems relating to the waters and related resources of the Great Lakes and to recommend programs and policies to the respective state and provincial governments and to the federal governments of the United States and Canada.

At the suggestion of the governors of the eight Great Lakes states, the Council of State Governments organized the Great Lakes Seaway and Water Resources Conference in August of 1954. In addition to focusing attention on state plans and programs pertaining to the recently approved St. Lawrence Seaway, the Conference discussed the Michigan proposal for an interstate commission. Officials from the eight states unanimously approved a resolution setting in motion the procedures and organization leading to development of the Great Lakes Basin Compact.

The Compact became effective on July 1, 1955 upon ratification by Illinois, Indiana, Michigan, Minnesota and Wisconsin. Pennsylvania gave its approval in 1956. The ratification process was significantly more problematic in New York and Ohio. Governor Averill Harriman of New York, while supporting the concept behind the Compact, found the New York appointment provisions authorizing and directing all state offices to furnish the Commission with any information requested to be "either superfluous or unduly restrictive" (Great Lakes Commission 1982). He therefore exercised his veto power over a bill which readily passed the legislature in 1957. Opposition in subsequent years was found in the New York Department of Public Works and the Power Authority of the State of New York. Objections focused upon three areas: that the Commission might provide another avenue for states desiring to divert water out of the Basin; that an unneeded and duplicative layer of bureaucracy would result; and that New York's participation in the Commission might conflict with the state's newly created Water Resources Commission. Opposition dissipated in the latter years of the decade as

developments within New York and the Commission's positive performance gave rise to a favorable state outlook; a 1960 law granted New York formal membership.

The ratification process in Ohio gave rise to extensive debate over an eight-year period. From 1955 through the end of the decade, the low priority of the ratification bills, despite their support from the state's leading officials, precluded them from passage into law. Further, the Cleveland Area Chamber of Commerce spearheaded efforts to thwart ratification, charging that the Commission would: pressure Ohio into recommendations which might not be in its best interests; constitute an unneeded bureaucracy duplicative of existing coordinative mechanisms; and would yield insufficient power in addressing interstate problems. As an alternative, the Chamber supported the creation of a Great Lakes Governors' Conference to address interstate problems; a position supported by the Ohio Chamber of Commerce.

The impasse was on its way to resolution in 1960, when Governor Michael N. DiSalle appointed a three-member cabinet committee to study the issue. A favorable cabinet committee report and an apparent softening of the Chamber of Commerce position were key factors. In early 1962, the Chamber indicated that appointments of business and industry representatives as advisors to the state delegation would silence their opposition.

A final obstacle encountered was in the form of the Senate Finance Committee, reluctant to approve the $18,000 bi-annual appropriation in light of Governor James Rhodes' austerity budget program. When the Commission offered Ohio a two-year dues-free membership, however, the state acquiesced. A ratification bill passed readily and was signed into law by the Governor in mid-1963.

As the Commission labored to gain Compact ratification in all the Great Lakes states, an effort was also launched to obtain U.S. Congressional recognition via consent legislation. A resolution recommending passage of such is on record as one of the earliest actions of the Commission (first meeting, December 12, 1955). It was not until July 24, 1968, however, that consent legislation was enacted in the form of P.L. 90-419.

The explanation for this extended delay is both lengthy and complex, reflecting the differing perspectives of all actors: the U.S. Congress, the federal agencies with Great Lakes interests, and the member states of the Commission. Over the thirteen years that Congressional consent legislation was pursued, perspectives and positions changed with the political climate, agency directions and the resource management needs of the Great Lakes.

The debate over Congressional consent focused upon two critical issues. First, controversy arose over the <u>need</u> for Congressional consent; the question as to whether such consent is a requirement of the U.S. Constitution (Article I, Sec. 10, Cl. 3). Second, questions arose as to the <u>desirability</u> of Congressional consent; how such consent would impact the functions of the Great Lakes Commission and other governmental institutions with Great Lakes interests.

In 1956, a special committee was organized under the Commission for the purpose of securing Congressional consent. The reasons were two-fold: the international implications of the Compact and the desired cooperation between the Commission and the federal agencies of the United States and Canada.

Initial opposition to the consent issue was both external and internal to the Great Lakes Commission. The U.S. Departments of State and Justice expressed vehement opposition to early drafts of the consent legislation, principally fearing a usurpation of their respective authorities over international relations. The opposition was based upon the following concerns and contentions: Great Lakes problems are national rather than regional; consent would put the Department of State in a subordinate position to the Great Lakes states; the Commission would be duplicative of existing Canadian-American agencies; Commission assistance in drafting/negotiation of international agreements might serve to embarrass the Department of State; consent to the Compact might supersede the treaty power; consent to the Compact is not necessary to secure the cooperation of Canada in the Commission's work; and the Constitution dictates the conduct of foreign relations by the federal government. Federal agencies opposed to Congressional consent maintained these concerns throughout the lengthy debate.

Differences of opinion within the Commission focused upon both the "need" and "desirability" questions raised earlier. Legal analyses as to the constitutional requirements for consent were largely inconclusive, thereby fueling the debate. Proponents argued that consent would strengthen the Commission, legitimize and formalize its federal and international relations, and improve its effectiveness as a spokesman for its member states on federal issues. Opponents maintained that the Commission was not subject to a consent requirement, and the compromises necessary to secure federal agency acceptance (and Congressional approval) of consent legislation would weaken the Commission. In some states, it was feared that Congressional consent would adversely influence their relations with Canada on such matters as hydropower development and energy production.

Efforts to gain Congressional consent moved forward in the mid-1960s as Commission members gradually aligned themselves (and members of Congress) by further exploring the issues and developing mutually acceptable draft legislation.

A February 1968 meeting, organized by Senator Philip Hart of Michigan, brought together Commission members and the federal agencies opposing Congressional consent; a meeting which served to resolve the impasse. Consent legislation (P.L. 90-419) was subsequently passed into law on July 24, 1968.

Great Lakes Fishery Commission

A. <u>Overview</u>

The Great Lakes Fishery Commission (GLFC) was established pursuant to the Convention on Great Lakes Fisheries, between Canada and the United States, ratified in October 1955. The Commission is charged with two broad areas

of responsibility. The first is to develop coordinated programs of research in the Great Lakes and, on the basis of the findings, recommend measures which will permit the maximum sustained productivity of stocks of fish of common concern. Second, the Commission is responsible for formulating and implementing a program to eradicate or minimize sea lamprey populations in the Great Lakes. The Commission is also required to publish or authorize the publication of scientific or other information obtained in the performance of its duties.

The Convention specifies that the Commission should work through official agencies of the contracting parties (and the Great Lakes States and Province of Ontario) in the performance of its duties. The Commission contracts with the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada for sea lamprey control and research. The balance of its program is pursued through a committee structure which involves the academic community and representatives of the agencies with fishery management and other natural resource mandates. The primary operating/ advisory committee is the Sea Lamprey Committee. The two advisory boards are the Board of Technical Experts and the Fish Habitat Advisory Board. The primary coordinating committees are the Lake Committees, the Council of Lake Committees, and the Fish Disease Control Committee. These committees create technical groups and together address issue- and lake-specific concerns within the mandate of the Commission.

A major initiative for the Commission in recent years has been to facilitate development and implementation of a Joint Strategic Plan for Management of the Great Lakes Fisheries by fishery agencies. The Commission, along with its committees, principal cooperators and other Great Lakes agencies, work together under the plan. A Committee of the Whole, composed of directors and ministers of agencies responsible for the welfare of Great Lakes fishery resources, has veto power over the plan. The Committee's endorsement provides additional incentive for Lake Committees and others to use the plan.

The Commission is comprised of Canadian and United States Sections, each with one vote, and served by four commissioners appointed by their respective governments. A secretariat, appointed by the Commission, assists the Commission in carrying out its duties. The staff is based in Ann Arbor, Michigan.

