Volume I

Sharing the Challenge:

A Guide for Community-Based Environmental Planning

CANADA'S GREEN PLAN
LE PLAN VERT DU CANADA

Canada

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Organization

VOLUME I

Preface

In April 1991, the Government of Canada launched the **Green Plan—**a program of strategies aimed at making sustainable development a reality in Canada. The strategies focused primarily on enhancing and maintaining the ecological processes upon which all life depends, and reflected the growing understanding that economies the world over depend on a healthy environment.

One of the **Green Plan** initiatives was the Atlantic Hot Spots program, which has since been renamed the Atlantic Coastal Action Program (ACAP). ACAP was designed as a demonstration project to show the effectiveness of an approach to solving environmental problems which involves having affected communities in a large part responsible for generating solutions.

The $10 million over six years committed to ACAP by the Federal government will be used to encourage and assist thirteen communities situated on harbours and estuaries in the Atlantic Region to design, plan, and implement innovative solutions to environmental problems within their coastal waters. Included for each site will be the production of a comprehensive environmental management plan and continuing activities designed to enhance and maintain environmental quality. Improving environmental quality in the ACAP communities will help to sustain their long-term economic viability since most local economies are linked either directly or indirectly to a healthy environment. To date, enthusiasm for the program has been high, and there has been no shortage of community participation.

The approach used in ACAP differs from that traditionally used to deliver government programs, and moves one step beyond the prevailing techniques for public consultation and involvement. Community committees of 'stakeholders' (representatives of all affected groups in environmental decisions, including industry, government and the general public) have been formed to develop a consensus on a plan for the environmental future of their communities. Having all the stakeholders (or interests) at the table at the beginning of any decision-making process, and working by consensus, leads to a greater commitment by all the parties to implementing those decisions and ultimately leads to better solutions.

ACAP CORNERSTONES

The Atlantic Coastal Action Program developed both in response to a growing demand from the public for early involvement in the environmen-

tal decision-making process, and to the increasing concern over environmental quality in Atlantic coastal waters. Three main principles of ACAP focus on achieving these ends.

First is the commitment to involve **all stakeholders** who have an interest in the environment of the coastal zone. This interest may be an industrial or business interest, a government interest, or an interest based on residency or environmental concern. In other words, anyone who is willing to support the program through volunteer time and/or in-kind resources is eligible to become part of the community stakeholder committee set up under ACAP.

The second cornerstone is a commitment to **partnerships—**encouraging stakeholders within the committee not only to share in the planning but to share responsibility for the outcome. Partnership in the stakeholder committee has two key functions: stakeholders having traditionally opposed positions (i.e. industry versus environmental organizations) have a neutral forum in which to work on common problems; and, secondly, all those responsible for implementing the solutions are together in one forum. Having all interests at the table allows pooling of resources and expertise, and often forges non-traditional working partnerships within the group.

The third cornerstone to the ACAP process is the commitment of the committees to work wherever possible by **consensus**. Working by consensus simply means that there is no vote and a solution must be reached that is agreeable to all parties. Every stakeholder has the opportunity to put forward ideas and suggestions which are openly discussed; if there is no dissent, consensus has been reached.

Consensus decisions are most often the easiest to implement because all interests have been accommodated in the final outcome. Allowing the committees to reach decisions by consensus encourages open debate and sharing of information, often dispels myths, and builds understanding and respect for other interests. Consensus will not always be achieved but ACAP requires that it be considered as the first option for making decisions within the committee.

ACAP COMMITTEE ACTIVITIES

ACAP is structured to encourage a three-pronged approach which allows several goals to be met simultaneously. While the main goal of the program is to produce a comprehensive environmental management plan, concrete activities (such as clean-ups), demonstration projects, and ongoing educational and awareness-building activities are also encouraged.

1. Comprehensive Environmental Management Plan

Developing a comprehensive environmental management plan encourages the committee to fully understand the environmental considerations and rank issues of most concern for action. It promotes setting goals and objectives, gathering baseline information, and concerted planning in defining solutions and establishing implementation schedules. The ACAP organizing team from Environment Canada has suggested a series of steps to be followed to simplify the development of such a plan, and to ensure that all actions, both during the program and for the future, are focused on achieving the goals and objectives reached by the committee.

Step 1: Vision Building and Setting Goals and Use Objectives—An important first step in developing a plan is to have a goal or end point. For a single issue this is a fairly simple task, but establishing goals when dealing with the complexities of a coastal ecosystem is a different matter. An important step is the exercise of having the community develop a view or vision of the ecosystem—a vision in which all parties can see themselves or future generations, living happily within and at harmony with the harbour or estuary ecosystem. Since stakeholders on the ACAP committees represent a cross section of the community, they are well-placed to develop a vision which can be ratified or accepted by the community at large.

Having a vision permits setting goals and environmental use objectives. These may range from simple targets such as fishable and swimmable waters, to emphasis on environmentally-friendly industries, aesthetic improvements, tailoring waterfronts to encourage use by the public, etc. Use objectives help to determine the level of environmental quality needed to achieve this vision.

Step 2: Environmental Quality Assessment—Once objectives for use are set, an assessment must be carried out to objectively evaluate the conditions in the harbour or estuary. In some cases the level of environmental quality required to support a desired use may already exist; in other instances it may not. In still others, there may be insufficient data to determine quality either one way or the other.

Where sufficient data exists, statements can be made on the existing quality of the waters, sediments, or biota with respect to use objectives, and to provide direction in selecting remedial measures to improve environmental quality. Where data gaps exist, steps should be taken to fill them and provide as full a picture as possible on which to base decisions.

Step 3: Choosing Remedial, Conservation and Prevention Measures—The next formal step is the selection of measures to improve and maintain environmental quality. For instance, some stakeholder committees may decide that dealing with contaminated sediments is a priority. Selecting the appropriate action then becomes the focus of the committee. In the case of sediments, many technological and other options exist for dredging and disposal of contaminated material. Leaving them alone and allowing natural processes to bury or contain them is also sometimes a viable option. All these issues need to be examined based on the information available, and on the values expressed by the various interests on the committee.

Another typical issue is the presence or absence of comprehensive land use planning in and around the harbour. This might be expressed in terms of the aesthetics (appearance) of the waterfront, level of public access to the water, lack of amenities for waterfront activities, etc.

Yet a further type of issue concerns industrial processes. Some ACAP committees might consider the need for promoting pollution prevention for harbour- or estuary-based industries as a means of ensuring that any clean-up activity is not negated by ongoing pollution. The same could be said for municipal discharges such as sewage.

It should be apparent from the above discussion that cleaning up the harbour or estuary requires more than remedial activities and should include conservation, land-use planning, and pollution prevention measures. The broad range of activities needed reinforces the need for all stakeholders to be at the table at the outset of the processs, since every stakeholder will be affected in some way by the outcome.

Step 4: Writing the Plan—The decisions of the ACAP committee should be written down, concrete recommendations made to the parties responsible for carrying them out, responsible parties and their role should be clearly identified, and an estimated cost for carrying out the action and timetable for implementation should be included.

Each committee will be encouraged to write an interim report after each step. This will make the final plan easier to write or manage, and will ensure that no vital information is lost in the course of the program. Each of the interim documents may then incorporated into the final comprehensive environmental management plan.

2. Actions and Demonstration Projects

ACAP will actively encourage each committee to engage in projects which will in the long run assist the community to reach its vision or goal. It is expected that these activities will include a broad range of activities from beach sweeps and citizen-based water quality monitoring to water conservation programs to small scale demonstrations of innovative technology. Each committee will be encouraged to be 'opportunistic' in recognizing where monies from funding programs could be used to promote the improvement of environmental quality. Action-based projects have the advantage that they involve stakeholders who are more motivated by tangible, 'hands-on' activities than by efforts such as planning which take place largely 'on paper'.

3. Education and Awareness Building

Many environmental issues exist because of a lack of knowledge and awareness. ACAP therefore promotes the development of an active and ongoing educational and public awareness strategy for each of the committees. The breadth and depth of these strategies will depend on the nature of the issues and the characteristics of the local population. In general, these are expected to include programs for schools, youth, other community organizations and the public at large.

The strategy can take many forms: formal talks and lectures, dissemination of existing information, circulation of results of activities, announcements of future activities, surveys, newsletters, media articles, public involvement activities etc.

A key principle of ACAP is that by providing educational opportunities and building awareness, the stakeholders will develop a commitment to environmental stewardship and responsibility within their community.

ROLES AND RESPONSIBILITIES

The success of ACAP and other programs like it depends largely upon the commitment of all stakeholders to work together to find common solutions. In order to be successful, the roles and responsibilities of the stakeholders should be defined clearly at the outset.

In general, in a consensus process, all stakeholders have an equal voice at the table. Every interest has a right to be heard—and a responsibility to listen and consider other interests. The following, therefore, is a guide to the stakeholders which can be expected to be involved in the process, and the responsibilities each might have.

Environment Canada

Environment Canada, as program proponent, fills three roles as follows:

1. It designates an individual to sit as a stakeholder on every committee. The designated individual has voting privileges and may also sit as a board member in an advisory capacity. The Environment Canada representative provides input on several levels: to serve the interests of Environment Canada as a stakeholder; to provide advice and expertise where appropriate; and to provide the access point to the ACAP administrative group, and to other federal programs where required.

2. Environment Canada administers the program through the Coastal Ecosystems Division, Water Resources Directorate, Conservation and Protection, Atlantic Region, in Dartmouth, Nova Scotia. There are five full-time staff assigned to the administration of the program to receive, review, and process funding applications and invoices, to ensure clear and open communication between the committees and senior management in Conservation and Protection, and, generally, to provide support. Staff members also represent specific areas of expertise which may be of use to ACAP groups, ranging from experience in 'vision building' and planning in multistakeholder processes to engineering, soil conservation, and environmental quality analysis.

3. ACAP is based on a team approach, and delivery of the program by Environment Canada also follows this philosophy. Additional Environment Canada personnel can also provide input and expertise to the program and may be asked to participate on individual committees where appropriate.

Environment Canada has committed up to $50,000 per year for five years to each of the ACAP committees for hiring a coordinator and for maintaining an office. Other monies will be available as seed money for projects aimed at completing the comprehensive environmental management plan. In addition, other support is provided through specific expertise, workshops, written materials etc.

Other Federal departments

The environmental concerns of each ACAP committee involve various Federal government departments, and consequently ACAP will seek to involve Federal departments where necessary. This will include promoting the application of other Green Plan initiatives in the ACAP project areas, and inviting other departments to work with ACAP committees in the delivery of programs. The federal contribution to the program is expected to be enhanced through inter-departmental cooperation.

Provincial governments

Provincial governments are stakeholders in the ACAP process and each ACAP committee has a provincial respresentative. ACAP actively promotes and encourages the involvement of Provincial departments. Provincial governments, as with all stakeholders, will be encouraged to support the outcome of the program, and also to provide ongoing support such as access to funding and expertise.

Municipal governments

Municipal governments play a significant role in the lives and futures of all members of ACAP communities, and indeed are one of the key players on the stakeholder committees. Efforts will be made to ensure that municipal governments participate on ACAP committees, provide other in-kind support, and accept the recommended directions of the program.

Business

Business must co-exist with environment, since a healthy environment is necessary to sustain the economy needed for a sustainable future for the ACAP communities. Key individuals from industrial and commercial sectors will be present as stakeholders on the ACAP committees. These stakeholders not only bring expertise and information, but often are in a position to provide in-kind support to the committees. Further, having business representatives at the table and involved in the decision-making process, enhances the likelihood of implementing decisions affecting their operations.

Non-Government organizations and interest groups

This is a large and varied group, including a range of stakeholders from environmental organizations to youth groups to residents' associations. They bring enthusiasm and volunteer time, local knowledge which surpasses that of all other stakeholders, and a dedication of purpose to get the job done. These participants have the same responsibility to respect decisions of the stakeholder committee and to work towards their successful implementation.

PURPOSE AND STRUCTURE OF THIS MANUAL

The ACAP approach is substantially different from the usual methods of delivering government programs. Consequently all participants have had to learn the new approaches. This takes time and presents a number of challenges. Environment Canada staff have been challenged on their assumptions over program components; stakeholders have been chal-

lenged to adapt to a different type of public involvement forum in which debate and the resolving of issues is discussed openly and without confrontation; and all participants have been challenged to work together in a spirit of partnership, trust and cooperation.

To meet growing demands for information and to assist in the learning process, ACAP has provided workshops (internal and external to Environment Canada), presentations and written materials (including this manual, *Sharing the Challenge*) to the key participants. *Sharing the Challenge* was developed in response to needs identified early in the ACAP process, for a document to clearly outline to stakeholders the concepts and steps inherent in the ACAP approach, and to provide an overview of the multistakeholder process to other organizations or groups which might benefit from the ACAP experience.

Throughout the development of *Sharing the Challenge*, ACAP has matured, and continues to evolve and grow. Thus this manual is a snapshot of the collective wisdom and experience of all those involved. It may be updated, however, as ACAP committees go about their tasks and gain new insights and experiences. We hope it will serve as a living document—dynamic, responsive, and in a continuous state of renewal.

Sharing the Challenge is intended as a guide and a tool towards the development of a comprehensive environmental management plan. It thus contains discrete sections or chapters based on the steps outlined above. The structure of the manual is as follows:

Volume I – Part 1 – The Multistakeholder Process – This section describes in detail what a multistakeholder process, and forum, means. How the committees are formed, the steps required for incorporation, expected rules of conduct etc. are included. The section is based on experiences from similar programs across the country, and includes experiences from ACAP committees which are already established.

Part 2A – Building A Vision: The Community Decides – The importance of building a vision and setting use objectives are described in this section. This is often the stakeholders' first experience in decision-making by consensus and the process helps participants see their commonality of interest. Several methods of vision building and setting use objectives are outlined.

Part 2B – A Primer on Environmental Quality Assessment – This section outlines how an environmental quality assessment should proceed, and includes information on how and where to access information, how to handle the information, and how to draw conclusions from it.

Part 2C – Developing an Environmental Quality Assessment Using Lotus Agenda – This section provides an example of how computer programs can assist in data management and help in the decision-making process.

Part 3 – Tough Choices: Selecting Your Solutions – How to choose solutions in a fair and logical manner is the subject of this section. It begins with suggestions on how to create yardsticks against which to evaluate the possible solutions, and how to find solution ideas. Possible methods for evaluating the solutions and setting priorities among them are presented. The suggestions are based on planning experience elsewhere, including community based efforts.

Part 4 – A Lasting Record: Putting Your Plan in Print – The importance of an understandable final written plan is the theme of this section. It addresses topics such as how to write, the parts of the plan, organizing the writing of the plan, and printing and production. A key component of the section is a sample table of contents for a Comprehensive Environmental Management Plan (CEMP).

Volume II – Community Environmental Profile: A Workbook for Use in ACAP Project Areas – As an optional, but useful, first step in determining environmental quality in a given area, a workbook for preparing a community environmental profile is provided. This workbook consists of a series of questions about various components of the community and local environment from land use and demographics to industrial processes. In filling out this workbook, the committee members not only develop a perspective of their community in general, but identify both published and anecdotal information. Filling out the workbook often helps focus on real rather than perceived problems, and those participating become much more comfortable in their knowledge of certain environmental aspects of their community.

All sections of the manual are subject to update and change where new substantive information or experience warrant it. Other incidental materials to assist the committees will be provided as the need arises.

SUMMARY

The Atlantic Coastal Action Program offers an exciting and challenging opportunity for harbour and estuary communities in Atlantic Canada to determine their environmental future through a combination of learning, action, and planning. All stakeholders are invited to participate in this process, which is based on consensus, partnership and trust.

While the program itself is limited to the life of Canada's *Green Plan*, it is hoped that each committee will find reason to look beyond that short term horizon and continue working together to ensure that the vision will be realised.

Atlantic Coastal Action Program
Environment Canada
Conservation & Protection—Atlantic Region

Acknowledgements

A document of this nature requires the collective wisdom and input of many people, and this will acknowledge all those who contributed in their own way.

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Part 1

The Multistakeholder Approach

Table of Contents

1.0 Introducing the Guide

The Atlantic Coastal Action Program (ACAP) is a federally funded Green Plan initiative to enhance and maintain environmental integrity in 13 harbours and estuaries. This manual has been developed in response to the need to share the expertise gained in ACAP committees from participating areas as the program evolves.

The ACAP process involves an integrated approach to developing environmental plans. It is designed to include those people who will be the most affected by future actions to restore environmental quality and/or to implement conservation and pollution prevention activities in the ACAP coastal area and watershed.

Those most affected by the ACAP process could be farmers, fishermen, businesses, industries, government agencies, tourist associations, wildlife and environment organizations. In addition, they could be residents of a neighbourhood which is affected by planned remedial action or conservation measures. These people are known as **stakeholders**:—they have the most to gain and may have the most to lose from the outcome of the ACAP process.

Currently, multistakeholder committees are being formed in the 13 ACAP communities. These committees are charged with the responsibility of developing their community's Comprehensive Environmental Management Plan (CEMP). Common characteristics are being identified and developed in the ACAP process which are useful to each project area community. These common characteristics are described here in a user-friendly manual for application by each project area coordinator and committee. The manual, entitled ***Sharing the Challenge: A Guide for Community-Based Environmental Planning***, is made up of a number of sections.

The first section – ***The Multistakeholder Approach***, is designed for communities which are at the beginning of the ACAP process. It has been developed from the experience gained from ACAP communities and multistakeholder processes in other parts of Canada. This Guide will share those experiences and establish some baseline protocols and checklists to assist committees over the entire planning period. The program is intended to be flexible and adaptable to the unique situations found in each of the 13 project areas.

The guide describes the multistakeholder approach to developing Comprehensive Environmental Management Plans (CEMPs). This planning

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approach differs from the way plans and programs have traditionally been developed. In the past, most planning has been done by one key party - the proponent - who is usually either a government agency or a private business. When environmental planning is conducted in isolation, projects are likely to take much longer to develop. This is because all the varying interests and opinions are not usually taken into account and the absence of dialogue and resolution of issues frequently results in critical viewpoints being identified at the final stages of the project, creating delays. These delays can result in late implementation, further environmental degradation and costly budget overruns.

By changing the planning approach to a participatory, joint planning method known as "the multistakeholder approach," it is expected that publicly acceptable, community-based Comprehensive Environmental Management Plans will be the result.

1.1 PURPOSE OF THE GUIDE

While there is no set prescription or recipe for the multistakeholder planning process, there are some basic principles and things to know which will help ACAP coordinators set up and guide the planning process. When numerous personalities and interests are involved in a lengthy planning process, a clear understanding of:

- what is to be achieved;
- how it will be achieved; and
- when it will be achieved;

is necessary to retain clarity of thought and avoid confusion and log jams in the planning process.

This guide is presented in two parts: the first part (Sections 1 & 2) acts as a "Primer" on the basic process for developing your Comprehensive Environmental Management Plan. This will help you and your committee members understand the milestone points in each stage of planning and underscores the importance of yearly work plans for reporting and funding purposes. The second part is more of an "Action Guide" (Sections 3 & 4), to help you establish a multistakeholder process at the community level.

Since each community and ACAP project area has unique characteristics, this Guide is simply to be used as a planning aid by ACAP project area coordinators and local committees.

Who is the guide for?

It is intended to provide assistance and guidance to Stakeholder Committees, local coordinators, individual stakeholders, the ACAP team and Environment Canada participants.

1.2 PROFILE OF THE ATLANTIC COASTAL ACTION PROGRAM

For many years, Atlantic Canadians have identified the need for action to clean up the polluted harbours and coastal areas within eastern Canada. Many of these despoiled areas throughout ACAP watershed and coastal areas can no longer support desirable uses such as recreation, commercial fishing, and industrial uses to the extent that would be liked. There are a number of causes for the degradation of these areas, but we have now learned about the impact of activities, such as the discharge of industrial effluents and the disposal of untreated sewage, on human and environmental health. We realize that something must be done to restore the environmental quality of these areas. Implementation of comprehensive conservation and pollution prevention measures will better serve the needs of our community today and in the future.

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In March, 1991, the Federal Government announced that $10 million of federal Green Plan funding would be available to develop remedial action plans and to enhance and maintain environmental integrity, for "at least 11" Atlantic harbours and coastal areas. It is expected that this funding will be supplemented by funds from the many other partners and participants in the program. Environment Canada subsequently established a multi-disciplinary ACAP "Team" at Atlantic Region's headquarters in Dartmouth, Nova Scotia. This Team will oversee the implementation of the ACAP community programs.

13 ACAP project areas have now been targeted. Each targeted community is charged with the responsibility to develop a Comprehensive Environmental Management Plan. These are:

New Brunswick
Saint John Harbour
Miramichi estuary
St. Croix River/Passamaquoddy Bay
Madawaska River
Letang Inlet

Nova Scotia
Pictou Harbour
Sydney Harbour
Annapolis River
Lunenburg-Mahone Bay

Prince Edward Island
Bedeque Bay
Cardigan Bay

Newfoundland
Humber Arm
St. John's Harbour

As the process evolves, more areas may be added to the list and some will be "delisted" as actions are implemented which restore and conserve water quality in these project areas.

ACAP is a facilitation process

The ACAP process facilitates the preparation of community-based action plans for implementation by key players. These actions will be designed to restore and conserve the water quality in Atlantic harbours and coastal areas.

It is intended by Environment Canada that ACAP communities will become the primary actors in the planning process. This will be assured by the formation of local committees which represent a broad spectrum of stakeholders within each community. These committees are generally charged with the responsibility of:

- developing a community-based "Vision" for the desired future state of the project area and identifying use objectives;
- defining environmental impairments and problems with the project area;

ACAP HIGHLIGHTS

The Program:
Atlantic Coastal Action Program, a ten million dollar component of Canada's Green Plan.

The Process:
Legally constituted, community-based, multistakeholder organizations, seed-funded and facilitated by Environment Canada, will develop Action Plans for restoration/conservation of coastal ecosystems in project areas.

The Planning Period:
Between 1991 and 1997.

The Product:
Comprehensive Environmental Management Plans with goals, objectives, financial plans and timetables for implementation.

The Result:
Delisting guidelines will enable communities to determine when their site is restored.

- choosing remedial actions
- coordinating and demonstration of small scale, innovative clean up and conservation solutions;
- preparing a Comprehensive Environmental Management Plan with a timetable for implementation and a schedule of costs.

At the end of the process, a plan will be developed which is environmentally sustainable, economically feasible and publicly acceptable and constitutes a long term planning strategy for the community.

In other words, by including those who are directly affected by changes which will improve the environment, a plan can be prepared which can be realistically implemented.

ACAP enhances other programs:

ACAP is complementary to the ongoing local, regional and provincial initiatives underway in the Atlantic Provinces. In no way does it replace those initiatives, it simply provides a baseline and enhances existing initia-

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tives by defining and recognizing ecosystem boundaries. To ensure that there is no duplication, overlap, or unnecessary expenditure of human and financial resources, representatives from government agencies and private sector projects will be on the multistakeholder committee to ensure that the existing plans and programs currently underway are integrated into the CEMPs and, if possible, vice versa.

1.3 SUMMARY

ACAP is a program sponsored by the Federal Government under the Green Plan, in response to the identified need to restore degraded coastal areas and enhance environmental integrity in Atlantic Canada. A total of 13 harbours and estuaries have been identified as ACAP project areas. Legally constituted, multistakeholder organizations are being established in each project area to develop Comprehensive Environmental Management Plans.

This Guide is designed for those coordinators, committees and stakeholders who are involved in developing a CEMP. It is not intended as a rigorous set of rules, rather it simply amalgamates experience from multistakeholder processes in other parts of Canada, identifying common elements in the planning process for useful guidance. This guide should avoid “reinventing the wheel”, by sharing the combined experience gained in other parts of Canada.

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2.0 Overview of the Process

This section describes the ACAP planning process. While each community will develop their CEMP a little differently, there are key elements in environmental planning that can be used to guide you through what may seem to be a complex maze of uncertainty. When the five planning stages presented in this section are utilized in the CEMP's development, committees will find that they have:

- a clearly defined path to follow;
- identifiable products and achievements on a regular basis; and
- an easy guide to follow to help the committees achieve results.

At the end of each stage, the achievements and overall planning process can be revisited to make necessary adjustments. However, it is expected that the overall objectives of the process will remain constant.

2.1 ACAP: INTRODUCING A GENERIC PLANNING GUIDE

To better understand the Committee's responsibilities, a generic planning guide is presented which shows the stages of a typical CEMP planning process.

Essentially it comprises a preliminary organizational activity and five stages, depicted in Figure 1 (next page).

Getting Ready: essential first steps

Before embarking on the CEMP's development, the Committee must become legally incorporated, members recruited and a Letter of Understanding signed between the Committee and Environment Canada. An office should then be established and a coordinator hired. Some training and orientation will be provided by the ACAP team of specialists to familiarize the fledgling organization with the process if required.

Some tools and planning aids are available, including:

- this guide;
- public meetings, discussion fora;

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FIGURE 1

ACAP: TOWARDS THE COMPREHENSIVE ENVIRONMENTAL MANAGEMENT PLAN

Generic Planning Process

Preliminary Organizational Activity and Training	**Stage 1**	**Stage 2**	**Stage 3**	**Stage 4**	**Stage 5**
Establish formal committee structure	Developing the CEMP framework	Developing the vision and setting goals and objectives	Describing the current environmental conditions	Identifying preferred approach	Comprehensive Environmental Management Plan
Sign LOU EC/ Committee	Prepare: - Organizational plan for CEMP - Prepare work plans years 1-5	- Vision workshops - Goals - Objectives - Public consultation - Prepare Section 1, CEMP for annual re-evaluation	- Conduct Env-Quality Assessment - Prepare Section 2 report **A** Developing the community's environmental profile **B** EQAs-The detailed scientific assessment	- Develop evaluation selection method - Inventory technical and regulatory options - Evaluate options utilizing ecosystem elements e.g. economic, social and natural environment - Select preferred approach - Prepare draft report - Public consultation - Prepare Section 3 report	- Action Plans - Timetables - Funding agencies - monitoring and evaluation - "Delisting criteria" - Prepare final CEMP report

- typical Letter Of Understanding;
- sample incorporation documents; and
- sample Terms of Reference for the local coordinator.

A typical timeframe required for this preliminary organizational step is between 3-6 months. A step-by-step guide including a check list, is included in section 4.

Stage 1: Developing the CEMP Framework

At the outset of the planning process, it is useful to prepare a work plan for developing your Comprehensive Environmental Management Plan, detailing work items and budget requirements. Simply put, this framework is your organizational and development guide to keep you on track for the entire planning period.

The first year's activities however, need to be worked out in much more detail than the subsequent years. This document will provide clear milestone points in the CEMP's first year and will aid you in progress reporting to funding agencies, partners and the Committee as a whole.

Planning aids which are available for use:

- this guide;
- training sessions; and
- planning workshops.

Timeframe

This stage which can typically take between 2-3 months, will result in a written set of workplans and determine how achievements will be tracked.

Stage 2: Presenting The Vision for Your ACAP Project Area

Determining how your community would like to see the watershed in the future is called "visioning". Visions can be developed in a number of ways - through group discussion and brainstorming, as well as graphically and pictorially. Your community may dream of the waterfront as a pristine, back-to-nature environmental reserve, as it might have been over a century ago. On the other hand, creating a variety of mixed coastal uses and activities may be some other community's view, with the condition

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that those activities are environment friendly and pollution free.

When the **Vision** is identified, use objectives can be established. **Use objectives** describe the conditions you wish to strive for over the short, medium and long-term to achieve the vision.

It is very important to identify and clearly describe the use objectives for your ACAP project area. These use objectives may be used to evaluate success and determine whether or not your project area should stay on the ACAP "list" as an area of concern. Because they are so important, they must be clearly defined so that after your plan is complete those who are monitoring progress will know exactly what you meant. An example of a confusing use objective is presented on the next page.

The purpose of this stage is to develop a document containing the Vision, and Use Objectives for the project area. When complete, it will form a section of your CEMP and should be revisited on an annual basis to ensure that the Vision and Use Objectives are still current. You should question them annually to determine whether they can realistically and feasibly be achieved, given the economic, social and environmental realities of the day, based on what you have learned over the year's activities.

For example, if a short-term use objective is to establish appropriate habitat restoration within two years in project area "x", and after developing that use objective you learn that the planning and funding process will take five years, the use objective could be moved to the mid-term timetable for implementation.

"One use objective for this harbour is that its' water quality will support an edible fishery"

The authors did not mean that extensive commercial fishing should take place, to fish the resource so that it could be eaten. What they actually meant was that edibility of fish is a guide to determining whether the water quality was acceptable. It was not meant to imply that the fish would or should be fished. However, when selecting desired use objectives, access for fishing and boats was built into the economic assessment, creating economic and social impacts that had previously been considered undesirable. Extensive revisiting of the use objective and lengthy discussions and debates took place over a period of six months to clarify the original meaning.

Available planning aids for this stage include:

- visioning workshop guidelines;
- public consultation to check the acceptability of the Vision; and
- technical support.

Timeframe

A typical timeframe for Visioning and the development of use objectives is 3-6 months.

Stage 3: Describing the Current Environmental Conditions in your ACAP Project Area

Before this stage can begin the boundaries of the ACAP project area must be defined. This topic can generate a lengthy discussion between stakeholders, but a "minimum boundary" must be established for work to proceed.

Key to the success of your plan's development is the accurate identification of current environmental conditions in and around your ACAP project area. While the problems must be identified in a scientifically-defensible way, community participation in this stage can be beneficial.

The purpose of this stage is to help your Committee answer the question "Does the Environmental Quality of this project area currently meet the use objectives established in Stage 2?"

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Developing the community's environmental profile [Stage 3A]

Environment Canada has developed a Users Guide to help communities identify environmental conditions in the study area. The Guide, called *Community Environmental Profile: A Workbook for Use in ACAP Project Areas*, (Volume II of this Manual) sets out a number of easy exercises to assist you in taking an inventory of local environmental conditions. The Workbook provides the context for identifying problems and priority research areas.

There will clearly be some environmental conditions that cannot be conclusively identified by following the steps in the Workbook until further scientific and/or technical studies have been conducted. Others will have been identified through existing and available data from government agencies and/or the private sector. And again, other environmental problems will be identified through the Workbook. Completion of the Workbook results in the identification of actual and probable problem areas and sets the stage for more formal environmental quality assessments.

At the end of this stage, a report should be prepared which describes the existing environmental conditions and identifies the priorities for further study through Environmental Quality Assessments (EQAs). This report becomes part of the CEMP, which should also be revisited annually as more data and information on the problems becomes available.

EQAs - The detailed scientific assessment [Stage 3B and beyond]

Once the community's environmental profile has been completed, detailed EQAs can be undertaken for high priority problem areas within the watershed. Traditionally, EQAs have been undertaken from a purely scientific perspective - environmental quality being assessed relative to quantitative objectives, as outlined in regulations or government guidelines such as the *Canadian Water Quality Guidelines* or the *Canadian Environmental Protection Act*.

Under the ACAP program, the EQA framework will combine scientific quantitative objectives with qualitative social objectives and values to make assessments of ecosystem health. An integrated, holistic approach to environmental quality assessment will be achieved - one that is scientifically rigorous where appropriate, yet socially and culturally responsive to the needs of the ACAP community.

Through their assessment of ecosystem health, the EQAs will identify, for each targeted area:

- the need and/or extent of remedial action necessary to restore ecosystem health;

- opportunities for conservation measures to enhance environmental integrity or to protect the area from further degradation; and

- educational opportunities for increasing environmental awareness and preventing further degradation, such as reducing toxic discharges while EQAs are being prepared.

Planning aids available:

- Community Environmental Profile: A Workbook

- Environmental Quality Assessment guidelines; and

- training sessions.

Timeframe

The timeframe for "Defining the Current Environmental Conditions" [Stage 3A] can vary between 2-4 months for an informal assessment. However, a more detailed formal Environmental Quality Assessment may take approximately 2 years to complete.[Stage 3B]

Stage 4: Identifying the Preferred Solutions

When your Committee has completed the environmental inventory, determined high priority areas for EQAs and begun the scientific and technical studies necessary to provide you with essential information on the extent of the environmental problems in your ACAP project area, you can begin to identify options for remedial action.

There may be a number of options or potential solutions for each of the environmental problems identified in Stage 3. The information gathered by the Community Environmental Profiles and the EQAs will assist the stakeholder committee in making informed decisions and choices with respect to remedial options and possible solutions. Some of the solutions may solve more than one problem at a time, while others will be specifically identified for only one issue. *The options selected by the stakeholder committee should balance restoration, or clean-up actions, with pollution prevention and conservation activities.*

The technical experts on your committee will be aware of "state of the art" remedial technologies; others on your committee may propose "soft"

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remedial actions and long-term conservation and protection options. An example of this is sediment control. Technical solutions may focus on dredging and on-site treatment of sediments. Other solutions may consist of stopping the source of sediments through grassing waterways or having a municipality pass by-laws which restrict the entry of sediments into waterways in the first place.

How to choose the preferred solutions

Choosing appropriate solutions or sets of solutions from a range of "soft" and "hard" options will require the establishment of objective evaluation and selection criteria. These criteria normally reflect ecosystem components, e.g. social, economic and natural environment standards. The selection criteria should also reflect community values as well as regulatory environmental standards. Blending these (sometimes) conflicting needs can be similar to walking on a tightrope, as many participants in the process will have differing views and needs.
For example, a naturalist organization may insist on "zero discharge" of all toxic contaminants from industrial effluent within five years. Your industry representative may suggest that the scientific evidence is not conclusive relating to the impact of the toxics on the ACAP project area. Therefore he or she may not be prepared to support the recommendation because of the potentially unnecessary expense involved in achieving "zero discharge".

Some of the options will have a greater economic impact than others, while other less expensive options may not contribute to significant environmental restoration. In order to be successful, this weighing and balancing process, to choose preferred solutions, relies on accurate information, and the ability of your stakeholder Committee to remain relatively impartial throughout the selection process. As well, you must be certain that the selected options will, to the best of your knowledge, achieve the Use objectives established in Stage 2.

During the completion of the Workbook in Stage 3A and the EQAs in Stage 3B, opportunities to implement innovative demonstration projects will likely be identified. Demonstration projects are useful tools for testing possible remedial actions, on a pilot scale, to determine the effectiveness of a particular initiative before it is fully implemented on a larger scale.