B. Mandate

As stipulated by the Convention, the mandate of the Great Lakes Fishery Commission is directed at five areas of activity:

1) The formulation of programs to determine means by which fish stocks of common concern to the United States and Canada can be managed for maximum sustained productivity;

2) The coordination or undertaking of such research to support those programs;

3) The development of recommendations to the two parties on the basis of research findings;

4) The eradication or reduction of sea lamprey populations in the Great Lakes; and

5) The publication of scientific reports and other information prepared in the performance of duties.

C. Functions

As specified in the Convention and reflected in its operation, the Commission's functions are focused primarily upon research, coordination, advisory services, planning and plan implementation.

Research activities focus upon sea lamprey control, and more generally, upon the feasibility of further rehabilitation of the Great Lakes ecosystem via fishery management. Sea lamprey control/management research, which includes both long-range research and issue-specific investigatory work, is conducted primarily by the U.S. Fish and Wildlife Service. General research (funded 50/50) is aimed more at sea lamprey/lake trout interactions, fish community dynamics, lake trout reproduction, innovation, and basic studies on sea lamprey.

The coordination function is pursued at several levels. The Commission's three central committees and several technical and lake committees, by virtue of their composition, provide a vehicle for ongoing coordination of fishery research and management activities among the state, provincial, federal and academic sector interests. Coordinative efforts are program-specific as well: two current programs entail the system-wide coordination of lake trout and other fish stocking and the coordination of fish population assessment initiatives by the various jurisdictions. On a broader level, consistent with Article VI of the Convention, the Commission seeks "to establish and maintain working arrangements with public or private organizations" with a Great Lakes resource management mandate.

The advisory service function is recommendatory in nature and focused primarily at the two federal governments, although the appropriate state and provincial jurisdictions are affected as well. For example, Section 939 of P.L. 84-557 (Great Lakes Fisheries Act of 1956) calls upon the U.S. Secretary of State to "transmit a copy of the recommendation with his comments thereon to the Governor of each Great Lakes State for consideration and such action as may be found to be appropriate." As the Commission lacks regulatory or enforcement authority, the advisory service function is an integral component of its mission.

The planning function, conducted on the strength of the Commission's research and coordinative functions, provides the vehicle for articulating management strategies. The principal effort to date, completed in 1980, was the preparation and approval of a Joint Strategic Plan for Management of Great Lakes Fisheries. Its stated objective is "to secure fish communities, based on foundations of stable self-sustaining stocks, supplemented by judicious plantings of hatchery-reared fish, and to provide from these communities an optimum contribution of fish, fishing opportunities and associated benefits to meet needs identified by society for: wholesome food, recreation, employment and income, and a healthy human environment." The plan, in identifying specific management issues, sets forth four

strategies for addressing them: consensus, accountability, environmental management and management information.

Finally, the Commission has a plan implementation function, derived from language in Article IV of the Convention. The Commission is responsible for the integrated management of the sea lamprey, a role which includes chemical control of larval lampreys, trapping adults on spawning migrations, constructing barrier dams, funding needed research and demonstration programs, and others. Aside from such "field-level" implementation, the Commission guides the implementation of the aforementioned strategies associated with the Joint Strategic Plan for Management of Great Lakes Fisheries.

D. Enabling Legislation

The "Convention on Great Lakes Fisheries Between the United States of America and Canada," entered into force on October 11, 1955, provides for the creation of the Great Lakes Fishery Commission and the assignment of its functions. Its preface (as embodied in a proclamation by President Eisenhower) recognizes the "decline of some of the Great Lakes fisheries," the extent of the sea lamprey problem, and the need for, "joint and coordinated efforts" by the two countries to "make possible the maximum sustained productivity in Great Lakes fisheries of common concern." A summary statement on each of the Convention's thirteen articles is provided below:

Article I. The geographic jurisdiction of the Convention's provisions is identified as the five Great Lakes, Lake St. Clair, the St. Lawrence River (from Lake Ontario to the 45th parallel), and to "the tributaries of each of the above waters to the extent necessary" to carry out the purposes of the Convention.

Article II. The Great Lakes Fishery Commission is established, comprised of Canadian and United States sections, each with up to three members appointed by the respective governments. (Amended to four members by exchange of notes and ratification in 1967.) Each section is granted one vote; decisions/recommendations of the Commission must be unanimous.

Article III. A process for the annual selection of a chairman and vice-chairman is established. Staff support for the Commission is authorized; responsibilities of the executive secretary are outlined, being "subject to such rules and procedures as may be determined by the Commission."

Article IV. The Commission's mandate is presented (see earlier discussion for elaboration).

Article V. In the interest of fulfilling its mandate, the Commission is authorized to conduct investigations, hold hearings in the United States and Canada, and "take measures and install devices in the Convention Area" in the interest of sea lamprey control.

Article VI. The Commission is directed to make use of the official agencies of the two governments (and other public or private organizations) in the performance of its duties.

Article VII. The two governments agree to furnish pertinent information upon Commission request.

Article VIII. Procedures for determination and payment of the individual and joint expenses of the two sections are established, and preparation of an annual budget is mandated.

Article IX. The Commission is required to submit an annual report to the two governments, including recommendation and advice on relevant matters.

Article X. The Convention is interpreted so as to ensure state, provincial and federal authority in "making or enforcing laws and regulations within their respective jurisdictions," provided they do not preclude conduct of the Commission's duties.

Article XI. The two governments are directed to enact legislation that might be necessary to effectuate the Convention.

Article XII. A joint review of the Convention in its eighth year is called for "to determine the desirability of continuing, modifying or terminating" it.

Article XIII. Following ratification, the Convention is to remain in force for at least ten years. Two years' written notice by either party is necessary to terminate the Convention at the end of the tenth year or beyond.

Pursuant to Article XI, the U.S. Congress enacted P.L. 84-557, the "Great Lakes Fisheries Act of 1956." In providing for U.S. rep-resentation on the Commission, the act establishes an appointment process and related structural/procedural requirements for the U.S. section.

E. Structure and Operation

The Great Lakes Fishery Commission is comprised of U.S. and Canadian sections, each granted one vote in a framework that requires a unanimous action to elicit a decision or recommendation. Each section is comprised of four individuals: the Canadian commissioners are appointed by the Privy Council for renewable two-year terms, while the U.S. Commissioners are appointed by, and serve at the pleasure of, the President.

A well-defined committee structure has been established to assist the Commission in its deliberations. Three central committees comprise the principal elements. The Board of Technical Experts (BOTE) is relied upon for "advice, synthesis of scientific, social, and economic opinion, the vetting of research proposals, and recommendations on publication." The Sea Lamprey Committee "reviews past programs of sea lamprey control, management, and research, current problems and opportunities, and advises the Commission on program priorities and direction." The Fish Habitat

Advisory Board, only recently established, "will help the GLFC determine policy direction on habitat matters, will increase interaction among fishery agencies and those agencies whose actions influence fish habitat quality, and provide leverage to influence decisions on management of habitat for the benefit of fish." Central committee membership includes the commissioners themselves as well as their appointees.

Also serving the Commission are several technical committees, the members of which are appointed by the various jurisdictions with fishery management authority. The Fish Disease Control Committee addresses transboundary issues under its Model Fish Disease Control Program and Policy. The Lake Committees, of which there are five, focus upon coordination of fisheries research and management, developing and coordinating studies and encouraging their application. In 1986 the Commission included representatives of the tribal interests which have legal fishery management authority in the Lake Committee membership. The Council of Lake Committees, established in recent years to address interlake issues, was instrumental in development of the Joint Strategic Plan for Management of Great Lakes Fisheries.

As provided for in P.L. 84-557, the U.S. Section also maintains lake advisory committees for each Great Lake. They are comprised of up to four members representing the commercial and recreational fishing industries, the general public and the lead state agencies with jurisdiction over fishery management.

As previously noted, the Commission relies (via annual memoranda of agreement) upon the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada to carry out the operational aspects of its sea lamprey control and research programs. Funding for such has been provided through the U.S. Department of State (69%) and Fisheries and Oceans Canada as delegated by the Canadian Department of External Affairs (31%). The funding allocation, long established, reflects the historic commercial catch ratio for lake trout and whitefish prior to sea lamprey impact.

A small secretariat, comprised of four professionals with fishery training and three support personnel, serves the Commission in the conduct of its business.