Consult with the public at large

When the preferred solutions have been identified, including potential remedial actions, pollution prevention and conservation activities, and/or demonstration projects, a draft report is prepared for review and acceptance by the entire stakeholder Committee. As well, the community-at-

large could be involved through public discussions, since many of the options will impact on local taxpayers, consumers, industries, businesses, and governments.

The final report becomes the third section of the CEMP.

Planning aids:

- Part 3: Tough Choices: Selecting your solutions;
- public meetings, stakeholder discussion groups and stakeholder constituent group internal review;
- comprehensive technical and scientific data - where required, these will be "translated" into user-friendly language everyone understands; and

Timeline

The timeframe for completing this stage can vary between one and three years. This stage is by far the most time consuming stage in the CEMP's development.

Stage 5: Completing the Plan

When the preferred solutions have been identified and agreed upon, they must be scheduled into an Action Plan. This is a critical last stage in the development of the CEMP, frequently controversial and difficult to complete.

While the actions may be agreed upon, timetables for implementing the actions can be difficult to determine. It can be expected that lengthy discussions may be held over:

- who is responsible to implement the action; and
- who will pay for the project.

When these two key issues have been resolved, funds will have to be found to proceed with the preferred solutions. Environmental impact assessments, planning and environmental approvals must be obtained for the construction of any substantial facilities.

Finally, a monitoring and evaluation process should also be developed as part of the Plan, to ensure that remedial actions are meeting the goals and objectives of the Plan. "Delisting" guidelines and criteria can also be

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identified to ensure that the ACAP project area is removed from the initial list when the objectives are achieved.

Planning aids:

- Part 4: A Lasting Record: Putting your plan in print

Timeline:

The timeframe for completing this final stage can vary between 1 and 2 years, depending upon the complexity of the issues.

2.2 ELEMENTS OF A GOOD PLANNING PROCESS

In developing each Comprehensive Environmental Management Plan, the community coordinator and the multistakeholder organization will face ongoing challenges and obstacles. While these obstacles and challenges may seem difficult to overcome, the sense of achievement and reward is well worth the effort when they are finally resolved.

Experience in other jurisdictions with the multistakeholder planning process is limited, while experience in single-proponent, community consultations is significant. Based on that experience, the following elements have been identified as basic planning principles which, if followed at the outset of the planning process, can reduce the number of challenges and obstacles to be faced and overcome along the way.

☞ CONSULTING ABOUT CONSULTATION

- Very early in the planning process meet with key participants to discuss ACAP and the multistakeholder process.
- As precisely as possible define the ACAP program, the steps in the development of the planning process and public participation opportunities.
- Clearly define the expectations - what can ACAP be expected to achieve.
- Explain the roles of stakeholders and Environment Canada in the ACAP multistakeholder process.

☞ WHO ARE THE DECISION-MAKERS?

The multistakeholder committee will decide the preferred options to be

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implemented. Early in the planning process, the President or Chair of the ACAP Project Area Committee must communicate that the multi-stakeholder process functions preferably by consensus, but in any event, by vote of the majority.

This is a *very different approach* than we have become used to, and one which relies on trust and good faith.

☞ WILLINGNESS TO INCORPORATE INPUT

The multistakeholder planning process must ensure that all input obtained either from the general public or by stakeholders is addressed, and where possible incorporated into the planning process, at the relevant stage.

☞ THE NEED FOR GENERAL PUBLIC CONSULTATION

While a multistakeholder process ensures that each identified interest is represented at the planning table, other interests must not be overlooked. It cannot be assumed that the "neighbourhood" public, and "new" interests which develop as a result of identified ACAP projects, necessarily have a spokesperson at the ACAP table. Other people can and will feel excluded from the planning process if their special needs are overlooked. As early as possible in the multistakeholder process efforts must be made to ensure broad involvement by all interested and affected parties within the ACAP project area.

☞ ONGOING PUBLIC EDUCATION AND AWARENESS

The involvement of the entire community is an important component throughout the ACAP process. Public education and awareness initiatives are necessary during the development, planning and implementation of the CEMP to ensure that the vision, goals and objectives of the community are achieved for the ACAP project area. Informing, educating and involving the general public, and all interested and affected parties, about the ACAP program is essential. If this is done, every step of the way, public issues, concerns and goals related to remedial, conservation and environmental protection measures will be identified, and can be incorporated into the process. Ongoing public education and awareness initiatives must be implemented throughout the process to maintain a high profile and interest in the restoration and conservation of the ACAP community areas.

☞ HANDS-ON CITIZEN INVOLVEMENT

In any program which involves a lengthy planning process, citizen action can stimulate interest in the community. Stakeholders and the coordinator

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There are a variety of communications methods to increase public awareness, educate members of the community about the ACAP program and to encourage broad public involvement in the ACAP process, including:

- newspaper and radio advertisements;
- articles and editorials in local newspapers and newsletters;
- project-specific newsletters;
- public meetings;
- planning workshops;
- cable television programs;
- community debates;
- clubs and school projects; and
- beach sweeps, tree plantings.

may wish to form a community awareness sub-committee to organize clean-ups and tree plantings. Harbour day festivals are also useful to draw attention to the plan's progress. Active grass roots involvement in community beautification projects is an important element in the development of the CEMP.

☞ A BALANCED VIEWPOINT

In forming the multistakeholder Committee, a good balance of representation should be ensured from all sectors. Citizen and environmental groups should not be overwhelmed by government or business interests, or *vice-versa*.

☞ ACCESS TO INFORMATION AND RESOURCES

Timely receipt of reports, agendas, and expert advice is a crucial element in the success of this planning process. Stakeholders cannot effectively participate if they don't have adequate information, in time.
The stakeholder committees may wish to retain their own staff or commission studies from independent experts on specific issues. Every effort should be made, through Committee discussion and partnership building, to permit this.

☞ FLEXIBILITY

As the planning process evolves, new ideas and possible solutions may be

identified which have either not been considered or have been discarded. In addition, new stakeholders will undoubtedly bring fresh challenges and solutions.

2.3 SUMMARY

A clearly defined process, at the outset will help both the participants and the project area coordinator achieve results. Your plan will be easier to complete, if a CEMP framework and annual work plans are prepared at the beginning of the process and then adjusted annually. However, it must be remembered that the development of the Comprehensive Environmental Management Plan will not always go smoothly - the ease and speed with which a Plan can be developed depends upon the make -up, good faith, and good judgement of the Committee and the reliability of the data.

Even though you may have created the best documents, which clearly outline your CEMP framework and your work plans, there are social and human elements to the process which are relatively intangible, but which must be incorporated into your process. By including the community, creating an open and receptive planning process, listening and responding to ideas, your Committee will be better able to incorporate the needs of your community into the process.

3.0 Organizing Your Committee

Here, the reader is introduced to the concept of Joint Planning through ACAP's multistakeholder process and guidance is provided in establishing your Committee. We describe what a stakeholder is, how to identify stakeholders in your community, recruiting them and defining roles, responsibilities and commitments. Once this is done, the Committee can become legally incorporated and enter into a Letter of Understanding for basic funding arrangements from Environment Canada and other sponsoring organizations. We have included eight sub-sections for easy reference:

- the concept of Joint Planning;
- what is a stakeholder;
- how to identify stakeholders;
- recruiting;
- defining roles, responsibilities and commitments;
- incorporation of the Committee;
- the Letter of Understanding; and
- setting up an ACAP community office.

3.1 THE CONCEPT OF "JOINT PLANNING"

In section 1, reference was made to the evolving field of environmental planning -how the challenges to solving environmental problems are gradually being shared between all involved parties, rather than just one proponent representing a government agency or private industry. This evolution toward the multi-sectoral, joint planning approach is thought to better reflect the different elements of society and our environment. This can result in comprehensive, ecosystem planning, rather than plans which address single issues, from single perspectives.

Joint planning processes complement our traditional, democratic system by providing elected politicians with concrete, publicly acceptable environmental plans and actions. Through community-based consultations, political leaders are provided with a direct pipeline to a group of multi-sectoral lay experts working together towards their mutual goal of

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restoring environmentally impaired coastal areas.

As well as the involvement and awareness of our political leaders, other key community "stakeholders" are involved in the restoration plans from the outset.

These stakeholders typically represent the land and water based activities and uses that have either contributed to the problems and/or will benefit from the environmental restoration of the area. If these stakeholders are included in the plan's development from the outset, key issues and concerns can be built into the process for early consideration.

"Joint Planning" differs from "Public Consultation"

Joint planning programs differ from typical public consultation and involvement programs. In typical public consultation programs, a proponent may consult with an affected community at distinct stages of the planning process. This approach, while considerably beneficial in that it identifies issues and concerns around a plan or project, creates a "them and us" approach, which can stand in the way of solid, balanced discussions when difficult decisions are being made.

The concept behind joint planning is that by involving and empowering key players at the outset (who represent a broad spectrum of the community), important issues and alternatives can be identified, discussed, and resolved early on in the process. As a result there are no "surprises" and publicly acceptable, comprehensive environmental planning and concrete actions can take place expeditiously. An example of a public consultation process which has been implemented at a key stage follows:

> A municipality is proposing to install a sewage treatment plant and decides to consult with the public, when it has identified a site for the plant, in an attempt to identify issues and concerns relating to the site. Participants may not only identify irreconcilable problems relating to the proposed site, but may also question the need, the proposed capacity, and the site selection process. They propose different technologies and question the cost of the facility. While these concerns may be valid, if these issues are raised late in the planning process extensive delays may stall the installation of a necessary facility.

ACAP's multistakeholder process is a significant step in the evolution of environmental planning. Not only does it propose to involve key players

at the outset of the planning process, but it also provides a mechanism for a multistakeholder committee to accept and take on the responsibility for developing the CEMP. Traditional obstacles are overcome by the provision of seed funding by Environment Canada, the initiator of the process, through access to Canada's Green Plan fund.

3.2 WHAT IS A STAKEHOLDER?

Each ACAP project area has unique characteristics and land uses from social, economic and environmental perspectives. Differing characteristics and environmental conditions of the project area will obviously lead to the identification of different interests and concerns held by local organizations. However, some general guidance is possible when describing the meaning of "stakeholder". This will assist in identifying and selecting key players for the local ACAP Committee.

For general guidance, the following definition may be helpful:

"a stakeholder is an individual or an organization who has a direct and/or indirect interest in the environmentally impaired area."

An "interest" in this case can be taken to mean "will be affected by and/or benefit from" the planning exercise and resulting remedial actions.

Some may say, "with that definition, everyone in the community has an interest!" While this is true, it is not practical to meet with thousands of people on a regular basis. The challenge is to identify stakeholders, from **key sector** groups, including citizens-at-large, who are representative of the interests and values of the community.

3.3 HOW TO IDENTIFY STAKEHOLDERS

A number of simple steps can be followed to make sure that the identification and selection of stakeholders is carried out fairly and equitably. The tendency can be in smaller communities to simply "pick who you know", while in large communities there can be so many possible choices that the Committee would be unworkable. Neither of these approaches necessarily take into account the diverse interests of the community. It is therefore possible that some of the interests may be excluded at the outset.

It is probably advisable to follow a stakeholder identification process which is objective and defensible. You will want to ensure that there is a well balanced community representation to provide for full and thorough debate as the CEMP process unfolds. This will also make a difference later on if members of the stakeholder Committee need to be replaced or if a

Identifying stakeholders is a useful exercise even if your group is established. These interests can be reflected through issue/options workshops.

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vacancy occurs due to circumstances such as change in residency, illness, etc.

If you already have developed your list, or established your Committee, you may wish to go through the process of developing a list for future reference. The first step is to develop a comprehensive list of active organizations and groups. This can be done by following the steps outlined below.

1. Develop a list of the principal land and water uses of the ACAP project area

Town plans and local history books are a good way of quickly identifying the land and water uses around the project area. An example of how useful this exercise is in identifying potential stakeholders is described in Figure 2:

FIGURE 2

IDENTIFYING STAKEHOLDERS

You may identify that your community is primarily agricultural in nature, with a partly forested watershed. Natural wetland areas are home to wildlife, and the fishing and recreation industries are abundant. Two towns have been developed around the new agricultural college, along with several older villages. All of these activities are in the watershed of your ACAP area. The inhabitants need the area to be restored for a number of reasons and from different perspectives.

From this hypothetical description you can identify the following uses and interests, which are normally represented by an interest or stakeholder group:

- agriculture
- forestry
- pulp and paper industry
- chemical manufacturing
- commercial fishing
- nature
- wildlife (ducks, deer, etc.)
- sports fishing
- environment
- conservation
- cottaging
- sailboarders and windsurfers
- business
- Municipal, provincial and federal governments
- harbour recreational uses
- educators and faculty
- service groups
- youth groups

When you have completed the list of types of "stakeholder" categories, you can begin to look for the associations or organizations which represent the land and water uses you have identified.

2. Newspaper, library and media search

Review print media in the study area for the past two years and identify interest groups, industries and individuals who have demonstrated an interest in the ACAP project area.

3. Contact Government Agencies/Non-Government Organizations

Regulatory authorities such as municipal, county, provincial and federal government agencies normally maintain lists or files of organizations who have an interest in the environment. Contact your local environmental agency or the planning departments. Non-government organizations, either national, provincial or local (such as the Environmental Network and the Conservation Council), are good sources for contacts.

4. Community Directories

Many communities publish community directories which are organized by category. This aids in establishing contact addresses and sometimes the name of the president or chief executive officer is included. You will not need to contact all the organizations in the directory, only those that fit within the stakeholder categories you have identified.

5. Developing Your Key Contact List

Contacts can now be made with the organizations you have identified to obtain the correct individual to approach and the correct point of contact. Your stakeholder list can now be prepared. At this step it is important to have as many contacts as possible (say, at least two per category). While you will have to narrow this list down during the recruitment stage, you must try to ensure that no-one feels excluded early on.

3.4 RECRUITING

The experience from the ACAP project areas shows that recruitment is being done differently in each case. Reasons for this vary, but it has generally depended upon the initiator of the ACAP Committee - whether it has been Environment Canada, or a local sponsor group. While there is no textbook way to approach recruitment, the following guidelines may be helpful.

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1. Contact your Key Contacts

Your key contact list is the most valuable aid in developing a well-balanced stakeholder committee. Call each individual by telephone and describe the ACAP process. If the individual is interested in discussing it further invite him/her to a small group meeting. It would be useful at this stage to send out a letter confirming this meeting.

2. The Exploratory Meeting

At this first informal meeting, Environment Canada personnel will describe the ACAP process, explain what is involved, and the need to form a committee. Those interested in participating can be asked to sign up before they leave. A sponsoring organization or small group of individuals (probably no more than six) should be identified at the end of the meeting to ensure co-ordination of the ACAP process until the formal multistakeholder committee is established.

3. Public Open House

A community public open house should be held early in the ACAP process, to ensure that everyone in the project area has an opportunity to learn about ACAP and to become a stakeholder.

4. The Sponsor Group

Based on the list of stakeholders you have prepared, the sponsoring organization can conduct one-on-one discussions with potential candidates. The sponsoring organization should gain an understanding of the views, opinions and potential commitment that each candidate has to the ACAP process. Selection criteria can then be applied if there is more than one candidate for each category. Examples of selection criteria are:

- has the candidate indicated that he/she will provide the committee with the level of effort required?
- does the candidate or candidate's organization live (or operate a business) within the ACAP area?
- has the candidate indicated that he/she meets the definition of a "stakeholder"?
- has the candidate indicated acceptance of the Terms of Reference? (see Appendix 1-1)

- what can this candidate bring to the committee that others can't?

Once the selection of the candidate has been made, the sponsoring group may wish to send a letter requesting their participation and concurrence with the purpose of the multistakeholder committee.

3.5 DEFINING ROLES, RESPONSIBILITIES AND COMMITMENTS

It is often useful to prepare a Terms of Reference for the multistakeholder committee (MSC), which clearly defines expectations, roles and responsibilities. In Appendix 1-1, a typical Terms of Reference is presented, which has been developed as a generic guide. Before some stakeholders will agree to participate, they will ask for this document to ensure that they understand and agree to the work required of them.

Use the terms of reference as a guide if your process is already up and running.

The **Terms of Reference** clearly describes the following:

- background;
- goal, mandate and purpose of the MSC;
- role of the MSC;
- membership and membership selection;
- MSC organization; and
- general conditions.

When recruiting stakeholders, the Terms of Reference should be in draft form, to be formalized by the full committee once constituted. Experience shows that at the first meeting of the full committee, the purpose of the committee, its objectives and procedural rules should be discussed, amended and/or adopted. These Terms will then be binding on the organization and this can be very useful later on when dealing with difficult and controversial issues.

An example of the value of the Terms of Reference is where it describes the procedural arrangements and the powers of the Chair. It states that the committee will operate in consensus mode to the extent possible. But the Chair may follow the more formal procedures (as outlined in Robert's Rules of Order) to ensure that the committee's work is completed. Another example is where a member has not been present for three or more meetings, and has not advised the secretary or the Chair. The Terms of Reference indicate quite clearly that a member should be replaced if

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this is the case. This procedural rule helps deal with sometimes sticky issues that can create hard feelings if they are not clearly spelled out.

Obtain commitment of time, resources and to the common goal at the outset.

At the outset of the process, stakeholders are asked to commit their time and resources to work towards a common goal: the restoration and conservation of the ACAP project area.