Operationally, the Commission's committee structure provides a formal network for the exchange of information, coordination of management activities and the identification of issues demanding consideration of, and action by the commissioners.

F. Institutional Resources

The total annual budget for Fishery Commission operations is approximately $7 million, most of which is allocated to sea lamprey control and research; 69% provided through the U.S. Department of State and 31% through Fisheries and Oceans Canada. This ratio was established on the basis of average annual Great Lakes commercial catches of lake trout and whitefish before the impact of the sea lamprey. Administrative costs are shared equally. Funding levels have increased over time; the total budget in 1975 was $3.28 million and $5.9 million in 1980. Staffing arrangements have remained

essentially unchanged in recent years, consisting of seven professional and administrative staff members. Professional staff background is oriented towards fisheries biology and management.

G. Selected Programs, Products and Accomplishments

The Commission's initiatives, undertaken with its principal cooperators, the states, the Province of Ontario, and the U.S. and Canadian Federal government, have evolved into several related areas of activities, each of which is ongoing: (a) sea lamprey control and research; (b) coordination of lake trout and other fish stocking; (c) coordination of fish population assessment and development of strategies to control exploitation; (d) registration of lampricides; (e) investigation of the feasibility of further rehabilitation of the Great Lakes ecosystem to reattain lost values; (f) implementation of the international Joint Strategic Plan for Management of Great Lakes Fisheries; (g) development and implementation of a plan for integrated management of the sea lamprey; (h) development of lake trout rehabilitation plans for each of the Great Lakes; and i) incorporation of habitat management and planning into fishery planning and management.

The Commission has a general research budget of approximately $220,000/year. This is to pursue small projects and provide seed money for larger projects. Examples of recent contracts are preparation of annotated bibliographies on sea lamprey and related fishes, genetic identification of fish stocks using mitochrondrial and nuclear techniques, use of hormones to control reproduction and metamorphosis in sea lampreys, applying chromosome banding techniques to stock identification in lake trout, investigations into the economics of Great Lakes fisheries, development of marking techniques for lake trout, and preparation of guidelines for management of broodstocks.

In addition to the preparation of Annual Reports, the Fishery Commission has published over 100 technical reports, special publications; journal articles; brochures; slide/tape shows and other reports addressing a range of fishery management issues.

H. Linkages

Previous discussion has highlighted the nature of the linkages between the Great Lakes Fishery Commission and the IJC and the GLC. These linkages are both, to date, much more developed than those between the GLFC and the Council of Great Lakes Governors. The Council has yet to focus concerted attention on fishery-specific issues and, hence, interchanges between the two organizations have been quite informal and rare.

Linkages are well developed at the federal level, by virtue of the Commission's mandate and membership, as well as its contractual arrangements with the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada. Similar strong linkages are found at the state and provincial levels, aided by the technical boards and committees within the Commission's operating structure.

I. Developmental History

The formation of the Great Lakes Fishery Commission, precipitated largely by a sea lamprey-induced "impending international catastrophe" was the culmination of a long-standing recognition of the need for binational fisheries management (Fetterolf 1980). The decline of the fishery in the lower Great Lakes began as early as 1830 (Christie 1973) and persistence of the trend in subsequent decades cultivated growing support for remedies through joint United States-Canadian action (Gallagher et al 1943). Prior to implementation of the present Convention in 1955, such actions - in the form of proposed treaties, bi-national conventions and informal arrangements - were pursued unsuccessfully between the years 1893 and 1952.

A joint commission appointed in 1893 presented recommendations on a lake-by-lake basis, to promote preservation of the fishery. The two governments failed to carry these recommendations out. The year 1908 saw the signing and ratification of a "Treaty between the United States and Great Britain - Fisheries in United States and Canada Waters." The treaty, which established an International Fisheries Commission and brought about the subsequent preparation of a code of regulations to protect food fishes in shared waters, was terminated in 1915 when the U.S. Congress failed to approve the code.

Renewed efforts toward the establishment of a binational fishery management mechanism were spearheaded by the Council of State Governments in a 1938 conference attended by representatives of state, provincial and federal fishery management interests (Byrnes 1946). An International Board of Inquiry was subsequently established, and presented (in August 1942) a series of recommendations leading to the drafting of a "Convention between the United States of America and Canada for the Development, Protection, and Conservation of the Fisheries of the Great Lakes." Signed in April 1946 by representatives of both countries, the Convention was regulation-oriented, granting a binational commission broad authority in setting commercial fishing seasons, allowable techniques, stocking procedures and the like. These regulatory overtones were resisted by several Great Lakes states and vocal segments of the commercial fishing industry. The U.S. Senate failed to act on the treaty.

Prompted by a precipitous decline in the already threatened populations of lake trout, lake whitefish and ciscoes, the unratified 1946 treaty re-emerged - in a much altered form - in 1952. Shaped by delegates from the federal governments, the Great Lakes states, Ontario and commercial fishing interests, the Convention on Great Lakes Fisheries between the United States of America and Canada was signed by both countries in September 1954, and ratified and entered into force thirteen months later.

Council of Great Lakes Governors

A. Overview

The Council of Great Lakes Governors is an organization comprised of the governors of the six westernmost Great Lakes states. Formed in 1982 as a private, non-profit entity, the Council provides a forum for identifying, discussing, researching, and formulating policy and plans on various

regional economic and environmental issues of common interest. Its stated objective is to "stimulate economic, community and environmental development" within its member states.

As an instrument of the states, the Council pursues a regional agenda formulated via joint consultation of the governors. Since its formation, regional economic goals have included industrial revitalization, reduced unemployment, expansion of export markets and tourism promotion. Environmental and resource management goals have focused upon both water quality and water quantity issues. The latter has been a principal focus to date, with a decided emphasis upon diversion/consumptive uses issues and attendant institutional arrangements for addressing them.

The Council's mandate is a broad one, permitting its membership substantial flexibility in the selection of issues and the manner in which they are pursued. This flexibility has facilitated representation from non-member Great Lakes states (New York, Pennsylvania) and provinces (Ontario, Quebec) on selected issues, most notably that of diversion and consumptive use.

The Council's strength is drawn from, and therefore dependent upon, the extent of the governors' commitment toward collective action on regional issues. Supported by a small staff and modest budget, the Council has relied upon a task force approach (drawing upon governors' appointees and state agency personnel) for technical assistance and advice.

B. Mandate

As presented in its articles of incorporation, the Council has a broad and ambitious mandate, striving to:

"1) Develop, plan, execute and coordinate programs and projects which will stimulate economic, community and environmental development within the states of Minnesota, Michigan, Wisconsin, Ohio, Illinois and Indiana;

2) facilitate coordination of multi-state capabilities to identify and effectively respond to problems and issues common to the states represented by the membership;

3) promote effective communication and cooperation among the states represented by the membership and governmental units in Canada with regard to issues and problems of mutual concern and responsibility;

4) provide a forum at which communication and discussion regarding such problems and issues can take place;

5) assist in the development, coordination and execution of plans and programs under multi-national, national, state and local authorities which shall promote the general welfare of the citizens within the area represented by the membership;

6) stimulate economic, community and environmental improvement by promotion of domestic and international trade, tourism,

business development, and other methods which shall be determined to have a common beneficial effect; and

7) assist in the orderly conclusion of unfinished work of the Upper Great Lakes Regional Commission, including the provision of technical assistance for project completions and general phase-out responsibilities of said Commission."

As indicated, this mandate is process oriented, as it establishes mechanisms for approaching broadly defined economic development and resource management problems and opportunities. Specification of the issues is implicitly reserved for the membership itself.

C. Functions

As presented in the articles of incorporation and reflected in practice, the Council's principal functions are three-fold: 1) the development, promotion and/or execution of programs and plans; 2) the provision of coordination and communication services; and 3) the promotion of methods and measures with a "common beneficial effect." All functions support the Council's interest in stimulating economic, community and environmental development in the region.

The planning function is pursued at two levels. The Council seeks to "develop, plan, execute and coordinate programs and projects" within the region by serving as principal catalyst and sponsor (i.e., self-initiative). On a broader level, the Council seeks to contribute to, or otherwise influence initiatives at all other levels of government when such initiatives can serve to "promote the general welfare of the citizens within the area represented by the membership."

The "coordination and communication" function places the Council in the role of a convener or forum within which the various relevant jurisdictions and interest groups can exchange ideas and nurture a cooperative approach "to issues and problems of mutual concern and responsibility."

The "promotion" function is a pervasive and rather undefined one, comprised of the various methods available for attaining stated "economic, community development and environmental" objectives. Regional policy making, advocacy and publicity activities are inferred.

It should be noted that the Council is also mandated to provide technical assistance in the "orderly conclusion of unfinished work" of its predecessor, the Upper Great Lakes Regional Commission. Additional background on this function is presented in the discussion of the Council's developmental history.

D. Enabling Legislation

The Council has no statutory authority; as a private, non-profit entity, its standing is derived solely from its articles of incorporation.

E. Structure and Operation

The formal membership of the Council of Great Lakes Governors is comprised of the governors of the six westernmost Great Lakes states. New York and Pennsylvania presently have "associate member" status, which permits them to participate in all activities but vote only on selected resource management issues (e.g., water quantity and quality). The provinces of Ontario and Quebec participate informally with observer status, although they have been granted "membership level" status for specific activities (i.e., Task Force on Water Diversion and Great Lakes Institutions).

The structural framework of the Council is comparatively lean; the preponderance of its activities are pursued via special task forces, committees or more informal arrangements which disband following completion of assigned tasks. The governors themselves provide the policy direction, with advice and assistance secured from an executive committee comprised of one gubernatorial designee from each member state.

As provided for in the articles of incorporation, the organization's "board of directors" is comprised of the governors of the six member states. A chairman is elected from among the membership to serve a two-year term, with the provision that the position "whenever possible, alternate successive terms between Members of the two major political parties." Actions taken must be by voice vote of a simple majority with a quorum present. The offices of president, vice-president, secretary and treasurer are held by Executive Committee members on a one-year, rotational basis.

To date, several commissions/task forces have been established to pursue and implement Council priorities. A Machine Tool Commission was established in 1984 "to develop public/private policy strategies and initiatives to encourage reinvestment in the machine tool industry." Comprised of three representatives from each member state (labor, management and machine tool specialists) the commission prepared several issue papers and presented the Council with recommendations in late 1984.

The Council's Task Force on Water Diversion and Great Lakes Institutions was established in March 1984 "to evaluate possible state and federal legislation and interstate and binational agreements to manage the use of Great Lakes water by the states and provinces." Comprised of governor/premier appointees from the eight Great Lakes states and two provinces, task force efforts produced the Great Lakes Charter - a "good faith" agreement on water quantity management signed by all heads of state in early 1985. The task force is presently focusing on institutional issues and implementation of the Great Lakes Charter. The latter is being aided by a recently formed Water Resource Management Committee with membership from the eight states and two provinces.

F. Institutional Resources

The six state members of the Council are assessed annual dues of $20,000, with additional funding assistance derived from project specific grants from foundations and U.S. federal agencies. The assessment has remained stable since the Council's formation, with additional support varying with project activity. The Council has maintained a staff of 2-4 professionals

over this time period between its Madison, Wisconsin and Chicago, Illinois offices.

G. Selected Programs, Products and Accomplishments

Principal accomplishments to date have included the development and ongoing implementation of the Great Lakes Charter and the Great Lakes Toxic Substances Control Agreement.

Signed by the Great Lakes governors and premiers in 1985, the Great Lakes Charter is a non-binding "good faith" agreement committing the states and provinces to a series of principles for coordinated, Basin-wide water management; development of a Basin-wide data collection and information retrieval system; registration of all water withdrawals over a minimum amount; and a ratification and consultation procedure by which large scale withdrawal proposals in one jurisdiction are brought to the attention of all others. A landmark agreement, the Charter is presently in the implementation stage under the auspices of a binational Water Resource Management Committee.

The Great Lakes Toxic Substances Control Agreement, signed by the governors in May 1986 with a memorandum of understanding with the premiers forthcoming, sets forth principles and cooperative initiatives to control and expand the understanding of toxic substances in the Great Lakes ecosystem. It is viewed as the first step in the development of a comprehensive plan for toxic substances control in the Great Lakes. Issues addressed include a permitting process; hazardous waste management initiatives; attention to atmospheric deposition; notification of accidental pollutant discharges; concentrated monitoring, surveillance and information exchange; preparation of common fish consumption advisories; examination of long-term funding sources; and others. The Agreement is in the early stages of implementation with oversight from a task force formed for that purpose.

Other initiatives have ranged from regional economic development to environmental protection and include, among others, a Regional Alternative Energy (Biomass) Program; a study to encourage reinvestment in the machine tool industry; a Joint International Business Development Study; and co-sponsorship of various legislative and gubernatorial forums on Great Lakes issues.

The Council periodically publishes papers and reports on issue-specific studies by staff, task forces and cooperating organizations on topics such as those identified above.

H. Linkages

Previous discussion provides an overview of the nature of the Council's linkages with the IJC, GLFC and GLC. It is apparent from that discussion that informal linkages and issue-specific interactions characterize Council relations with the first two, while the rather extensive similarity in mandate, functions and personnel arrangements with the latter is increasingly recognized.

Understandably, the Council's linkages at the state level are very well developed at both the executive and legislative levels. Beyond the Council staff and the governors themselves, numerous task forces have been created, drawing heavily from state agencies. It is at this task force level that the overlap in personnel with the GLC occurs. Linkages with the Great Lakes provinces and non-member Great Lakes states have been particularly strong; all have been drawn into task forces of particular relevance to them. This is also true of private sector interests that have been drawn into the various economic development initiatives sponsored by the Council (e.g., Commission on the Machine Tool Industry).

Linkages at the U.S. and Canadian federal levels are somewhat more tenuous and tend to be established on an issue-specific basis. Like the GLC, the Council pursues advocacy activities directed at the (U.S.) federal level, but federal agency participation in ongoing Council functions is limited.

I. Developmental History

The history of cooperative ventures - both formal and informal - among the Great Lakes governors on regional issues is an extensive one dating back many decades. Meetings among the governors - occasionally with Canadian representation - were observed with increasing frequency during the 1950s, prompted both by the opening of the Great Lakes/St. Lawrence Seaway system and common concern over accelerated degradation of water quality and related resources. During this period of time, the Midwestern District meetings of the Council of State Governments provided an active forum for discussion of regional issues and the emergence of a regional identify.

Specifically, the origin of the Council of Great Lakes Governors is traced to the Upper Great Lakes Regional Commission (UGLRC). Created in 1967 under Title V of the Economic Development Act of 1965, UGLRC was charged with administering grants to economically depressed communities in northern Minnesota, Wisconsin and Michigan. The governors of these three states served as members, along with the federal Secretary of Commerce. Terminated by Executive Order of the President in 1982, a non-profit, private corporation was immediately established to conduct phase-out activities and provide a modified mechanism for continuing the objectives of the UGLRC.

A rising regional consciousness, fueled in part by the midwest's shared economic recession and recognition of the benefits of collective action, fostered the rapid expansion of the "successor" organization. The states of Illinois and Indiana accepted membership in June 1982, followed in March 1983 by the state of Ohio. As noted earlier, the Council has since relaxed its membership limitations to provide issue-specific membership status to New York and Pennsylvania, and expanded participation by the Canadian Great Lakes provinces. As a "newcomer" to the arena of regional Great Lakes management, the Council continues to evolve both structurally and operationally.

A Comparative Analysis of Selected Structural and Programmatic Characteristics

A comparative analysis, in general terms, of selected structural and programmatic characteristics of these four principal institutions for Great

Lakes management provides insight into the function of the institutional ecosystem as well as its component parts. Further, it provides the basis for the investigation of the present and "desired" framework for Great Lakes management. From the standpoint of institutional structure, we can focus on membership, geographic jurisdiction, organizational resources and authority. From a programmatic standpoint, we can conduct a comparative review of institutional goals, program scope and management functions.