If this common goal is articulated early in the process, it can provide the "glue" which holds the committee together in difficult times. This commitment of time, resources and to the overriding goal is an essential ingredient in the success of the overall plan.

3.6 INCORPORATION OF THE MULTISTAKEHOLDER COMMITTEE

In some project areas, an incorporated sponsoring organization is identified that wishes to "manage" the community-based development of the CEMP. In other cases, the stakeholder committee is identified and formed by an Environment Canada staff or contract person. In either event, there is a need to formally incorporate the Committee, since it is the Committee's responsibility to complete the Comprehensive Environmental Management Plan. A properly constituted board of directors or executive will act as the accountable officers to the organization - a Chair or President, Secretary and Treasurer are required.

A duly constituted organization will maintain accurate financial records, and prepare quarterly and annual reports to funding agencies. Annual audited financial statements will also be required.

A Guide to Incorporation is available from each Provincial office.

3.7 LETTER OF UNDERSTANDING

As the primary sponsoring organization, Environment Canada is prepared to make a seed-funding agreement under the auspices of the Federal Government's Green Plan. It is committed to contribute up to $50,000 per year towards the support of a coordinator's office. The coordinator will be an employee of the Committee and assist in the development of a Comprehensive Environmental Management Plan. Additional funding may be forthcoming from time to time, for specific projects which are needed to complete the CEMP, such as preparing the Community Environmental Profile, conducting environmental quality assessments, and demonstration

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projects. In order to access this funding, local committees must enter into an agreement called the Letter of Understanding (LOU).

At some point during the organization of the Committee, but after its incorporation, Environment Canada will require that a Letter of Understanding is entered into between the incorporated organization and itself. This LOU sets out the conditions upon which funds will be transferred to the ACAP project area Committee. An example of an LOU is attached in Appendix 1-2.

Letters of Understanding, or other forms of agreement, may also be entered into by other funding partners as the work progresses. Requirements for work plans and "key deliverables", such as progress or project reports, are normally specified in these LOUs.

3.8 SETTING UP THE ACAP COMMUNITY OFFICE

Establishing an ACAP Community Office is an important organizational feature in the development of the CEMP. This office will be used for:

- the work of the coordinator;
- meetings with the Chair and the board of directors;
- a resource library for members of the public;
- a focal point for the production of reports, news releases, event organization; and
- the general operation of the project.

While office rental can represent a significant portion of the ACAP project budget, offices can frequently be obtained free of charge from a participant in the process as "in-kind" support. Such support is invaluable and can count as matching support when applying to funding sources. For example, a municipal office, government department, harbour manager or community centre may be able to provide free space. This is clearly the most desirable route since it conserves funds. Stakeholders should be approached to provide "in-kind" support as well as equipment and supplies.

Some of the equipment which will be required is listed below for general guidance:

- word processing and printing equipment;

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- facsimile machine;
- at least one telephone line with a dedicated project phone number;
- desks, tables and chairs;
- beverage machine; and
- stationery and supplies.

The office should be located within the ACAP project area.

3.9 SUMMARY

Getting the stakeholder committee organized and up and running is a time consuming task, but if done properly it can provide a solid foundation to the development of the CEMP. This section outlined how to identify and select the stakeholder committee, the need for formally incorporating this body, how, through the Letter of Understanding, to begin the flow of funds into the project, and establishing a community office.

4.0 The First Meeting

This section is presented in three parts — the first, preparing for the meeting, the second, the agenda and procedures, and the third, reporting.

The purpose of the first meeting

When any new organization is established, there must be a clear understanding amongst its members of the purpose, goals of the organization, and what is to be achieved. The first meeting of your group should therefore be used to set the stage for the work to be done over the planning period. In most cases, the sponsor organization will have prepared a draft proposal or workplan and by-laws for consideration at the first meeting. While many members will be familiar with ACAP, it is useful to ensure a common understanding of the ACAP process and its end product - the Comprehensive Environmental Management Plan. It is also useful to review the Terms of Reference, the roles and responsibilities, and expectations of each member.

One of the first orders of business at the meeting could be to establish a process to hire a coordinator for the ACAP project area. The first meeting can also be used to establish an interim Chairperson or facilitator who will run future meetings until such time as an appropriate Board of Directors is established and officers selected.

A representative of the sponsoring organization will be required to perform numerous tasks both prior to, during, and after the meeting. His/her role is to organize the first meeting, facilitate the procedures at the meeting and prepare the meeting record or minutes. Once selected by the Committee at the first meeting, the Chairperson or facilitator can assume management of this organizational role.

At the end of the first meeting, a commitment to proceed with the development of the CEMP should be obtained.

The first meeting can be described as an “orientation” meeting, exchanging information and establishing the organizational and procedural structure for the future.

4.1 PREPARING FOR THE MEETING

While it is important to prepare properly for the first meeting, many of the following suggestions can be used as a checklist for every meeting:

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Discussing the agenda ahead of time with the Chair (if applicable) is a vital step. While the agenda for the first meeting is reasonably standard, the Committee will want to see certain items placed on the agenda for each meeting. These items will have resulted from a previous meeting's discussion or they can be progress reports.

Meeting Planner

- establish an appropriate time and place when most people can attend;
- prepare an agenda in consultation with EC and the sponsoring group;
- send a letter of invitation, the agenda, and any supporting material, providing a minimum of 10 days written notice to all members;
- ensure that appropriate equipment, such as an overhead projector, refreshments, microphones, flip charts, signage and other meeting aids are available;
- ensure that the meeting room layout is effective (i.e. hollow square round table, classroom style, etc.);
- notify the media, elected officials or other identified interested persons;
- ensure that your EC spokesperson is available and properly briefed;
- liaise with the sponsoring organization (if applicable) to determine chairing arrangements; and
- personal contact with members 2 days prior to the meeting to ensure attendance.

It should be remembered that the agenda is the driving force behind the Plan's progress. If a crucial item is left off due to an oversight (such as determining the evaluation criteria for alternative remedial actions) the planning process can be substantially delayed. The Chair (or later the coordinator) should keep track of the steps in the planning process and recommend to the executive items that should be considered for the agenda. The coordinators can help the process stay on track.

If these simple, preparatory steps are followed, your meetings should be well organized and effective.

4.2 THE MEETING AGENDA AND PROCEDURES

At the outset of the first meeting, it is necessary to agree upon an interim Chairperson and secretary in order for business to proceed. Frequently, the sponsoring organization will service the Chair's role, and the Chair will designate an interim secretary. The Chair's role is to ensure that the meeting agenda is adhered to and that the business of the meeting is achieved. The Secretary's role is to take an accurate record of the meeting, including the reporting of resolutions.

A sample agenda for the founding or orientation meeting of the Committee is shown in figure 3.

The chair and the secretary should ensure that all business items on the agenda are covered. At subsequent meetings, the first item on the agenda is always approval of the minutes from the previous meeting and business arising from the minutes.

4.3 POST MEETING REQUIREMENTS

The first step after the meeting is to prepare the minutes and allocate responsibilities for undertaking the business arising from the minutes. These work items should be included in the CEMP detailed work plan for record keeping purposes. The minutes should be reviewed by the Chair prior to being mailed to Committee members, 10 days prior to the next scheduled meeting, along with the agenda.

4.4 SUMMARY

The importance of proper planning and conduct of the first meeting of the fledgling organization cannot be overstated. With appropriate planning, you can prepare for any eventuality and ensure that the meeting proceeds in an efficient and effective fashion, with adequate opportunity for the exchange of views.

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FIGURE 3

TYPICAL AGENDA - ORIENTATION MEETING

Item 1: **Welcome and Introductions**
(the sponsoring organization will welcome participants and each member will introduce themselves)

Item 2: **Purpose of the Meeting and Agenda Review**
(the temporary Chair will describe his/her role, indicate that the meeting record is being taken by the interim secretary and describe that the purpose of the meeting is to review and approve Committee procedures. The Agenda will be reviewed and approved with or without amendment to the agenda items)

Item 3: **Background on ACAP and the Comprehensive Environmental Management Plan**
(EC spokesperson will briefly describe the evolution of the ACAP process, its purpose and the CEMPs)

Item 4: **The role of the sponsoring organization** (if applicable).
(the sponsoring organization will describe their interest in the ACAP process and their role).

Item 5: **Review of the Terms of Reference**
(the Terms of Reference of the Committee will be reviewed clause-by-clause with amendments and clarifications accepted. This agenda item should result in a resolution to accept the Terms).

Item 6: **Hiring of ACAP Coordinator/Election of Interim Chairperson**
(determine course of action to hire ACAP coordinator and elect interim Chairperson).

Item 7: **ACAP workplan/proposal and bylaws**
(development by the Committee, or approval of the sponsoring organization's, draft workplan/proposal to EC, and by-laws for incorporation).

Item 8: **Organizational Procedures**
(this item will relate to how the Committee intends to do its business - e.g. operate by consensus, election of officers, etc.)

Item 9: **Next Meeting and Agenda. Adjourn**
(this item will establish the date of the next meeting)

Appendix 1-1

SAMPLE TERMS OF REFERENCE - Multistakeholder Committee

1.0 BACKGROUND

There are 13 ACAP areas in Atlantic Canada. Each area will be preparing a Comprehensive Environmental Management Plan (CEMP) within a six year planning period. These plans will contain a list of actions for implementation, resulting in the restoration of each specific ACAP area.

CEMP's will be prepared by legally constituted multistakeholder committees (MSC).

2.0 GOAL, MANDATE AND PURPOSE OF EACH MSC

2.1 Goal

The goal of each MSC is to prepare a Comprehensive Environmental Management Plan for their ACAP project area.

2.2 Mandate

The MSC and its members are bound by these terms of reference.

2.3 Purpose

The purposes of the MSC are:

- to consider all matters put forward to it by any member (stakeholder) relating to the development of the CEMP;
- to examine issues put forward by the public relating to the CEMP and respond to such matters;
- prepare a CEMP, in accordance with the general guidelines established in the "Multi-stakeholder Guide"; and
- to review reports, studies and other documents that may be prepared by sub-committees, and/or the general public and to provide input and feedback as required.

3.0 ROLE OF THE MSC

3.1 Role

The role of the MSC in the CEMP development is to:

- provide a community-based perspective relating to the broad

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range of social, natural and economic environment conditions in the ACAP area;

- become an up-to-date and knowledgable group on the ACAP process;
- provide a consistent forum for discussion and potential resolution of issues arising throughout the duration of the CEMP process;
- provide a regular opportunity for public input in-between stages of the CEMP's development;
- provide stakeholder constituent group responses to CEMP stage documents;
- prepare work plans, reports and applications for funding; and
- review input obtained from the public.

4.0 MEMBERSHIP

For the MSC to achieve its goal and purpose, membership must be multi-disciplinary and reflective of the social, economic and natural environments within each ACAP area. Membership of the MSC should reflect the land based activities within each ACAP area.

These activities are grouped into the following general categories:

- Natural Environment:

  This category includes organizations with an interest in ground and surface water, aquatic and terrestrial biology. Environment, conservation and naturalist groups would all be interested in this area.

- Social Environment:

  This category includes community and native organizations, heritage, archaeology, recreation, culture, communications, education, planning and housing interests.

- Economic Environment:

  Agriculture, Transport, Chambers of Commerce, Engineering, Boards of Trade, Business, Commercial Fishermen and Tourism organizations would be eligible for this category.

- Citizens-at-large:

  Members of the public who have a general interest in the process but are not affiliated with an organization would be eligible in this category.

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Membership could be drawn from representatives in these four general categories.

5.0 MEMBERSHIP SELECTION

- The membership should include representation from across the ACAP area, and be equally distributed between each of the 4 categories (natural, social and economic environment, and citizens-at-large).
- Reference should be made to section 3.

6.0 MSC ORGANIZATION

- At its first meeting the MSC will determine the procedures for running the meeting. The MSC may elect or otherwise appoint a Chair from its membership.
- Rules of procedure shall be established by the Chair and/or facilitator with the consent of the MSC membership.
- Minutes, agendas and secretarial services will be provided to the MSC by the interim chair, co-ordinator or other appropriate individual.
- An Environment Canada representative will be assigned to each MSC, and will have voting privileges.

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Appendix 1-2

Sample Letter of Understanding

Water Resources Directorate
Economics and Conservation Branch
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6

May 21, 1992

1245-82/3-IB

Re: Letter of Understanding (LOU) of Environment Canada's Support of Community-Based Development of a Comprehensive Environmental Management Plan for

The Canadian Minister of the Environment is responsible under the Green Plan for implementing the Atlantic Coasts and Harbours initiative. This initiative has been designated the Atlantic Coastal Action Program (ACAP). It is the intent of ACAP to support community-based participatory planning and management as an effective means of ensuring that the environment is protected and sustained for the future generations. The signatories agree to mutually support this intent.

It shall be the understanding of the signatories that the primary objective of Environment Canada support for the undertaking is the preparation and completion of a Comprehensive Environmental Management Plan (CEMP) as the vehicle to meet the intent of ACAP through the ?? Environmental Management Association Inc. This shall be achieved through a process of participatory management via a community-based stakeholder committee.

In support of the Letter of Understanding, the parties agree to the following:

TERMS OF REFERENCE FOR THE "GREEN TOWN ENVIRONMENTAL MANAGEMENT ASSOCIATION INC."

The "Green Town Environmental Management Association Inc." will be the party primarily responsible for managing the project and will deliver the following schedule of tasks:

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- Consulting thoroughly with community stakeholders on each component during the course of developing the CEMP;

- Establishing environmental use objectives for the area;

- Determining the environmental health of the area through a community directed approach which is scientifically defensible;

- Identifying alternative remediation and conservation approaches and technologies to ensure that environmental use objectives are met;

- Securing community consensus on remediation and conservation alternatives;

- Completing a document describing the implementation plan. This will include, but not be limited to, specified objectives, the identification of responsible parties, a timetable for implementation, identification of financing alternatives for implementing the CEMP and identification of a means to audit implementation.

ANNUAL WORK PLAN

- Annual work plans which establish goals, directions, and outputs will be prepared by the Association and submitted to Environment Canada for approval.

RESOURCES

- Environment Canada will commit $50,000.00 per year (to a maximum of $250,000.00), to the “Green Town Environmental Management Association Inc.” to support a Community Coordinator’s Office for the duration of this Letter of Understanding. This support will be subject to mutual agreement between Environment Canada and the “Green Town Environmental Management Association Inc.” regarding progress in satisfying program objectives in completing the CEMP. Progress toward this goal will be reported to Environment Canada on a quarterly basis.

- The “Green Town Environmental Management Association Inc.” shall submit a request for an initial quarterly advance to support the Community Coordinator’s Office. Remaining funds will be advanced to the “Green Town Environmental Management Association Inc.” on a quarterly basis providing that expenditures under previous advances are justified to the satisfaction of Environment Canada. Payment for invoices submitted by the “Green Town Environmental

Management Association Inc." will be made within 30 days of their receipt by Environment Canada.

- Capital equipment such as office, computer and communications equipment may be purchased from the allocation to support the Coordinator's office providing that such items are approved before purchase by Environment Canada in writing. Any such equipment must be maintained by, and will be the property of the "Green Town Environmental Management Association Inc."

- An annual audited financial statement is required from the "Green Town Environmental Management Association Inc."

- Additional resources to develop the CEMP will be negotiated between Environment Canada and the "Green Town Environmental Management Association Inc."

ENVIRONMENT CANADA MEMBERSHIP ON THE ASSOCIATION

- Environment Canada will designate a representative to the "Green Town Environmental Management Association Inc." He/she will be responsible for negotiating the provision of Departmental resources to the Association for the completion of tasks which support the development of the CEMP.

ACCESS TO INFORMATION

- Data and information arising from program initiatives supported by Environment Canada shall be in the public realm.

COMMUNICATIONS

- The parties agree to advise each other at least seven days in advance, of plans to publicly announce any significant aspects of the ACAP process. The preparation and release of significant public press releases, or other publicity related to ACAP, and the organization of certain aspects of key events will be mutually coordinated between the signatory parties. For greater clarity, an attachment to this Letter of Understanding identifies the procedures which will be followed by the parties.

AMENDMENTS TO THE LOU

- If at any time during the continuance of this Letter of Understanding, the signatories shall deem it necessary or expedient to make an alteration or addition to this Letter, they may do so by means of a

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written agreement between them which shall form part of this Letter of Understanding.

DURATION OF THE LOU

- This Letter of Understanding will be completed within five years of the date of signing. By signature of the Association Chairman, and return of the second duplicate, this understanding will be binding on the parties.

Signed on behalf of Environment Canada

_____ _____

Ed Norrena Date
Regional Director General
Conservation and Protection
Environment Canada

Signed on behalf of "Green Town Environmental Management Inc."

_____ _____

Date

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Appendix 1-3

NEWS RELEASE - 7 MARCH, 1991 (see attached)

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Appendix 1-4

NOTES ON PUBLIC CONSULTATION AND THE MULTI-STAKEHOLDER PROCESS

The following is the text of background material for a seminar on public participation and the multi-stakeholder process, presented to Environment Canada personnel in early 1992 by Land Use Research Associates Inc.

SESSION 1 — PUBLIC INFORMATION, CONSULTATION AND INVOLVEMENT: PARTICIPATORY ENVIRONMENTAL PLANNING

The focus of this session is to generate a clear understanding of what participatory environmental planning is, and how successful plans can be developed through using the multi-stakeholder decision-making processes.

Multi-stakeholder involvement in environmental planning is becoming a more frequently accepted practice across Canada. Beginning in the early 1980s with the coining of the term 'stakeholder' (this term is thought to originate from the Niagara Institute), decision-makers began to actively recognize that there are almost always more than one set of 'players' with a significant 'stake' or interest in a proposed environmental project or plan. If these stakeholders were not actively involved in the decision-making process, then projects were likely to be developed in isolation, on a one-sided basis, without the benefit of building-in other very relevant views.

By involving these players in a planning process at the outset—at the strategic planning stage—it is hoped that key stakeholders will work together, alongside government agencies, to develop Comprehensive Environmental Management Plans which can be implemented quickly for ACAP areas.

Joint Planning, as it is now known, falls right in the middle of the public involvement continuum—between public consultation and delegated authority.

Prior to this more formal recognition of different interests, consultation programs with members of the public and interest groups had been in development across the Country. Most frequently, public consultation had occurred at specific stages of the decision-making process. Simply 'consulting' with affected people at specific stages can frequently lead to controversy, lack of understanding and delays in projects.

The overall purpose of multi-stakeholder participatory planning exercises is to ensure success of projects through shared responsibility in the development and implementation of environmental plans and programs.

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The benefits of multi stakeholder decisions processes in environmental planning are that they typically include:

- an improved understanding of the opportunities and constraints facing each stakeholder;
- an opportunity for the exchange and comprehension of information;
- better decision-making that reflects a range of opinion;
- improved project management; avoidance or minimization of adversarial situations;
- enhanced credibility and legitimacy of the project through a visible and credible decision-making process;
- the development of public expertise; and,
- consensus bulding which can lead to beneficial long-term relationships between all stakeholders.

SESSION 2—KEY PLAYERS IN THE MULTISTAKEHOLDER PROCESS

Simple descriptions of the roles and responsibilities of five key players are contained in the following information. These are to be used for discussion in Session 2.

FACILITATOR

Role

- Guide and Group Energize
- People Protector
- Consensus Builder
- Conversational Traffic Cop, and
- Win/Win Supporter

You make sure that rules and procedures of the meeting are followed and that people can talk openly and with little conflict.

Responsibilities

1. You are a neutral observer of the group—do not contribute or evaluate ideas.
2. Help the group focus on one common objective.
3. Stick to an agreed-upon agenda with set priorities. Prevent meeting from getting 'off topic'.
4. Make sure everyone participates. Most problems require the knowledge and experience of several people.
5. Protect individuals and their ideas from attack and help group members act as a team.
6. Identify, then help resolve, conflicts.

Techniques

1. Clearly define your role and responsibilities to the group.
2. Confirm the session objective(s) and process **before** beginning.
3. Be creative. Add ideas together to show how they connect.
4. Stay neutral—don't contribute to the content of the meeting.
5. Clarify or summarize ideas regularly. If you are asked for facts or your opinion, boomerang questions back to the group members by asking them what they think.
6. Offer a menu of possible ways to attack a problem and wait until there is agreement on one particular method.
7. Do not be afraid to make mistakes and don't be defensive if a group member points out your mistake.

RESOURCE PERSON

Role

- to answer questions concisely when asked
- to listen
- to provide clarification when asked

Responsibilities

1. Be honest and direct. Evasiveness and defensive answers cut into your credibility.
2. Take cues from the facilitator or chair. The resource person should help the facilitator keep the group on track.
3. When the group is being swayed by one strong member, it is easier for the resource person to challenge the group, than to challenge the facilitator. In this situation, be the Devil's advocate.
4. Do not take over the group. When you are talking, the group is no longer functioning.
5. On the other hand, the group needs as much information as possible in order to provide valuable input. It is your task to provide that information.

Four ways to stymie group process:

- engage in individual discussion with group members
- provide long-winded answers
- drift in and out of group discussions, and
- join right in on the debate.

CHAIR

Role

- spell out rules of procedure
- ensure that people speak in order
- become familiar with *Robert's Rules of Order*, and
- make sure that people have enough time to discuss issues.

Responsibilities

For the term of office for which you have been elected or appointed:

1. You develop the agenda with the Co-ordinator.
2. You make sure that the agenda, minutes and other meeting materials are circulated well ahead of the meeting.
3. Help people identify and resolve issues.
4. Review progress of the CEMP and ensure that schedules and reports are updated to keep the CEMP on track.
5. Keep order at meetings.
6. Strike sub-committees and participate in discussions (by appointing a temporary chair or requesting facilitation services).

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STAKEHOLDER PARTICIPANT

Role

- participates actively and positively
- check back with constituent group
- really listens, and
- focuses on win/win solutions.

You are an active participant in the discussion of the meeting. It is important that you contribute your ideas and viewpoints as well as try to understand your fellow participants' viewpoints.

Responsibilities

1. Participate, feel free to pitch in. You don't have to worry about being heard, being attacked, being cut off or being too talkative, so you can and should throw yourself totally into the subject matter.
2. Ask questions. The only stupid question is the good one that isn't asked.
3. Make sure your message is understood the way you wanted it to be. Ask the listener(s) to ask you questions.
4. Be a good listener. Respect your fellow group member. Put yourself in the speaker's place and try to see his point. Don't cut people off or disrupt the meeting with off-hand remarks.
5. Go easy on argument and criticism. They put people on the defensive. Keep an open mind. Don't evaluate an idea before it has a chance to be developed.
6. Get involved in friendly disagreement. If you don't support a view, say so and explain why. But do it in a friendly way. If your idea is criticized, don't be defensive and take it as a personal attack.
7. Avoid disruptive side conversations.

CO-ORDINATOR

Role

- maintains group's records
- secretarial function
- maintains constant dialogue between stakeholders
- operates under the instructions of the executive and chair
- performs project tracking and management function, and
- Jack/Jill of all trades

Responsibilities

1. As with the Facilitator, you are neutral.
2. Ensure that all minutes of meetings, follow-up information and action items are delivered between meetings.
3. Plan public consultation events.
4. You'll need good public relations and communications skills.
5. You keep the office and the committee highly organized.
6. You will be developing funding proposals, monthly and quarterly reports.
7. Maintain good relationships with all involved (if possible!).
8. Keep the media informed.
9. Together with the executive, you'll need to plan public activities such as tree plantings, beach sweeps, etc.

SESSION 3 — CONSENSUS BUILDING: FUNDAMENTAL SKILLS FOR JOINT PLANNING

The purpose of this session is to understand the role that 'consensus building' plays in the Joint Planning processes being undertaken by ACAP.

Consensus building becomes a 'way of life' in joint planning exercises. There are very few issues where everyone agrees at the outset. However, there are a number of techniques that can be used by facilitators to assist in reaching consensus.

What is consensus?

Webster's Dictionary defines consensus as "an opinion held by all or most; general agreement, especially in opinion."

In practice, consensus is taken to mean unanimous consent to a course of action.

Consensus can be claimed if all agree or most agree with few abstentions. If there is **any** dissent, there is no consensus.

Operating a committee or group by consensus is the ultimate goal of the ACAP stakeholder committees. However, it must be understood that consensus is frequently difficult and sometimes impossible to obtain.

How is consensus different from voting?

ACAP facilitators and their Chairpersons will often need to invoke ordinary voting procedures if consensus eludes them on an issue. Voting is a democratic process where the majority view 'rules'. Most participants are familiar with voting procedures and will live with the results.

It is important before putting a question to the vote that a commitment is obtained from all stakeholders that they will abide by the result of the vote.

Consensus-Building techniques

Some people are good at consensus building, and others not. It is important that the facilitator has, if possible, proven consensus-building skills. Largely, success in reaching consensus is due as much to the intuition of the facilitator, as it is to the science of consensus building.

Some key techniques will help in developing consensus:

- make sure that the issue is properly identified and understood by all participants. Frequently, framing the issue in the form of a statement for consideration helps people clearly understand what is being asked;
- make sure that all interested parties are present for the discussion;
- ensure adequate time is available for the debate, for, against, and in the middle;

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- make sure you, as facilitator, understand each speaker's position and that other participants understand each position;
- with the use of a flipchart, make a list of 'pros' and 'cons' to the position or statement as speakers make their points;
- ensure that all the issues and viewpoints are recorded;
- have the group eliminate less important areas of disagreement and focus on key stumbling blocks;
- through open discussion, search for middle ground between key areas of disagreement; call on impartial participants (middle grounders) to assist you;
- attempt to reach agreement on smaller points, then larger points, then impossible points. Take an 'easy issue' to resolve, then a 'hard issue'—to show progress and the benefits of working together;
- if disputants are narrowed to a small number (e.g. 3 sides of an issue), request that they meet separately to form a resolution that they can live with (coffee breaks can be used for this purpose);
- if consensus cannot be achieved, seek advice of the group as to when the issue could be revisited, or develop appropriate process to deal with the issue (such as mediation); and,
- if the issue cannot wait until the next meeting, a vote can be called to resolve the issue.

SESSION 4—CONFLICT RESOLUTION

During multi-stakeholder, joint planning processes, conflict resolution is performed by a wide number of players on a regular basis in an informal setting. There is a wide array of conflict resolution 'tools' available to facilitators, including consensus-building (which avoids disputes occurring in the first place). These methods include a variety of mediation and negotiating techniques, instituting compromises through modifications, as well as separating difficult issues and deferring them with a view to allowing time to settle the matter.

Common Conflict Resolution Techniques

Unassisted Negotiation—This is the situation if an issue or dispute is between two or more parties, and they resolve issues without help from a third party. (Negotiation means "to confer with another so as to arrive at a settlement of some matter.") Many disputes are resolved this way.

Facilitation—This function has been described in the session on consensus building (a conflict avoidance technique). The facilitator can act as a passive, third party 'host', to assist each party to work together to find acceptable solutions.

Mediation—This is an active process of resolving disputes. It involves work to ensure that there is fairness in the negotiations, that the process is efficient and that it produces lasting solutions. (Mediate means: "to intervene between two persons for the purpose of reconciling them"). The mediator should be accepted in advance by all disputants.

Arbitration—Arbitration means "to have a dispute settled by a person appointed by the parties." This can be meant as a quasi-judicial tribunal or board charged with the responsibility of making decisions under a

variety of laws. There are other forms of arbitration in the labour field, such as non-binding arbitration—that is, the parties are not legally bound to implement the decision.

Principles of Mediation

Mediation is the most common method of formal conflict resolution used in group processes. If the facilitator or mediator follows these principles, success will be more likely. The following principles drive the mediation process:

- the principle of joint-gain by joint problem-solving;
- soft on people, hard on the problem;
- keep to issues and interests, not positions;
- the need to consider options based on the other parties' interests;
- discussions can be confidential and non-binding on the parties, should mediation efforts break down;
- any party may call off the mediation exercise at any time if they cannot negotiate a position, after best efforts have been applied;
- agreement may be renegotiated in the future if circumstances change; and
- a finite time frame for the mediation exercise is desirable.

Goals of Mediation

There are two key goals to mediation as a conflict resolution technique:

- to provide cost effective, stable solutions to environmental planning disputes; and
- to add to the effectiveness of the existing provincial environmental planning process, by mediating fair solutions.

Objectives of Mediation

The goals of mediation can be achieved by:

1. Initiating and carrying out mediation to find creative solutions to environmental planning disputes that may otherwise have proceeded to a more formal, arbitration process, such as an environmental hearing; and,

2. Reducing the time and costs of arbitration to the proponent and the taxpayers, by joint problem-solving and principled negotiations, and to achieve better solutions to planning disputes than parties could have hoped for through traditional methods of arbitration.

Mediation Criteria

Choosing when to apply mediation as a tool in multi-stakeholder dispute resolution can be judged by the following guidelines:

- when the multi-stakeholder process has failed to resolve one or more parties' concerns and an adversarial approach has been, or will be sought;

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- when the size, value or importance of the issue warrants intervention, prior to formal arbitration;
- when there is likely to be a public benefit with a mediated solution, greater stability of the solution, or the arbitration process is too lengthy and costly to appropriately deal with the issue;
- when the identified parties are willing to explore options for resolution, and negotiate in good faith;
- when the identified parties have a defined individual who can commit the required time to the mediation process; and,
- when there is a mediator available who is acceptable to all parties.

Conflict Resolution Procedures

If the criteria are met, and the time is 'right' for mediation to occur, the mediator/facilitator may follow the procedures outlined below:

- contact each party involved to determine their willingness to participate in mediation. Identify an individual from each party who can negotiate on behalf of each party;
- assuming that the parties are willing, schedule an initial mediation meeting. Assign a secretary to make detailed and accurate minutes of each meeting. These minutes should include the interests of parties, options for resolution, criteria for evaluation, discussions surrounding options, drafts of agreements, etc.
- convene an initial meeting and establish: an agenda for meeting; a timetable for completion of the mediation; and locations and timetable for future meetings if required.

The following procedures can be followed at the first meeting:

- review principles of mediation with participants;
- each party describes their interests (not their position);
- mediator summarizes each party's interests and clarifies any facts that may not be clear;
- mediator then opens floor to all parties to propose options for resolving the issues;
- mediator assists in the development of criteria against which each option may be evaluated, and leads and focuses discussion to explore potential solutions;
- if agreement on an acceptable option is reached, a resolution can be drafted containing the solution and clearly detailing the obligations of each party in fulfilling the agreed-upon solution. The resolution should also detail fallback provisions should one or more parties default on their commitments (This latter step should only be used in a formal process);
- the parties may wish to consult with their constituent groups, within a given time-frame, to ensure that the resolution is supported. A time frame should be established for ratification by constituent groups; and
- if consensus is not reached, return to the 'option invention' stage and re-evaluate the options against the criteria. If consensus is still not reached, then a more formal process may be selected, such as arbitration.

SESSION 5 — ENVIRONMENTAL STRATEGIC PLANNING: BRINGING CONCEPT TO REALITY

Strategic Planning is a process of articulating a vision, and preparing a road map to achieve it. The ACAP process, as proposed, is a strategic plan for the restoration of 13 coastal and harbour regions in Atlantic Canada. The Action Plan, or Comprehensive Environmental Management Plan, is the result of the strategic planning process.

Environmental Strategic Planning is a process which:

- identifies a logical, traceable and replicable planning process which can be readily followed by ACAP stakeholder committees;
- provides for the constant identificaiton and resolution of issues through consensus-building and conflict resolution techniques;
- anticipates, through straight talk and common sense, obstacles and hurdles which could come up along the way;
- allows for the revisiting of goals, objectives and sometimes key decisions, on an annual or more frequent basis as needed;
- is adaptable to change based on circumstances or scientific data;
- relies on the good faith of participating stakeholders to implement the agreed upon action plan;
- is iterative, and reiterative—flexible and comprehensive;
- provides for strategic checkpoints at each key decision point, with the general public and stakeholder constituent groups; and
- provides for a well-organized planning process.

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Part 2

From Objectives to Evaluation

Part 2A

Building a Vision: The Community Decides

Table of Contents

1.0 Introduction

We often hear that Canada was founded by leaders of great vision. They saw a nation stretching from sea to sea, fueled by natural resources, and populated by British settlers--a strong arm of mighty Britain and making her mightier.

We all know that the reality of the Canadian dream has been quite different. We're now a multicultural nation with a distinct view and a place of its own in the world. The vision--what we all seem to value so much in our early leaders--seems to have been not so much a clear view of the future, but something else, perhaps as simple as a gut sense of the driving principles of human societies.

This section of the Atlantic Coastal Action Program manual is also about vision, but with a difference. It is about developing a concept for the community in the environment--a community vision--and is an essential step in developing a Comprehensive Environmental Management Plan. The community vision that each ACAP group develops must be workable and based on realistic premises, and it must include a new variable in the equation--the environment. It differs from the vision of our elders, too, in that it must be a collective vision. In this age of public participation and awareness, collective action based on consensus seems to be the only workable solution by which any actions, including those directed at the environment, can take place.

Individuals and communities make decisions and undertake projects every day that rely on someone's vision for the future, whether it's for a bustling shopping mall, an urban housing development or a network of recreational trails. Unfortunately, as any one who has tried to gain acceptance for his or her ideas in a community will know, it's often a highly personal and local view, often failing to address longterm or environmental effects. Not all visions gain acceptance. Developing a community vision, particularly one which adequately considers the environment, can improve chances of success. It's a difficult but rewarding and even essential task. This section gives an approach to help community organizations do just that.

Here we outline various techniques for developing a community vision. Some of the 'visioning' processes described have been developed and tested before. The use of visioning in developing a Community Environmental Management Plan was used in a multi-stakeholder process for the development of an environmental action plan for Hamilton Harbour, Ontario. Guided imagery, one of the techniques which will be described,

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has been the subject of several workshops including one presented to ACAP representatives at the first ACAP workshop held at Acadia University in July 1992.

The 1990s have become a critical decade for finding ways to cope with and solve environmental problems which have been building during the past century. And more and more it appears the only way to effectively handle the situation, indeed to even enable us to afford the solution, is through consensus, informed action, and planning at the local level. Visioning is a key element in uniting efforts to solve environmental problems.

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2.0 The Community Vision

The term 'vision' has a variety of meanings. The formal definitions from the Oxford English Dictionary (OED) include: *imaginative insight; statesmanlike foresight; and sagacity in planning (mental penetration, discernment, practical wisdom)*. In addition, 'vision' has a spiritual and/or religious meaning to many people.