A. Selected Structural Characteristics - A Comparison

1) Membership. Membership on both the International Joint Commission and the Great Lakes Fishery Commission is international in nature, appointive and generally reflective of a federal orientation toward binational resource management. A variety of advisory boards and committees involving state, provincial and academic representation have been established to provide various planning, research, monitoring, surveillance and coordinative services.

   Conversely, membership on the Great Lakes Commission and the Council of Great Lakes Governors is limited to the United States, is either elective or appointive, and generally reflective of an interstate orientation toward binational resource management. The Great Lakes Commission appointment process varies from state to state, involving three to five members, at least one of whom is appointed by the governor. The Great Lakes Commission has provided for the designation of federal and provincial observers, and created in 1982 a Technical Advisory Committee on Research and Development comprised of non-voting state, federal, provincial and academic representatives.

   The governors of the six westernmost Great Lakes states comprise the membership of the Council of Great Lakes Governors. The Council works primarily through governors' offices and state agencies, although provincial representation has been solicited on an issue-specific basis.

2) Geographic Jurisdiction. All four institutions maintain a special focus upon the Great Lakes Basin, although in some cases, actual geographic jurisdiction is much broader. The Great Lakes Fishery Commission, by virtue of its mandate, is most closely oriented toward Basin management. Both the Great Lakes Commission and the Council of Great Lakes Governors, as policy oriented institutions, address interstate issues of interest which primarily (but not exclusively) include Basin-specific issues. The International Joint Commission has jurisdiction over all U.S.-Canadian border disputes; the Great Lakes Water Quality Agreement provides Basin-specific jurisdiction as a subset of this overall authority.

3) Institutional Resources. Organizational resources include funding arrangements, staffing, and membership support. A common thread runs through all four entities: funding is modest with respect to mandated responsibilities, staffs are largely skeletal, and institutional viability is generally dependent upon staff support from member entities.

Taken collectively, the four regional institutions support fewer than thirty professional staff and control annual budgets of approximately 10 million dollars, almost three quarters of which supports sea lamprey programs of the Fishery Commission. Even with the substantial "in-kind" contributions from member and cooperating jurisdictions, it is clear that the staffing and funding resources for the collective Great Lakes regional management effort are miniscule and in many cases woefully inadequate to address mandated responsibilities, much less those that may be added under future scenarios. It is also clear that perceived deficiencies in institutional performance, as well as tendencies toward selective attention to mandated responsibilities, are possibly as much a function of resource constraints as of institutional bias or some form of structural deficiency. While simply expanding staff and budgets is not, in and of itself, a solution to institutional inadequacy, it is appropriately considered one means to addressing some deficiencies and ensuring that full institutional potential - under any scenario - is realized.

4) Authority. All of the institutions of concern were created as instruments of formal international or intergovernmental agreement. The Great Lakes Water Quality Agreement of 1972 (amended in 1978) provided the basis for establishing the Great Lakes Regional Office of the International Joint Commission. The Commission itself was established in 1911 under the authority of the Boundary Waters Treaty of 1909. The Great Lakes Fishery Commission was created to carry out the mandate embodied in the International Convention on Great Lakes Fisheries, which entered into force in 1955. The Great Lakes Basin Compact, passed by the eight Great Lakes states during the period 1955-63 and ratified by Congress in 1968, set out the mandate for the Great Lakes Commission. The Council of Great Lakes Governors, a greatly modified successor to the Upper Great Lakes Regional Commission, was formed in 1982 and operates under a set of bylaws approved by its membership.

B. Selected Program Characteristics - A Comparison

From a programmatic standpoint, a comparative analysis of institutional goals, program orientation and management functions provides useful insight into the Great Lakes management structure. The reader is referred to Figures 6-9 for a matrix overview of program interests. Each was prepared by, or in consultation with, a staff member from the respective institutions.

1) Institutional Goals. As indicated in the text, the stated goals of the institutions of concern are distinct, yet compatible and focused in a single direction - the protection and enhancement of the resource via multi-jurisdictional cooperation. Indeed, these goal statements appear, at least at first glance, to be above reproach. A case in point is the goal of the Great Lakes Commission: "to promote the orderly, integrated, and comprehensive development, use and conservation of the water resources of the Great Lakes Basin" (Article I, Great Lakes Basin Compact). Goal statements for the other three institutions of concern are somewhat more focused, but

consistent with this all-encompassing statement. It is clear that interpretation and pursuit of stated goals is the principal concern in institutional analysis.

2) Program Orientation. Program orientation varies considerably among the institutions of concern. International Joint Commission programs are oriented primarily (but not exclusively) toward water quality and quantity (i.e., levels, flows, diversion) issues in the international Great Lakes. The Great Lakes Fishery Commission focuses its programs toward maximizing the sustained productivity of the Great Lakes fishery. The Great Lakes Commission's program orientation is a function of the collective resource management priorities of the Great Lakes states; numerous policy-oriented issues are under examination at any given time. The Council of Great Lakes Governors operates in a similar mode, although the issues examined are generally fewer in number, typically reviewed in substantial depth, and culminate in major policy positions or initiatives by the governors.

   Although a number of issues are under active consideration by one or more of the institutions at any given time, program orientation is, at least to date, sufficiently different to preclude substantial problems of duplicative effort. However, a strengthening of coordinative practices may be in order.

3) Management Functions. The four institutions of concern pursue several of the same management functions: data collection and analysis, research, coordination, and policy development. The nature and extent of such activities, however, varies significantly with regard to the resource characteristics, uses and development impacts of interest (Figures 6-9). In addition to these fundamental management functions, the International Joint Commission does possess regulatory powers relating to lake levels and flows, is involved in monitoring/surveillance activities and maintains a public information program.

   The Great Lakes Fishery Commission is primarily involved in fishery-related data collection and analysis, research and coordination. It has distinguished itself in terms of Basin planning with the preparation of its Joint Strategic Plan for Management of the Great Lakes Fisheries.

   Management functions emphasized by the Great Lakes Commission include advocacy, policy development and coordination. Selected others are undertaken on an issue-specific basis, such as research and data collection and analysis. This statement is generally reflective of the Council of Great Lakes Governors as well.

   Figures 6-9 also provide an indication of the management and resource functions that 1) are not consistent with a specific institution's existing mandate; and 2) those that are consistent with the existing mandate but are not presently undertaken. Examining the institutions collectively, examples of the former include (for

most institutions) regulation, enforcement, and arbitration/conflict resolution. Examples of the latter (for most institutions) include advisory services, Basin planning, public participation/education and impact assessment. This second category is particularly important. It demonstrates the fact that not one Great Lakes regional institution is presently exercising full authority under its existing mandate. Consequently, one can convincingly argue that any institutional design exercise must be preceded by careful review of existing institutions and their present mandates. This is, in fact, fundamental to the rationale for undertaking this study.

KEY:

- ☒ within mandate, major function
- ⧄ within mandate, minor function
- ⊡ within mandate, not undertaken
- ☐ not within mandate