You won't find, however, a definition for community vision in the OED. In the multi-stakeholder process we are using in ACAP, we have given 'community vision' a definition of our own--one that should be used for developing your Community Environmental Management Plan. It is extremely important, in practical terms, that participating groups clearly understand and base their efforts on this definition and not on preconceptions of its meaning. Look on it as a device to achieve the desired end, perhaps not perfect, but workable.

In the ACAP process, 'community vision' is defined as *a scenario for the future in which desired uses for the harbour or estuary are articulated based on certain environmental conditions.* In other words, it is a view of what or how you would like your community to contain or be, but having the necessary environmental conditions to make it possible.

2.1 THE VISION STATEMENT

The process we wish you, as ACAP participants, to follow is to develop a statement of community vision (vision statement) first, before you even look at what is wrong in the environment. You should note that this is not what you'll be tempted to do. Usually we look at environmental problems first, often in isolation. For instance, we might focus on industries which are clearly polluting an estuary, or on fisheries which are declining. This often ends up as an exercise in fire-fighting and misses the root of the issue. Developing a community vision is, rather, not asking what you think is wrong, but is asking first, **in what kind of place do you want to be in the future?** Then we ask **why are we not there now?**--in other words, what is wrong?

Developing a vision statement (visioning) at the outset of the process is important for a number of reasons. First, the community participates in setting its own vision and use objectives for its environmental future, thereby ensuring a greater sense of responsibility and 'ownership' (critical in the implementation phase of any remedial or conservation action). Secondly, time and resources are not wasted in later stages of the process, such as the environmental quality assessment, since only information

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relevant to the vision and use objectives is generated and analysed. This attribute is particularly important since it helps deflect the common criticism of 'study for study's sake'. Thirdly, visioning often is the first opportunity for diverse interests in the community to sit down together and reach consensus. If consensus cannot be reached at this stage, it will be even harder later in the process when the time comes to choose remedial options.

Furthermore, the focus provided by a clearly-stated and agreed-upon set of use objectives, can enable the ACAP committee to more efficiently allocate limited resources, such as volunteer time, and can also allow citizens to participate at different points in the process depending upon their special interests. For instance, citizens or groups interested in stream clean-ups or beach sweeps could be asked to participate in projects involving those activities, say if improved aesthetic features of the area became a goal. If the committee has no clear indication of where it is headed, that extra level of participation might not be utilized.

2.2 COMING UP WITH A VISION STATEMENT

As a species, humans are particularly good at cooperating and reaching consensus on issues. Faced with a problem to solve, an infinite range of solutions can be created, working together in small groups. There is nothing in particular that is magic in developing a vision statement for your community, but some approaches have emerged which are better than others. To save time, we suggest that you consider existing approaches to developing a vision statement rather than trying to come up with some of your own. This is partly what the ACAP process is all about--to educate you in effective approaches to solve the problem. Your task is immense and resources are limited, so if you want to make progress, it is wise to look to any help you can get.

In developing the vision statement, you should remember that the final product must be saleable to the community at large. It won't be adopted by the community unless it adequately reflects their needs or concerns. Getting enough input to ensure that your vision is representative is a tremendous obstacle and you need special techniques to help you develop community consensus. You should also remember you can gain valuable insight from the community at large--the saying 'No man is an island' definitely applies here.

The following techniques are aimed largely at 'feeling out' the community, and also to help you develop your own view:

Questionnaires–Questionnaires to gauge public opinion are normally used in areas where the population is widely dispersed. Their success depends

entirely on the quality of the questions and how they are asked. Good questions and questionnaires are hard to come by. Since time immemorial, statisticians have made careers designing questions that get meaningful answers.

Once the questionnaires have been filled out and returned, you are faced with compiling and analyzing the information--another highly complex task. Remember that the goal of the questionnaire is to determine a community's goals and objectives for future uses of the environment. Ensure that you carry out this analysis objectively so that no single interest supercedes another, yet keep in mind that every respondent should feel that his or her answers are important and worthy of inclusion in the overall plan.

No questionnaire can give a perfect picture of public opinion or be perfectly interpretable. A useful way of making sense of the questionnaires is to collate the information and then try ranking the issues. After ranking, select priority areas for action. Then organize a workshop for respondents to work through the survey and ranking data. Once everyone has had their say, the issues should be ranked again, perhaps after the workshop, and submitted again for confirmation by the participants, either through a mailout or through one or several additional workshops. The outcome of the entire process will be a consensus over what the final goals and objectives should be.

If it is necessary to limit the workshops to a manageable number of individuals, select persons who represent identifiable interest groups. More than one workshop may be required. Include the need for one or more workshops in your overall project planning.

To be successful, the questionnaire approach must be developed and coordinated by individuals having strong conceptual and analytical skills, in-depth knowledge of the issues, and who are well-versed in public involvement techniques. If no one in the group is sufficiently expert in these areas, seek outside help. Your ACAP representative will be a good source of contacts to help you develop a questionnaire approach.

Public Meetings--Public meetings are often used to solicit a community's input into the development of environmental goals and objectives. Unfortunately, the process does not usually result in consensus, an important building block in the ACAP process, and is therefore the least effective of the mechanisms listed in this section for developing a vision for a community.

Holding effective public meetings over environmental goals and objectives is a skill and you might want to consult with individuals who are good

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at it. One pitfall arises when a task force, consultant, or the like prepares, ahead of time, a statement to which the community is asked to respond. A confrontational situation can arise in which polarized interests speak forcefully while the average citizen is intimidated by the process and remains silent.

Public meetings can also be held in which no statement has been prepared, and which have an open-ended structure. Meetings of this type must be carefully planned to keep the participants focused on identifying goals and objectives.

Public Workshops–Workshops are a good way to engage communities in setting environmental goals and objectives. The most effective means of getting a workshop on the road is to identify as many stakeholders as possible and have them attend an organizational meeting. At the meeting, have the participants identify other individuals and organizations who should be asked to participate.

Choosing the participants for a public workshop is a difficult process and demands a lot of attention. Nothing destroys the credibility of a process more than a group or individual who feels left out and who makes a point of publicly telling you so. In your plan, consider the use of facilitators to guide the sessions. Like the ability to organize and hold a good public meeting, acting in the role of a facilitator is a skill, developed both through experience with the process and from formal training. It is critical that facilitators be objective, have no stake in the outcome, and be skilled in summarizing discussions in succinct and meaningful statements which answer the questions being asked.

Next, think about the questions the workshops should answer. One of the most important questions to be asked at the end of this process is: “can we all live with these statements?”

As a last consideration, plan for wide distribution of the results of the workshop, and offer opportunities through which the results can be further refined. Always remember that communication is a two-way street: if we expect meaningful and timely input, our output has to be just as meaningful and timely. Advertise the workshop widely to allow additional interested parties to come forward and participate.

Workshops may turn up controversial issues, and it is not always appropriate to discuss them fully at the time--a further session should be scheduled for this purpose.

Personal or Group Interviews–Interviewing individuals or groups (‘kitchen table’ workshops) is a popular method for soliciting views on environment,

official plans etc. While important information can come from this approach, a major drawback is that it does not allow all sides to sit at the table together. This means that consensus building is not encouraged and the information tends to be polarized. The onus is then on the interviewer to reconcile the disparate views.

Should this method be used, schedule a follow-up workshop at which all sides can come together and discuss their points of view. The information gathered in the interviews can be compiled, and a first cut at priorizing the issues can be made and then presented for discussion. This will go a long way to preparing the issues for future presentation and for building consensus in the community. As stated before, the ACAP view is that the only useful vision is one based on consensus; only with consensus can we be sure that everyone affected by the goals and objectives has responsibility for and ownership of the actions required to meet them.

General Call for Input–Newspaper advertisements, radio announcements, cable T.V. shows, unsolicited mail--all are ways to solicit public input to the process. Commonly, a general set of questions is distributed, and the public is asked to respond, usually by mail. One of the difficulties in this approach is that the response rate is usually low, and seldom elicits response from the average citizen. On the whole, it is not an appropriate method to use to develop a vision for a community.

The 'Worthy' Group–Often a project organizer or proponent will solicit a response, and sometimes input, from a group or organization which is active and prominent in a community, but which otherwise isn't suitable as a stakeholder. This approach isn't generally a good idea, as the effort usually ends up being perceived as catering to a particular group and hence, not representing the interests of the community as a whole. Such actions can lead to confrontation, which does not encourage consensus and may also be divisive.

Guided Imagery–Guided imagery (a relatively new method for building a broad range of interests into a community vision), asks each member of a multi-stakeholder committee to imagine their own ideal community, based on a generalized framework provided by a group leader. Participants then describe features of the imagined ideal community to the rest of the group. The exercise points out common features in the visions of each of the participants, which can then be used for developing a vision statement for the community.

In guided imagery, participants sit relaxed around a table, their eyes closed, while a facilitator reads a prepared text containing a framework of key community elements. Questions in the text further prompt them to think of situations in an ideal community. Typical questions might be

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"What do you hear in the neighbourhood?" or "Are there people there, and, if so, what are they doing?" The facilitator does not suggest what the participant will see--he/she merely sets the stage for the participants to visualize in their mind's eye what features an ideal community would have.

Once the facilitator has finished reading the text, the participants are asked to write down the first ten things that come to mind about their ideal community. Each participant is then asked to describe an item from his/her list. Once this is completed, and the participants have become comfortable with the exercise, the facilitator gives the group a large sheet of paper and asks each of them to draw on it one prominent feature of their imagined community. The finished drawing represents a collective vision of the ideal community.

The main strength of this approach lies in its conceptual nature. When individuals are asked to think with their eyes open, many things influence their thoughts--culture, jobs, education etc. We see things as they are--not as they could be or how we would wish them to be. The guided imagery process, however, uses the creative or instinctive parts of the brain and enables us to see more clearly how we feel about what we would like our communities to become.

An important feature of process is that the visions developed through guided imagery are surprisingly similar across a broad spectrum of interests. (*In fact, the vision Canada's first statesmen shared was probably a more down-to-earth one, rooted in the way of life they knew and patterns of life they shared, plopped down on the rugged Canadian landscape.*) Thus, guided imagery can also promote group interaction. People who have never met before, or who have have come from different backgrounds, find that there is a lot of common ground between them. Discussions are positive, and consensus is usually reached. It becomes easier to pick out priorities and identify what the common objectives are.

Guided imagery is also a bit more fun than other methods of developing a vision. Unlike dry, paper exercises, guided imagery demands total involvement and is a good way to introduce the participants to each

3.0 Now that You Have a Vision

Having developed your group's community vision, get it down on paper. Common elements from individual visions will help you reach consensus on certain points, but you will have to use all the tools available to reach consensus on other points. The final vision you arrive at will have many elements in common, too, with present uses of the environment in your ACAP area. In fact, a list of current uses can be a guideline for your future vision, though it will lack many of the elements which are currently not possible due to degraded environmental conditions. How to develop goals and objectives based on your vision is discussed in Part 1 of this manual.

A final note! The process of developing your vision will not work if you do not take the process seriously. The outcome of the ACAP depends largely on how good your vision or plan is. This will depend on how open you are to sharing your knowledge, your willingness to learn from others, as well as your interest in working jointly to achieve a genuine collective plan as the project proceeds. ACAP is an opportunity to make a tangible contribution to your community, not a chance to advance yourself. If we work in the ACAP process and achieve a successful outcome, everybody will benefit.

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Part 2B

A Primer on Environmental Assessment

Table of Contents

1.0 Getting Started

ACAP participants have already been introduced to Environmental Quality Assessment (EQA) in ***Part 1—The Multistakeholder Approach*** in this Guide. Environmental Quality Assessment involves comparing various measures of environmental quality in your area, to the levels you require to fulfill your objectives and vision for present and future uses. If your objectives can be achieved under the current environmental conditions, then environmental quality is said to be good. There are many degrees of environmental quality--your assessment will depend on how high a standard you set for yourself at the beginning of the process. The important principle to remember is, that in ACAP and similar programs that require environmental quality assessment, quality is defined in terms of the desired end uses.

Although this might suggest that you need not be concerned with aspects which do not appear to touch on your desired uses, in practise it is essential that you get as complete a picture of the environment of your study area as possible. The many components of the environment interact and many factors not immediately obvious to you might have an impact on environmental quality.

This workbook presents the essential features of Environmental Quality Assessment. First it explains the task of gathering data--the kinds of information you will find in your own surveys and from documents or reports obtained from a variety of sources. You will want to know how to judge the importance of different kinds of information, and to realize possibilities and limitations of your evaluations. It then discusses guidelines, the tools to aid in assessing environmental quality, and gives a simple way to organize your data and perform the environmental quality assessment. Lastly it explains where your Environmental Quality Assessment fits in the whole ACAP process, enabling you to get on to the next stages.

Environmental Quality Assessment only appears to be daunting until you have done one. The next one--or future updates--will be a piece of cake.

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2.0 Gaining Confidence– Weighing the Importance of Environmental Data

2.1 WHERE TO LOOK

If you have used ***Community Environmental Profile--A Workbook for Use in ACAP Project Areas*** (Volume II of *Sharing the Challenge*), you will have gathered environmental information of many different kinds and will have gained an idea of the information resources available to you. While information may reach you in a variety of forms, one of the most important sources is personal contact. All levels of government, universities and private industry (engineering firms, major industries etc.) employ individuals whose job it is to deal with information and knowledge. As often as not they are only too willing to help you get your information gathering off the ground. Often their position exposes them to information outside their specialty too, so be prepared for being side-tracked to other leads when you call for information on a specific subject.

Your ACAP representative within Environment Canada is a good first contact to make. He/she can give you the names of key individuals (both within Environment Canada and outside) that deal with each of the major kinds of environmental information you will need. As well, you might be given the names of appropriate federal or provincial government departments and agencies which normally deal with the various environmental subjects of concern. You will also have contacts which are recommended by the members of the local ACAP committee, those you will have to look up yourself and those to which you are directed by the ***Community Environmental Profile*** workbook.

Often a visit to a key individual can yield much of what is known about a topic. When you make a contact, you must be disciplined and stick to gathering information which is related to your ACAP area. Acquire documents or photocopies of information relating to the topic. These will form an important part of your information base.

In addition to those Federal and Provincial Government departments and agencies, other good contacts may be found by contacting local governments, planning offices, museums, universities, environmental organizations, institutions such as the Bedford Institute of Oceanography, St. Andrew's Biological Station, Gulf Fisheries Centre, Atlantic Veterinary College, Northwest Atlantic Fisheries Centre, etc.

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TYPICAL CONTACTS

FEDERAL GOVERNMENT

Environment Canada (*Conservation and Protection; Water Resources Directorate; Canadian Parks Service; Canadian Wildlife Service; Atmospheric Environment Service.*)

Department of Fisheries and Oceans

Forestry Canada

Health and Welfare Canada

PROVINCIAL GOVERNMENT

Newfoundland--Development and Tourism, Environment and Lands, Fisheries, Forestry and Agriculture, Health, Mines and Energy.

New Brunswick--Agriculture, Fisheries and Aquaculture, Health and Community Services, Natural Resources and Energy.

Nova Scotia--Natural Resources, Fisheries, Environment, Agriculture and Marketing, Health and Fitness.

Prince Edward Island--Agriculture, Energy and Forestry, Environment (Marine Division, Environmental Protection Branch, Water Resources Branch, Fish and Wildlife Branch), Fisheries and Aquaculture, Parks and Recreation, Tourism.

2.2 TYPES OF ENVIRONMENTAL INFORMATION

Environmental information can take a variety of forms. You may have collected the comments of an expert on one hand, your personal observations on another, and have a thick consultant's study sitting in the middle. The various types of information you will be encountering have different degrees of importance in environmental quality assessment. A number of different kinds are described below:

1) Articles in Scientific Journals–Are good sources of factual information and interpretation since they have undergone an extensive review process. If the article reports a study that has been carried out on your ACAP area, particularly to address one of the environmental problems you are grappling with, it can be extremely valuable. Scientific articles are often highly focused and also frequently contain background and additional information which may turn out to be more useful than the topic the article discusses. Keep your eyes open for that nugget which might answer a key question.

2) Technical and Data Reports–These documents are produced and issued mainly by government but also by private interest groups and organizations (e.g. the Canadian Pulp and Paper Association; the Canadian Electrical Association). They include scientific studies, data gathering exercises, and analyses on special topics, generally contain sound factual information and often are issued regularly. The information contained in these studies can is useful and generally reliable.

3) Proceedings of Workshops and Symposia–In this category are collections of articles presented at meetings and workshops devoted to special topics. Studies dealing with environment and government environmental research frequently appear in this form, which usually contains reliable information and the advantage that you can often find several perspectives on a particular topic. As a rule these are not as closely reviewed as scientific articles, but some review is generally included and they are good reference material.

4) Reports and studies by consultants, committees, task forces etc.– Government and industry frequently commission studies by outside organizations. Such studies can range widely in scope, depending on the information requirements--from thorough scientific evaluations to data compilations and literature reviews. They usually answer simple questions and often contain relevant background information, though like some scientific studies, they are often narrow in focus. Environmental assessment studies fall into this category.

5) Written Communications–Including internal memoranda, monitoring and lab test results, letters, and so on. Much of the effluent quality data for industries is provided in this form to government regulatory agencies (such as Environment Canada and Provincial Environment departments). Written communications are valid sources of information for an environmental quality assessment but you must be careful in using them. Often such results represent single samples and lab test results can be in error for various reasons. Whenever possible state the amount of data (how many samples, studies etc.) you are using to support your conclusion.

6) Government information publications–Includes reports, brochures, data sheets for mass distribution. These generally contain solid factual information of a general nature, but unless focused on your study area are not likely to provide useful material.

7) Personal or Verbal Communications–Conversations with knowledgeable individuals can provide you with useful information, but you must be especially careful to get it right. When interviewing it is important to have a clear idea why you're making the contact, to ask specific questions and make sure you understand the response. If possible, repeat the answer, or

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the jist of the statement, for a confirmation that you have understood it. Take detailed notes and write them out after the conservation. In your data summary, you can use a personal conversation as a standard bit of reference material.

8) Anecdotal Information–Apart from the written and verbal information you may acquire in developing the community environmental profile, most of the information you gather will be anecdotal--data obtained by untrained observers or unsupported by other sources. In many cases, anecdotal information is the only source of information about important aspects of an environmental situation. As a case in point, a housewife once settled a heated debate concerning ocean currents in a harbour by relating her own observations of drifting logs.

Almost anything relating to activities and uses of the ACAP study area can be extremely useful in environmental quality assessment. Such things as patterns and timing of clam digging, seasonal occurrences and presence/absence of wildlife, timing of industrial activity or discharges, frequency of use by pleasure boaters, and so on, can be valuable.

To the best of your ability, you should gather data in an objective fashion, and evaluate and present it in an organized and systematic way. For example, identify all industrial outfalls, not just the big ones, and when you present data, find logical ways to rank it. For example, for pollutant sources, present them in terms of volume, kind of industry, type of effluent etc. Don't spend all your time looking at one small facet of your study area, say in documenting a major known industrial polluter--you're apt to get bogged down. Make an effort to look at the whole picture.

Further, remember that all anecdotal information is not created equal. Information collected by a reliable individual in a systematic way, having a clear purpose, and existing as a written record at the end of the process (the data you collect) is anecdotal in the best sense. While you may not be sufficiently expert to interpret it, you can draw conclusions from the data that can be reviewed by your associates or by someone with experience in analysis of environmental data. If your anecdotal information is sloppy or incomplete, it makes it harder to involve others in the process, and your conclusions will be less valuable.

Remember that your efforts have limitations so don't expect too much, even from the your best data gathering effort. Generally the kinds of questions best answered by anecdotal studies are 'Yes/No' ones--'Yes, the harbour is used for swimming', or 'No, the river has never gone dry in the summer'. The value comes in adding your results together in presenting the overall picture of the environment in your area.

Lesser forms of anecdotal information are hearsay and rumour. Consider these useful if they point to situations which you may not have considered and if you can find the source of the information. But if you can't find the source of hearsay data, don't use it.

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3.0 Let's Get Organized

3.1 BASIC HOUSEKEEPING

Before an assessment can be carried out, the data must be organized. Environmental data comes in various shapes and sizes, from a variety of sources, often widely separated geographically within an area. Furthermore, new information is constantly coming in. To be useful, it must be organized.

Gathering information systematically as outlined in your ACAP workbook will help to organize your data. You should also set up a system of cataloging documents and bits of information to enable you to find them readily. A satisfactory system to catalogue your documents can be based on an index card file, a reference list, a library shelf, or a simple computer database to name a few. Information can be grouped on a variety of general topics, whichever are most useful.

The next step (which is outlined below) is to extract relevant pieces of information from the material you have collected and to organize it in a way that will be useful for carrying out the environmental quality assessment.

3.2 THE NEXT STEP--PREPARING YOUR DATA FOR ASSESSMENT

This section describes a simple approach to organize and present data and conduct an environmental quality assessment. The approach was used in the environmental quality assessment for Pictou Harbour, conducted prior to ACAP, and it works reasonably well.

First divide your study area into convenient ***geographic sub-areas***. You should do this even before you begin collecting information because it helps focus on the different features and regional characteristics. Typical sub-areas might be the watershed; the estuary itself; and the outer marine areas. As you gather data, make note of the geographic regions to which the data apply.

For each geographic sub-area, your data will fit one or more of the following categories, which we have called ***environmental components***:
These categories should be sufficient to fit most data. You'll find more data on biophysical components than on human components, largely because it's easier to measure and assess them.

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BIOPHYSICAL AND HUMAN COMPONENTS FOR ENVIRONMENTAL QUALITY ASSESSMENT

BIOPHYSICAL COMPONENTS

Water (water quality data, oceanography, smell, colour etc.)

Biota (contaminants in organisms, toxicity data, fish & wildlife habitat, fish kills, etc.)

Sediments (chemistry, grain size, rate of deposition, etc.)

HUMAN COMPONENTS

Fisheries (status, location of recreational & commercial fisheries etc.)

Domestic Uses (water supply, waste disposal, residential use of shorelines)

Recreation (swimming, boating, tourism)

Industry (uses, water supply, waste disposal, access etc.)

Miscellaneous (agricultural water use, coastal land management, human health)

Look for data that in some way relates to an evaluation of quality. For biophysical components it usually means looking at standard measurements such as temperature, dissolved oxygen, pH (acidity) or levels of contaminants in water and sediments. For human components, look for indicators that any of these uses will be impaired. For example, in 'Fisheries', look for studies or comments that let you infer a fishery is healthy, declining etc., or for 'Recreation', whether the area is presently used for swimming or camping--if it is, it is an indication of satisfactory environmental quality. Industrial uses can be affected by measures which change environmental conditions. For instance opening a causeway to restore an estuary may take away the freshwater supply of an industry. Try to determine how industry will be affected as it is an element of the environmental picture which you may well wish to conserve.

You can organize your data by entering it on the form illustrated below which you fill out for each environmental component. The form also has a space for completing the environmental assessment, which you will do after all the data has been compiled. Each sub-area thus has up to eight forms. Blank forms which you can copy and use are contained in the Appendix to this section of *Sharing the Challenge*.

NOTE FOR COMPUTER USERS: Database programs can be used to advantage in compiling data and for setting up and filling in forms for

environmental quality assessment. A word of warning, however! Don't attempt to use one on an EQA unless you are well-versed in the program and have a full grasp of the environmental assessment process--otherwise a lot of time can be wasted. We suggest working through the process our way before you tackle it in yours. For those interested in computer approaches, Part 2C of *Sharing the Challenge* gives a sample use of a database management program which can be used on IBM compatible computers.

Fill in the forms using the data you have gathered, as indicated below:

Principal Concerns/Objectives–List the project objectives for the geographic sub-area. This will be the same for all the environmental components so you need only put it on the set of forms for the first environmental component.

Geographic Sub-area–As noted these are component parts of your study area.

Background Data Sources–List all your data sources for the sub-area and environmental component. During the process of producing an environmental quality assessment, questions frequently arise about the background data, and the references placed here should be sufficient to enable you to find and check original data.

SAMPLE EQA FORM

ANYWHERE ENVIRONMENTAL QUALITY REPORT

Geographic Sub-Area: Folly Bay

Environmental Component: Water

Principal Concerns/Objectives: (Apply to all environmental components. These may be as specific as necessary)

- preserve commercial fisheries in harbour;
- maintain recreational opportunities (boating and swimming) for citizens and visitors;
- keep water clean and aesthetically pleasing;
- develop commercial facilities (new wharf and marina);
- develop scenic features of coastal areas as part of a tourism plan;
- maintain fish and wildlife habitat.

Background Data Sources:

Description	Reference
- Trace metals	Leopold (1973)
- Trace metals	Swarofsky (1989)
- Dissolved oxygen	Environment Canada (1982)
- Bacterial Counts	Environment Canada (1985)
- Suspended sediments	Fisheries & Oceans (1987)
- Water samples, Windy River	ACAP Survey (1992)
- Aesthetics	ACAP Survey (1992)
- Point sources	ACAP Survey (1992)
- Agriculture impacts	ACAP Survey (1992)

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Background Data Summary: (Highlight levels which fail guidelines)

Reference	Results
- Leopold '73	Mercury levels averaged 0.3 ug/L off Sandy Point. Pass CWQG.
- Swarofsky '89	All priority pollutants analysed (see list). All pass CWQG.
- Environment Canada '82	Dissolved oxygen monitored near town sewage outfall. Passes CWQG.
- Environment Canada '85	Harbour closed to shellfish harvesting.
- DFO '87	Harbour is sedimenting in. Combination of agricultural and land clearing practices.
- ACAP Survey '92	Chemical analyses attached. All levels of metals pass CWQG. Fecal coliforms too high for contact recreation.
- ACAP Survey '92	Garbage and oily film in water near public wharf. Runoff from carwash is a potential concern.
- ACAP Survey '92	Odours from miscellaneous unidentified pipes and seepage from home septic tanks along coast.
- ACAP Survey '92	Significant effluent observed from small vegetable processing plant at mouth of Windy River.
- ACAP Survey '92	Several pastures encroach Windy River shoreline; cattle seen drinking in river.

Environmental Quality Evaluation

Assessment

- Water quality in terms of trace metals and dissolved oxygen acceptable in terms of Canadian Water Quality Guidelines for most uses but high coliform levels due to the sewage outfall and agricultural runoff currently are too high to permit swimming and shellfish harvesting anywhere in the harbour. Oil and debris in the water near the wharf is aesthetically poor and may indicate other contamination problems.
- Water quality is sufficient for existing fisheries and wharf facilities and will not interfere with future commercial facilities, through they should be designed to direct minimal effluent to the harbour. The fish plant at the mouth of the harbour will not be able to operate in the long term because of the current sewage problems.
- Efforts to develop scenic features will generally not be affected by current water quality but the town sewer outfall will detract from downtown development.
- Sedimentation could impact shipping and use of berthing facilities in the harbour.

Data Gaps

No information was found concerning levels of contaminants in any of the outfalls in the study area.

Too few fecal coliform samples have been taken to adequately assess the distribution, seasonality, and range of concentrations in the harbour.

Background Data Summary–Summarize the relevant data, referenced by source, including added pages if necessary. If you have the results of water quality analyses, list or attach copies of all the pertinent measurements. Include in this summary general comments such as 'Salmon fishery

down in recent years'; 'Town plans to install new sewage treatment system' etc.

In the attached data (but not in the main background data summary) also include briefly information such as where, how often, and how many samples were taken, and what analysis procedures were used. Some measurements and analyses have more weight than others in Environmental Quality Assessment. For example, a study of fecal coliform concentrations that used a 'geometric mean' of several measurements is apt to have more weight in decision-making than a simple average, and so it is useful to say what form of average was used. Similarly you may not be able to trust the findings of a study 20 years ago, which used an analysis technique which has since proven to give erroneus results.

Remember that a single analysis or data point rarely can give as good information as a study having more sampling and greater geographic coverage. Similarly, one measurement above guidelines out of ten is probably not a concern, but if more exceed the guideline the fact should be noted (for more on guidelines see Section 4.1). Also note if a study indicates that a change in environmental conditions has taken place and indicate the direction of change. This type of data is particularly important in assessing environmental quality.

Also note that guidelines are developed to protect environmental quality and allow you to make a decision such as 'safe/unsafe' or 'acceptable/unacceptable' based on whether or not your measurement corresponds to the guideline. Measurements near or above the guideline are obviously of more concern than those below it and thus have more weight in your analysis. As a practical matter, consider that a value only ten per cent of the guideline isn't a hazard, values between that and the guideline are more important, and values at or above the guideline are very important. Note changes with time in parameters to give you an indication if values are approaching the guideline level (i.e. the situation is worsening) or getting farther away from it (the situation is improving).

Go over your background data summary with knowledgeable individuals as you compile it and get comments and help. This can be a learning experience for both of you. Once you have filled out the forms for all geographic sub-areas, you are ready to begin your environmental quality assessment.

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4.0 Performing an Environmental Quality Assessment

To assess environmental quality, you must compare information which you have gathered to a variety of standards, or guidelines, some of which may be subjective and some which use a scientific measurement or evaluation. After you carry out this comparison you will know whether your ACAP area 'passes' the environmental criteria for each of the uses you specify. You will also have an idea where you lack information to answer critical questions.

4.1 GUIDELINES

A guideline is a measure which makes an environmental quality judgement for you. Numerous guidelines are available to assist you in evaluating environmental quality, but you may have to establish rough guidelines for yourself concerning particular desired uses. Whenever you see an official guideline, there is always a specified purpose, such as protection of human health or reduction of damage to fisheries, for which the guideline has been established. You may even decide that existing guidelines are not stringent enough to meet your use objectives.

No single set of formal or official environmental guidelines exists for Canadian marine waters. The guidelines and publications listed below will give you sufficient information for most situations. These can all be found in the Environment Canada library in Dartmouth, Nova Scotia, and most university and government libraries also have them. You can also obtain them from the source departments.

Apart from official guidelines, some subjective guidelines may be established in your study. For example, if tourism expansion is an objective of the ACAP project, then presence of beach litter might be a subjective guideline to evaluate environmental quality (i.e. the presence of litter indicates poor environmental quality). You do not have to formally set up subjective guidelines--many like this one are based on perceptions you and others on your ACAP committee have about what is good or bad for the environment.

4.2 MAKING YOUR ASSESSMENT

Generally it is sufficient in an environmental quality assessment to compare measured levels of a feature of the environment with a guideline relating to a particular use and determine whether the measure passes or

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IMPORTANT ENVIRONMENTAL GUIDELINES

Water Quality Sourcebook. A Guide to Water Quality Parameters 1979. Environment Canada, Water Quality Branch.

Canadian Water Quality Guidelines (CWQG) 1987. Canadian Council of Environment Ministers. Available from Health and Welfare Canada and Environment Canada.

Canadian Drinking Water Guidelines (CDWG) 1989. Health and Welfare Canada.

Water Management--Goals, Objectives, Policies and Implementation Procedures 1984. Ontario Ministry of the Environment.

Environmental Control (Water and Sewage) Regulations, 1980. Newfoundland Department of Consumer Affairs and Environment Act.

Canadian Environmental Protection Act Ocean Dumping Guidelines. Environment Canada, Dartmouth, Nova Scotia.

Canadian Shellfish Sanitation Program, Manual of Operations. Fisheries and Oceans Canada, Manual Production and Distribution, 200 Kent Street, Ottawa K1A 0E6.

fails. A pass indicates that the environmental quality is acceptable for the intended use. In many cases, and particularly with data you acquire through developing the Community Environmental Profile, you won't have a lot of measurements but will have a subjective sense, or perception, of the environmental quality. Nonetheless, perceptions of environmental quality, can be entered directly in the assessment section of the form. Say, for example, that 'there is a perception that a connection exists between effluent from the plant and declines in waterfowl populations.' Perhaps this observation will lead to a study which will look at the problem.
Also remember that an environmental quality assessment goes through stages of evolution and that a final document only results after an appropriate period of reassessment and evaluation. An assessment you make now is not necessarily 'cast in stone'--and will change as you learn more about the problem and see the relationships between the various elements more clearly.

Summarize the results of your assessment at the end of the form. Try to generalize from the various comparisons you made--if you had several sources of water quality data, break them down into general categories, for example say that dissolved oxygen and trace metal concentrations were satisfactory according to guidelines, but that fecal coliform levels were unacceptably high.

You should identify data gaps when you cannot answer significant questions about the current state or quality of the environment. For example, if there is a sewage treatment plant on the estuary and you wish to encourage public swimming, you need information on bacterial concentrations--otherwise there is a data gap. Other examples of data gaps include: absence of data on waterfowl feeding and nesting areas if you plan to allocate coastal lands for a marina; need for information on contaminants in sediments if channel deepening and maintenance is encouraged; need to know effluent quality of major industries if you wish to maintain commercial shellfish beds; and so on.

If possible, data gaps should be filled as soon as possible. This will usually have to be accomplished through data gathering activities of government agencies or industries directly involved, but in some cases may be accomplished by citizens' themselves under the direction of qualified individuals. For example, a citizens' environmental monitoring program, such as the one carried out by the Clean Annapolis River Project, may provide some of the information needed to fill certain data gaps. Your Environment Canada ACAP representative will be able to help identify appropriate avenues within government and help to get the cooperation of their agencies to fill data gaps. Industry representatives on the ACAP Stakeholder Committee can also be important in getting the participation of industries which use and impact the study area to institute or modify monitoring and data gathering exercises. Some data gaps will take a while to fill, but the environmental quality assessments can be carried on for other components, on the provision that the data gaps are filled.

The assessments for each environmental component can be used to prepare a summary report to give an overall picture of the results of the environmental quality assessment for each geographic sub-area and a statement of the data gaps found. A report is a focus of discussion, but helps to bring all the issues and limitations of the exercise more clearly into focus. One or several of the ACAP committee members can be charged with preparing the report, but the whole committee should review it. The report may have to be revised several times before it is acceptable to all committee members.