MANAGEMENT FUNCTIONS	RESOURCE CHARACTERISTICS											RESOURCE USES									RESOURCE DEVELOPMENT IMPACTS							
	Coastal Zone	Forests/Vegetation	Levels and Flows	Drainage	Water Quantity	Water Quality	Air Quality	Fish and Wildlife	Geology	Soils	Floodplains	Agriculture	Mineral Extraction	Navigation/Transportation	Ports/Harbors	Power Production	Recreation/Tourism	Domestic/Industrial Devel.	Fish/Wildlife Production	Forestry	Water Pollution (pt. non-pt)	Pollution/Atmos. Deposition	Erosion/Sedimentation	Fish/Wildlife Depletion/Imbal	Resource Extraction	Natural Area Loss/Degradation	Diversion/Consumptive Uses	Public Health Risks
Data Collection & Analysis	O	O	☒	O	☒	☒	⧄	☒	O	O	O		O	O	O	⧄	O	O	⧄	O	☒	⧄	⧄	⧄	O	⧄	☒	☒
Research	O	O	⧄	O	⧄	⧄	⧄	⧄	O	O	O	O	O	O	O	O	O	O	⧄	O	☒	⧄	⧄	⧄	O	⧄	☒	☒
Advisory Services	O	O	☒	O	O	O	⧄	⧄	O	O	O	O	O	O	O	O	O	O	⧄	O	☒	⧄	⧄	⧄	O	⧄	☒	⧄
Regulation																												
Enforcement																												
Arbitration/Conflict Resol.	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Basin Planning	O	O	☒	O	☒	☒	⧄	⧄	O	O	O	O	O	O	O	O	O	O	O	O	☒	⧄	⧄	⧄	O	⧄	☒	☒
Monitoring & Surveillance	O	O	☒	O	☒	☒	☒	⧄	O	O	O	O	O	O	O	O	O	O	⧄	O	☒	⧄	O	⧄	O	⧄	☒	⧄
Coordination	O	O	☒	O	☒	☒	⧄	O	O	O	O	O	O	O	O	O	O	O	O	O	☒	⧄	O	O	O	⧄	☒	⧄
Public Particip/Education	O	O	☒	O	☒	☒	O	O	O	O	O	O	O	O	O	O	O	O	O	O	☒	O	O	O	O	O	☒	O
Advocacy																												
Policy Development	O	O	☒	O	☒	☒	O	O	O	O	O	O	O	O	O	O	O	O	O	O	☒	O	O	O	O	O	O	O
Impact Assessment	O	O	☒	O	☒	☒	O	⧄	O	O	O	O	O	O	O	O	O	O	⧄	O	☒	O	O	⧄	O	O	☒	⧄

Figure 6

RESOURCE AND MANAGEMENT FUNCTIONS: INTERNATIONAL JOINT COMMISSION

KEY:

- ☒ within mandate, major function
- ⧄ within mandate, minor function
- ⊙ within mandate, not undertaken
- ☐ not within mandate

MANAGEMENT FUNCTIONS	RESOURCE CHARACTERISTICS											RESOURCE USES									RESOURCE DEVELOPMENT IMPACTS							
	Coastal Zone	Forests/Vegetation	Levels and Flows	Drainage	Water Quantity	Water Quality	Air Quality	Fish and Wildlife	Geology	Soils	Floodplains	Agriculture	Mineral Extraction	Navigation/Transportation	Ports/Harbors	Power Production	Recreation/Tourism	Domestic/Industrial Devel.	Fish/Wildlife Production	Forestry	Water Pollution (pt. non-pt)	Pollution/Atmos. Deposition	Erosion/Sedimentation	Fish/Wildlife Depletion/Imbal	Resource Extraction	Natural Area Loss/Degradation	Diversion/Consumptive Uses	Public Health Risks
Data Collection & Analysis	⧄	⊙	⧄	⧄	⧄	⧄	⊙	⧄	⊙	⊙	⊙	⧄	⧄	☒	⧄	⧄	⧄	⧄	⧄	⊙	⧄	⧄	☒	⧄	⧄	⧄	⧄	⊙
Research	⊙	⊙	⊙	⊙	⧄	⧄	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⧄	⊙	⊙	⊙	⧄	⊙	⊙	⧄	⊙	⧄	⊙	⊙	⊙	⧄	⊙
Advisory Services	⧄	⊙	⧄	⊙	⧄	⧄	⧄	⊙	⊙	⊙	⊙	⊙	⊙	⧄	⧄	⊙	⧄	⧄	⊙	⊙	⧄	⊙	⧄	⧄	⊙	⧄	⧄	⊙
Regulation																												
Enforcement																												
Arbitration/Conflict Resol.	⊙	⊙	⧄	⊙	⧄	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⧄	⊙	⊙	⊙	⊙	⊙	⊙	⧄	⊙	⊙	⊙	⊙	⊙	⧄	⊙
Basin Planning	⊙	⊙	⊙	⊙	⧄	⧄	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⧄	⊙	⊙	⊙	⧄	⊙	⊙	⧄	⊙	⧄	⊙	⊙	⊙	⧄	⊙
Monitoring & Surveillance	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Coordination	☒	⊙	⧄	⧄	☒	☒	⧄	⧄	⊙	⊙	⊙	⊙	⧄	☒	☒	⊙	⧄	☒	⧄	⊙	☒	⧄	☒	☒	⧄	☒	☒	⧄
Public Particip/Education	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Advocacy	☒	⊙	☒	⊙	☒	☒	⧄	⧄	⊙	⊙	⊙	⊙	⧄	☒	☒	⊙	⧄	☒	⧄	⊙	☒	⧄	☒	☒	⧄	☒	☒	⧄
Policy Development	☒	⊙	☒	⊙	☒	☒	⧄	⧄	⊙	⊙	⊙	⊙	⧄	☒	☒	⊙	⧄	☒	⧄	⊙	☒	⧄	☒	☒	⧄	☒	☒	⧄
Impact Assessment	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙

Figure 7

RESOURCE AND MANAGEMENT FUNCTIONS: GREAT LAKES COMMISSION

KEY:

- ☒ within mandate, major function
- ⧄ within mandate, minor function
- ⊙ within mandate, not undertaken
- ☐ not within mandate

MANAGEMENT FUNCTIONS	RESOURCE CHARACTERISTICS											RESOURCE USES									RESOURCE DEVELOPMENT IMPACTS							
	Coastal Zone	Forests/Vegetation	Levels and Flows	Drainage	Water Quantity	Water Quality	Air Quality	Fish and Wildlife	Geology	Soils	Floodplains	Agriculture	Mineral Extraction	Navigation/Transportation	Ports/Harbors	Power Production	Recreation/Tourism	Domestic/Industrial Devel.	Fish/Wildlife Production	Forestry	Water Pollution (pt. non-pt)	Pollution/Atmos. Deposition	Erosion/Sedimentation	Fish/Wildlife Depletion/Imbal	Resource Extraction	Natural Area Loss/Degradation	Diversion/Consumptive Uses	Public Health Risks
Data Collection & Analysis					⧄	⧄		☒											☒					☒				
Research								☒											⧄									
Advisory Services								⧄																				
Regulation																			⧄									
Enforcement																			⧄									
Arbitration/Conflict Resol.								☒								⧄			⊙									
Basin Planning								⧄											⧄									
Monitoring & Surveillance																												
Coordination								☒											☒					☒				
Public Particip/Education								⊙											⧄					⊙				
Advocacy								⧄											⧄					⧄				
Policy Development								☒											☒					☒				
Impact Assessment																												

Figure 8

RESOURCE AND MANAGEMENT FUNCTIONS:
GREAT LAKES FISHERY COMMISSION

KEY:

- ☒ within mandate, major function
- ⧄ within mandate, minor function
- ⊡ within mandate, not undertaken
- ☐ not within mandate

MANAGEMENT FUNCTIONS	RESOURCE CHARACTERISTICS											RESOURCE USES									RESOURCE DEVELOPMENT IMPACTS							
	Coastal Zone	Forests/Vegetation	Levels and Flows	Drainage	Water Quantity	Water Quality	Air Quality	Fish and Wildlife	Geology	Soils	Floodplains	Agriculture	Mineral Extraction	Navigation/Transportation	Ports/Harbors	Power Production	Recreation/Tourism	Domestic/Industrial Devel.	Fish/Wildlife Production	Forestry	Water Pollution (pt. non-pt)	Pollution/Atmos. Deposition	Erosion/Sedimentation	Fish/Wildlife Depletion/Imbal	Resource Extraction	Natural Area Loss/Degradation	Diversion/Consumptive Uses	Public Health Risks
Data Collection & Analysis																												
Research	O	O	O	O	☒	⧄	O	O	O	O	O	O	O	⧄	⧄	O	⧄	⧄	O	O	⧄	O	O	O	O	O	⧄	O
Advisory Services	O	O	O	O	☒	⧄	O	O	O	O	O	O	O	☒	☒	O	☒	☒	O	O	⧄	O	O	O	O	O	☒	O
Regulation																												
Enforcement																												
Arbitration/Conflict Resol.	O	O	O	O	☒	⧄	O	O	O	O	O	O	O	⧄	⧄	O	⧄	☒	O	O	⧄	O	O	O	O	O	☒	O
Basin Planning	O	O	O	O	☒	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	☒	O
Monitoring & Surveillance																												
Coordination	O	O	☒	O	☒	⧄	O	O	O	O	O	O	O	☒	☒	O	☒	☒	O	O	⧄	O	O	O	O	O	☒	O
Public Particip/Education	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Advocacy	O	O	O	O	☒	⧄	O	O	O	O	O	O	O	⧄	⧄	O	⧄	O	O	O	⧄	O	O	O	O	O	☒	O
Policy Development	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Impact Assessment	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

Figure 9

RESOURCE AND MANAGEMENT FUNCTIONS: COUNCIL OF GREAT LAKES GOVERNORS

APPENDIX B

SURVEY QUESTIONNAIRE FORM

SURVEY QUESTIONNAIRE

"Institutional Arrangements for Great Lakes Management: Past Practices and Future Alternatives"

Introduction: In recent years, the importance of the Great Lakes to the economy and quality of life of the region and the nation has been increasingly recognized. This recognition has been accompanied by a growing interest in (and concerns about the adequacy of) the various governmental institutions responsible for managing the Great Lakes resource. It is generally agreed that present institutional arrangements for Great Lakes management are in need of careful review and possible revision to ensure adequate use, development and protection of the water and related land resources of the Great Lakes Basin.

The questionnaire is one component of a study designed to: 1) explore the functions and operations of past and present Greaet Lakes management institutions; 2) identify "desired" institutional characteristics (e.g., structure, procedures) with applicability to Great Lakes management needs; and 3) develop alternatives for the revision of existing Great Lakes institutions and institutional arrangements and/or the design of new ones. The intent of the study is to assist decision makers in reconciling Great Lakes institutional arrangements with resource management needs.

Survey recipients have been carefully selected from the community of Great Lakes managers, decision makers, resource users and interest groups in the region. A prompt and studied response will ensure the development of sound and usable study results.

Format and Directions: The questionnaire consists of five sections: 1) background information on the respondent; 2) views on existing Great Lakes institutions and institutional arrangements; 3) views on desired Great Lakes institutions and institutional arrangements; 4) views on how institutional change should take place; and 5) miscellaneous questions.

Survey respondents are asked to complete all sections; approximately 20-30 minutes will be required. Signatures are optional; individual respondents will not be identified in the survey analysis or study report.

Please return completed forms by _____ to:

Michael J. Donahue

A. BACKGROUND ON RESPONDENT

1) Please identify your principal association with the Great Lakes management effort:

_____ academia
_____ local agency
_____ state/provincial agency
_____ federal agency
_____ citizen or citizen group
_____ regional/international agency
_____ private sector
_____ other (_____)

2) What is the nature of your role? (check more than one if appropriate)

_____ research
_____ planning
_____ regulation
_____ administration
_____ teaching
_____ advocacy
_____ coordination
_____ other (_____)

3) Listed below are the four principal regional governmental agencies with some type of Great Lakes management responsibility. How familiar are you with their purpose, structure and functions?

	very familiar	somewhat familiar	limited knowledge	not familiar	no knowledge
International Joint Commission	1	2	3	4	5
Great Lakes Commission	1	2	3	4	5
Great Lakes Fishery Commission	1	2	3	4	5
Council of Great Lakes Governors	1	2	3	4	5

4) Please state your principal association (past or present) with each of these agencies. (e.g. agency member, board/committee member, advisor, staff, cooperator)

a) International Joint Commission _____
b) Great Lakes Commission _____
c) Great Lakes Fishery Commission _____
d) Council of Great Lakes Governors _____

B. VIEWS ON EXISTING GREAT LAKES INSTITUTIONS AND INSTITUTIONAL ARRANGEMENTS

Questions 1-6 ask for your impressions of the overall Great Lakes management effort, which involves the collective activity of numerous agencies at various levels of government (i.e. local, state, provincial, regional, federal, international)

1) Overall, what is your assessment of the collective Great Lakes management effort?

____ very satisfactory
____ satisfactory
____ marginal
____ inadequate
____ very inadequate
____ no basis for response

2) Do you believe that the goals and functions of the various agencies involved in Great Lakes management are compatible or do they tend to conflict?

____ very compatible
____ primarily compatible
____ mixed
____ primarily conflicting
____ very conflicting
____ no basis for response

3) How do you view present levels of coordination and cooperation among the various agencies involved in Great Lakes management?

____ very satisfactory ____ satisfactory ____ marginal
____ inadequate ____ very inadequate ____ no basis for response

4) Collectively, do the various Great Lakes management agencies provide the full range of functions needed to adequately manage the resource, or are there unmet management needs?

____ all management needs satisfied ____ most management needs satisfied
____ mixed ____ most management needs unmet ____ all management needs unmet
____ no basis for response

5) Institutional deficiencies can be attributed to inadequacies in the structure of an agency (e.g., membership, jurisdiction, authority) or the operation of an agency (e.g. procedures, leadership, approach to problems). To what do you attribute deficiencies in the overall Great Lakes management effort?

____ structural only ____ predominantly structural ____ mixed
____ predominantly operational ____ operational only ____ no basis for response

6) Listed below is a range of resource management functions. Looking again at the overall Great Lakes management effort (i.e, all levels of government), please indicate the extent to which you believe each management function is presently being addressed. Please add others, if appropriate.

Management Function	very adequate	adequate	marginal	inadequate	very inadequate	no basis for response
Data Collection & Analysis	1	2	3	4	5	6
Research/Issue Analysis	1	2	3	4	5	6
Advisory Services	1	2	3	4	5	6
Regulation	1	2	3	4	5	6
Enforcement	1	2	3	4	5	6
Arbitration/Conflict. Res.	1	2	3	4	5	6
Basin Planning	1	2	3	4	5	6
Monitoring/Surveillance	1	2	3	4	5	6
Coordination	1	2	3	4	5	6
Public Participation/Education	1	2	3	4	5	6
Advocacy	1	2	3	4	5	6
Policy Development	1	2	3	4	5	6
Impact Assessment	1	2	3	4	5	6
_____	1	2	3	4	5	6
_____	1	2	3	4	5	6
_____	1	2	3	4	5	6

7) Listed below are some of the commonly cited reasons for dissatisfaction with present institutional arrangements for Great Lakes management. Please indicate the extent to which you agree/disagree with the statements, and add others if appropriate.

	strongly agree	agree	marginal	disagree	strongly disagree	no opinion
a) There are too many institutions involved in managing the Great Lakes	1	2	3	4	5	6
b) Great Lakes management is fragmented; no one is "in charge"	1	2	3	4	5	6
c) Poor coordination among institutions leads to inefficient management	1	2	3	4	5	6
d) Great Lakes institutions are understaffed	1	2	3	4	5	6
e) Great Lakes institutions are not responsive to current and emerging management needs	1	2	3	4	5	6
f) "Turf protection" among institutions inhibits cooperation	1	2	3	4	5	6
g) Great Lakes institutions are too limited in management authority to be effective	1	2	3	4	5	6
h) Great Lakes institutions are not sensitive to needs at the local/citizen level	1	2	3	4	5	6
i) An "ecosystem approach" to Great Lakes management is lacking	1	2	3	4	5	6
j) Great Lakes institutions fail to effectively represent the region at the federal level	1	2	3	4	5	6
k) U.S. and Canadian management efforts are inadequately coordinated	1	2	3	4	5	6
l) _____	1	2	3	4	5	6
m) _____	1	2	3	4	5	6

Questions 8-11 ask for your impressions on the performance of regional Great Lakes management institutions, specifically the International Joint Commission, the Great Lakes Commission, the Great Lakes Fishery Commission and the Council of Great Lakes Governors.

8) Based on your knowledge of their mandates (and current Great Lakes management needs) how well do you believe the following institutions function?

	very satisfact.	satisfact.	marginal	inadeq.	very inadeq.	no basis for response
International Joint Commission	1	2	3	4	5	6
Great Lakes Commission	1	2	3	4	5	6
Great Lakes Fishery Commission	1	2	3	4	5	6
Council of Great Lakes Governors	1	2	3	4	5	6

9) Do you believe these four institutions complement each other, or is there some duplication of effort?

_____ complementary _____ primarily complementary _____ mixed
_____ primarily duplicative _____ duplicative _____ no basis for response

10) How do you view present levels of coordination and cooperation among these four institutions?

_____ very satisfactory _____ satisfactory _____ marginal _____ inadequate
_____ very inadequate _____ no basis for response

11) Please identify what you believe are the principal strengths and weaknesses of these four agencies. These may be structural or operational characteristics (For example, an agency's strengths might include: a basinwide planning mandate; bi-national membership; and a capable staff. Weaknesses might include: lack of implementation authority; funding limitations and ineffective advocacy efforts). Add extra sheets if necessary.

a) International Joint Commission:

Strengths _____

Weaknesses _____

b) Great Lakes Commission:

Strengths _____

Weaknesses _____

c) Great Lakes Fishery Commission:

Strengths _____

Weaknesses _____

d) Council of Great Lakes Governors:

Strengths _____

Weaknesses _____

C. VIEWS ON DESIRED GREAT LAKES INSTITUTIONS AND INSTITUTIONAL ARRANGEMENTS

Assume, for the moment, that all existing regional Great Lakes institutions are to be replaced by a single regional institution. All other levels of government and their functions remain unchanged.

Assume also that you have the opportunity to design this new regional institution. What characteristics should this "ideal" institution have? Check only one response per question.

1) Membership

_____ Great Lakes states only
_____ Great Lakes states and provinces only
_____ Great Lakes states and U.S. federal agencies only
_____ U.S. and Canadian federal agencies only
_____ Independent, bi-national agency; no membership
_____ Great Lakes states, provinces, and U.S./Canadian federal agencies
_____ All levels of U.S./Canadian governments, including localities
_____ Other (_____)
Comments _____

2) Selection of Members

_____ Direct participation by heads of government (e.g. governors, federal agency heads).
_____ Appointed by appropriate heads of government
_____ Mixed representation (executive and legislative)
_____ Elected by citizenry
_____ Other (_____)
Comments _____

3) Geographic Area of Concern

_____ Great Lakes Basin boundaries (bi-national)
_____ Great Lakes political jurisdiction boundaries (bi-national)
_____ Great Lakes state boundaries only (U.S. only)
_____ Great Lakes Province boundaries only (Canada only)
_____ Other (_____)
Comments _____

4) Financing

_____ Annual appropriations from member jurisdictions
_____ Maintain its own taxing power
_____ Federal/state/provincial grants
_____ All of the above
_____ Other (_____)
Comments _____

5) Institutional Arrangement

_____ Interstate compact
_____ Federal/state compact
_____ Bi-national compact or treaty (binding)
_____ Separate but parallel U.S./Canadian agencies
_____ Informal interagency agreement (non-binding)
_____ Other (_____)
Comments _____

6) Management Focus

_____ "Soft management" focus (advisory, coordination, research)
_____ "Hard management" focus (regulation, enforcement, standard setting)
_____ Balanced "hard" and "soft" management
_____ Other (_____)
Comments _____

7) Scope of Concern

_____ Comprehensive management (the agency addresses, in some manner, all pertinent resource management issues)
_____ Selective management (the agency addresses a finite set of resource management issues, based on membership priorities)
_____ Other (_____)

8) Staffing Arrangements

_____ Management functions carried out by large, "in-house" staff
_____ small "in-house"staff; member jurisdictions allocate personnel for carrying out management functions
_____ Other (_____)
Comments _____

9) Level of Autonomy

_____ Total accountability to membership; carries out only those initiatives assigned to it
_____ Total autonomy; interprets and carries out mandate independent of the views of affected political jurisdictions
_____ Some autonomy in developing programs, but accountable to membership in developing and implementing planning recommendations, advocacy efforts, etc.
_____ Other (_____)
Comments _____

10) Management Functions - Indicate the relative importance of these various functions to your "ideal" regional institution.

	Very Important	Important	Marginal	Not Important	Un-desirable
Data Collection Analysis	1	2	3	4	5
Research/Issue Analysis	1	2	3	4	5
Advisory Services	1	2	3	4	5
Regulation	1	2	3	4	5
Enforcement	1	2	3	4	5
Arbitration/Conflict Resolution	1	2	3	4	5
Basin Planning	1	2	3	4	5
Monitoring/Surveillance	1	2	3	4	5
Coordination	1	2	3	4	5
Public Participation/Education	1	2	3	4	5
Advocacy	1	2	3	4	5
Policy Development	1	2	3	4	5
Impact Assessment	1	2	3	4	5

11) Please provide below any additional characteristics you would like the "ideal" regional Great Lakes management institution to have. Add extra sheets, if necessary.

_____

_____

_____

_____

Questions 12-14 assume you have the opportunity to design one or more regional institutions to replace existing ones.

12) Should regional management functions be centralized in a single institution or allocated among several institutions?

____ centralized (one agency) ____ decentralized (multiple agencies)

13) Resource Focus (Indicate the relative importance of the following as the focus of your "ideal" regional institution. Add others, as appropriate.)

Resource Focus	Very Important	Important	Marginal	Not Important	Un-desirable
Air Quality	1	2	3	4	5
Coastal Zone	1	2	3	4	5
Drainage	1	2	3	4	5
Fish and Wildlife	1	2	3	4	5
Floodplains	1	2	3	4	5
Forests/Vegetation	1	2	3	4	5
Geology	1	2	3	4	5
Levels and Flows	1	2	3	4	5
Soils	1	2	3	4	5
Water Quality	1	2	3	4	5
Water Quantity	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5

14) If regional management functions are to be allocated among several institutions, which of the following is the preferred approach?

_____ management functions assigned by resource (e.g., one agency is responsible for fisheries, another for water quality, etc.)
_____ management functions assigned by level of authority (e.g., one agency is responsible for regulation/enforcement, another for research/coordination, etc.)
_____ other (_____)

D. MEANS TO IMPLEMENT CHANGE

1) All political constraints aside (i.e., under ideal circumstances) how could you revise present institutional arrangements to better manage the Great Lakes?

_____ no changes needed
_____ incremental refinements to existing agencies
_____ consolidation and/or major revision of existing agencies
_____ create new agency(ies), leave current ones intact
_____ create new agency(ies) to replace existing ones
_____ other (_____)

2) Given the political realities of regional Great Lakes management, which of the above approaches is the most likely to happen in the foreseeable future?

_____ no change possible
_____ Incremental refinements to existing agencies
_____ Consolidation and/or major revision of existing agencies
_____ Create new agency(ies), leave others intact
_____ Create new agency(ies) to replace existing ones
_____ Other (_____)

3) In your opinion, what are the greatest obstacles to implementing needed revisions to present institutional arrangements?

Obstacles to Change	very important	important	marginal	limited importance	not important
Lack of political will	1	2	3	4	5
Resistance by existing regional institutions	1	2	3	4	5
Funding/resource constraints	1	2	3	4	5
Uncertainty over institutional needs	1	2	3	4	5
Resistance by political jurisdictions unwilling to sacrifice autonomy	1	2	3	4	5
Other (_____)	1	2	3	4	5

5) Based on your conception of the "ideal" Great Lakes management institution and the performance of existing institutions, please identify specific structural or operational changes you would suggest for the following. This could include some form of restructuring, procedural changes, consolidation or abolishment, among others. Please be as specific as possible.

a) International Joint Commission: _____

b) Great Lakes Commission: _____

c) Great Lakes Fishery Commission: _____

d) Council of Great Lakes Governors: _____

E. MISCELLANEOUS QUESTIONS

1) Please identify any agency or organization (past or present, in or out of the Basin) that may possess structural or operational characteristics with potential applicability to the Great Lakes management effort.

Name	Desirable Characteristic

2) In your opinion, what are the major Great Lakes management problems and needs that will require a regional approach over the next several years?

_____

3) Please provide any additional comments/observations regarding the present institutional arrangements for Great Lakes management and the alternatives available for strengthening them.

_____

Thank you for your cooperation in completing this questionnaire. Your efforts are sincerely appreciated.

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