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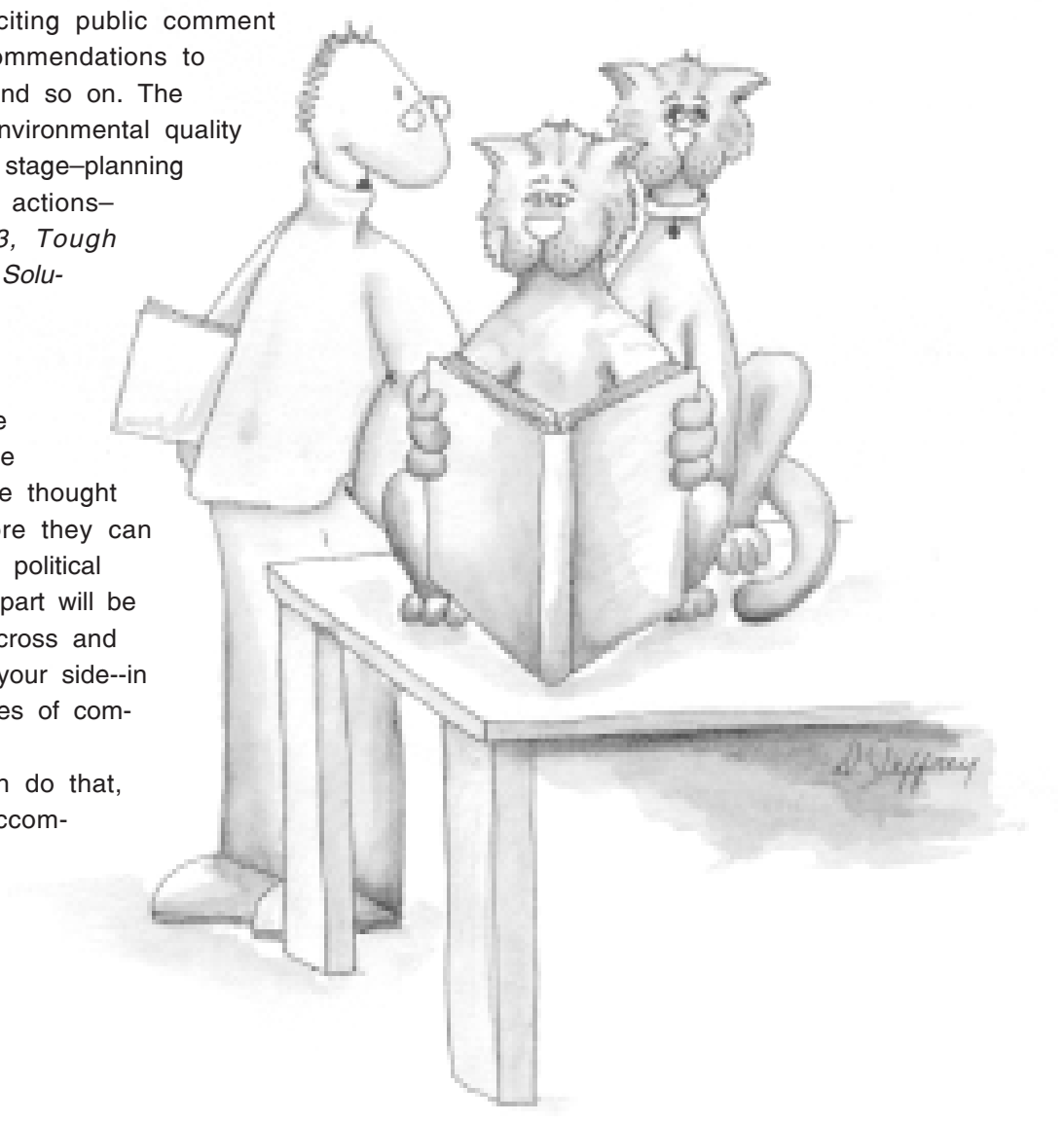
5.0 Where Do We Go from Here?

An environmental quality assessment gives you a report card for your study area, and a solid base for taking action. From here, you can begin looking at remedial measures, make efforts to address data deficiencies, establish monitoring programs and so on. The assessment usually will lead to reappraisals of your objectives, as these can change after you become more familiar with the environmental aspects of the problem. Slowly, you'll see the more important aspects of the issues and identify where actions can do the most good.

Remember that the environmental quality assessment doesn't give solutions to environmental problems–it merely shows where work is needed. You have to come up with solutions yourself. For example, the assessment might show that water quality in an area is below the level needed for aquatic recreation. You'll have to decide on a strategy to remedy the situation. A strategy might include forming an *ad hoc* committee, soliciting public comment and ideas, making recommendations to municipal government, and so on. The process of taking the environmental quality assessment to the next stage–planning and executing remedial actions–is described in *Part 3, Tough Choices: Selecting Your Solutions,* of this manual.



Some activities can take place immediately, while others will demand more thought and understanding before they can be carried out. Like any political process, the really hard part will be getting your message across and winning people over to your side--in this case to the objectives of community environmental management. If you can do that, you will indeed have accomplished something--for yourself, for your community, and for the environment!

Appendix

BLANK FORMS FOR ENVIRONMENTAL QUALITY ASSESSMENT

NOTES

ENVIRONMENTAL QUALITY REPORT FOR:

Geographic Sub-Area:

Environmental Component:

Principal Concerns/Objectives:

Background Data Sources:

Background Data Summary:

Environmental Quality Evaluation

Assessment:

-

Data Gaps:

Part 2C

Developing an Environmental Quality Assessment Using *Lotus Agenda*

Table of Contents

1.0 Introduction

This section of *Sharing the Challenge* will demonstrate one way in which a citizens' group can use a computer to organize written information and fill out forms in their Environmental Quality Assessment (EQA) process. Sample outputs on the following pages illustrate how the program, *Lotus Agenda* (*Agenda* for short), can help to organize data. *Lotus Agenda* is an information management program, parallel in many ways to a database program for numerical data.

The following example shows what *Agenda* can do. Figure 1 is an output produced when *Agenda* was set up to contain information relevant to the Environmental Quality Assessment process. For a hypothetical situation, the output concisely lists environmental objectives, EQAs and actions needed to bring the present environmental quality ('PRESENT') to what is desired for the future ('VISION')(Figure 1).

Figure 1. Partial list of actions arising from Environmental Quality Assessments, by Objective.

Preserve fish/wildlife habitat

VISION: Maintain/enhance fish and wildlife habitat.

PRESENT: In a word the habitat is diminishing.

- Explore cost-effectiveness of Bob Bancroft's stream pool structures.
- Build up awareness of streambank erosion and preventative practices.
- Make a survey of wastes entering Folly Bay.

Preserve commercial fisheries

VISION: Preserve commercial fisheries in harbour.

PRESENT: Commercial stocks are being depleted.

- Make a survey of wastes entering Folly Bay.

Maintain swimming & rec. boating

VISION: Maintain recreational boating and swimming for citizens and visitors.

PRESENT: The bacterial contamination, though in excess of guidelines, is not as extensive in time and space as feared.

PRESENT: According to present plans the wharf/marina developments will not present negative impacts on habitat, fisheries, swimming, or appearances, but rather will enhance boating and commercial fisheries and tourism.

- Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.

Develop commerical wharf & marina

VISION: Develop commercial facilities such as a new wharf and marina.

PRESENT: According to present plans the wharf/marina developments will not present negative impacts on habitat, fisheries, swimming, or appearances, but rather will enhance boating and commercial fisheries and tourism.

etc

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The program can easily display the data in different ways. In this case, a few keystrokes produces a list of suggested actions covering all environmental objectives (Figure 2). Here, *Agenda* has been set up to list each action several times, according to various categories which apply to it.

Figure 2. Partial list of actions, organized by environmental objectives and persons responsible.

ACTIONS

- Make a survey of wastes entering Folly Bay.
- Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.
- Explore cost-effectiveness of Bob Bancroft's stream pool structures.
- Build up awareness of streambank erosion and preventative practices.

Short-term

- Make a survey of wastes entering Folly Bay.
- Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.
- Explore cost-effectiveness of Bob Bancroft's stream pool structures.

Long-term remedial

- Build up awareness of streambank erosion and preventative practices.

WHO

- Make a survey of wastes entering Folly Bay.
- Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.
- Explore cost-effectiveness of Bob Bancroft's stream pool structures.
- Build up awareness of streambank erosion and preventative practices.

Coordinator

- Make a survey of wastes entering Folly Bay.
- Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.
- Explore cost-effectiveness of Bob Bancroft's stream pool structures.

Stream Committee

- Explore cost-effectiveness of Bob Bancroft's stream pool structures.
- Build up awareness of streambank erosion and preventative practices.

Suppose we wish to add target dates for the actions in Figure 2. A few keystrokes produces a similar list, this time with a column for target dates (Figure 3).

Figure 3. A list of actions, with target dates for completion, sorted by date.

ACTIONS	When
· Make a survey of wastes entering Folly Bay.	1992/09/15
· Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.	1992/10/15
· Explore cost-effectiveness of Bob Bancroft's stream pool structures.	1993/01/15
· Build up awareness of streambank erosion and preventative practices.	1993/06/01

Short-term	When
· Make a survey of wastes entering Folly Bay.	1992/09/15
· Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.	1992/10/15
· Explore cost-effectiveness of Bob Bancroft's stream pool structures.	1993/01/15

Long-term remedial	When
· Build up awareness of streambank erosion and preventative practices.	1993/06/01

Who	When

Coordinator	When
· Make a survey of wastes entering Folly Bay.	1992/09/15
· Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.	1992/10/15
· Explore cost-effectiveness of Bob Bancroft's stream pool structures.	1993/01/15

Stream Committee	When
· Explore cost-effectiveness of Bob Bancroft's stream pool structures.	1993/01/15
· Build up awareness of streambank erosion and preventative practices.	1993/06/01

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As a final illustration, the program can add a column for the person(s) responsible for each action (Figure 4).

Figure 4. A list of actions, with target dates for completion, and person(s) responsible.

ACTIONS	Who	When
· Make a survey of wastes entering Folly Bay.	coordinator	1992/09/15
· Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.	coordinator	1992/10/15
· Explore cost-effectiveness of Bob Bancroft's stream pool structures	strm committ coordinator	1993/01/15
· Build up awareness of streambank erosion and preventative practices.	strm committ	1993/06/01

Short-term	Who	When
· Make a survey of wastes entering Folly Bay.	coordinator	1992/09/15
· Prepare suggestions and options, with cost ranges, on how bacteria levels may be reduced.	coordinator	1992/10/15
· Explore cost-effectiveness of Bob Bancroft's stream pool structures.	strm committ coordinator	1993/01/15

Long-term remedial	Who	When
· Build up awareness of streambank erosion and preventative practices.	strm committ	1993/06/01

etc.

A variety of other information pertinent to the process can also be added and then organized in useful arrangements.

The following key steps the citizens' group will be taking in the EQA process can be made much easier using a computer 'organizer':

a) to consolidate scientific data and qualitative information from a citizens' environmental audit into an assessment of the existing environmental quality of the area, and,

b) to relate the EQA to desired future use objectives established during a visioning process, etc.

Lotus Agenda *will enable you to design a form for your data and information. Then it will display the form already filled in with your information!* It will ease the workload significantly, leaving the group more time for the less-routine tasks.

The following section introduces *Agenda* step by step using simple examples.

2.0 Using Lotus Agenda in Environmental Quality Assessment

As we have seen, there are various steps required in performing an EQA. This section shows how *Lotus Agenda* supports the citizens' group in accomplishing many of those steps. The section contains a review of the steps in the EQA process (**STEPS 1** through **7**), and, for each, gives an explanation about what *Agenda* can do to assist in a particular step, shows how the program can be operated to gain this assistance, and gives sample outputs. The operating details are provided to illustrate use of the program, but are not intended as a substitute for the User's Guide for *Lotus Agenda*.

The flowchart in Figure 5 outlines the various steps in the EQA process and the corresponding sample outputs contained in this manual. Our demonstration is based on an imaginary harbour, from which one sub-area (Folly Bay) has been selected for environmental quality assessment. The bay suffers from many of the problems likely to be found in ACAP areas and may also share some of the future environmental goals.

STEP 1-- REVIEW OBJECTIVES

For the Folly Bay sub-area of the harbour, we begin by reviewing the objectives for environmental quality of the harbour. This step involves making a list of objectives determined in the ACAP visioning process (Part 2A of this manual). To accomplish this, *Agenda* can present an 'Objectives View' which repeats the list of objectives (Figure 6). A 'View' is *Agenda*'s name for a form, list or table. Views are controlled by a feature known as the 'View Manager'.

Start your *Agenda* file by pressing F8 to go to View Manager. Then edit the name of the initial view, changing it to 'Objectives'. Return to the view, press F2 (edit), and change the name of the section head category to 'Objectives' (Figure 6). To place your first environmental objective (e.g. from the list of Principal Concerns/Objectives) in *Agenda*, press INS and type one item. Add the remaining objectives in a similar way.

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Figure 5. Flowchart showing the steps in the EQA process and the corresponding 'Views' produced by Agenda.

Agenda can make the list in Figure 6 more informative by adding date information (e.g. the dates when these items were accepted as objectives ('Entry'), or the dates when we would hope to see them realized ('When')). *Agenda* can also display the list of objectives sorted by 'When' date. An output in which these changes have been made is presented in Figure 7.

Entry of date information in *Agenda* follows similar steps to the entry of 'Objectives' information described above. To create the output shown in Figure 7, we have to enhance the 'Objectives View' by introducing date categories and adding columns for important dates. *Agenda* has three built-in date categories which we will use - *Entry, When,* and *Done*. For each objective entered, the entry date is automatically entered or can be edited manually. These dates can be displayed in the output by adding a column to the view. To do this, position the cursor on the 'Section

Figure 6. View of the Objectives category.

OBJECTIVES or DESIRED USES

- VISION: Maintain/enhance fish and wildlife habitat.
- VISION: Preserve commercial fisheries in harbour.
- VISION: Maintain recreational boating and swimming for citizens and visitors.
- VISION: Develop commercial facilities such as a new wharf and marina.
- VISION: Keep water clean and aesthetically pleasing.
- VISION: Develop scenic features of coastal areas as part of a tourism plan.

Head' category and press ALT-R to add a column on the right. You can supply the name 'Entry' or press F3 for a list of choices among already established categories. Repeat this process to add a 'When' column. You can then assign a 'When' date by moving the cursor to the 'When' column and entering the appropriate date.

The output in Figure 7 contains two further refinements: notes and sorting. One of the items has an explanatory note attached to it (the presence of a note is indicated by a musical note which *Agenda* places to the left of the entry). An attached note can contain a large amount of information supporting the listed environmental objective, but is not displayed in the 'Objectives' list. You can view it easily from within *Agenda*. To create an attached note, move the cursor to the Objective in question and press F5. Then type in the note.

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Figure 7. As in Figure 2, with acceptance (Entry) and target (When) dates sorted by target date. A note accompanying one 'item' is printed.

OBJECTIVES or DESIRED USES	Entry	When
· VISION: Maintain/enhance fish and wildlife habitat.	1992/07/13	1992/07/13
· VISION: Preserve commercial fisheries in harbour.	1992/07/13	1992/07/13
· VISION: Keep water clean and aesthetically pleasing.	1992/07/13	1994/06/01
· VISION: Maintain recreational boating and swimming for citizens and visitors.	1992/07/13	1994/07/01
· VISION: Develop commercial facilities such as a new wharf and marina.	1992/07/13	1995/06/01
· VISION: Develop scenic features of coastal areas as part of a tourism plan.	1992/07/13	1996/06/01

The second useful refinement permits sorting the 'Objectives' list by 'When' dates. This is done by pressing F10 to reach the main menu and making the following three selections: View -> Properties -> Item sorting.

As a further refinement, it may be desirable to classify the Environmental Objectives in terms of values to which they relate, such as health and safety (often the purpose underlying water quality guidelines), sustainability (which includes economic feasibility as well as ecological complexity and environmental preservation), and aesthetics (the 'soul' of the place). A sample list of objectives classified in terms of 'Values' is presented in Figure 8.

To add the new category, 'Values', with its sub-categories, 'Health & Safety', 'Sustainability' and 'Aesthetics', press F9 for 'Category Manager'--the hierarchy of categories. The Category Manager is one of the ways in which *Agenda* allows you to add categories. Move the cursor to the last category, press INS and type 'Values'. Repeat this to insert 'Health & Safety' etc. You can use the menu to change 'Health & Safety' to a sub-category by pressing F8. The hierarchy of categories to this point is shown in an output list of the Category Manager (Figure 9).

To produce the view presented in Figure 8, press F9 to leave the Category Manager. Since you wish to display columns containing the 'Values' category and its sub-categories, you must create the necessary new columns. Press ALT-R as before, and name the new column 'Values'. Then proceed down the list of 'Objectives', classifying each in terms of the 'Values' (sub-categories) which apply to them. To do this, place the cursor in the 'Values' column and type the name of the sub-category (e.g.

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Health & Safety, Aesthetics etc.). *Agenda* helps in this process by monitoring your entry as you type it and recognizing which of the available sub-categories you could be entering. When it recognizes a sub-category, *Agenda* will enable you to fill in the rest of the name without further typing. Pressing F3 will produce a display of your choices for sub-categories in this column. For an objective which has more than one value category, position the cursor on the item, press ALT-M and type the second, third or subsequent value sub-category.

Figure 8. As in Figure 7, without the note but with a column for Values.

OBJECTIVES or DESIRED USES	Entry	When	VALUES
· VISION: Maintain/enhance fish and wildlife habitat.	1992/07/13	1992/07/13	complexity Aesthetics
· VISION: Preserve commercial fisheries in harbour.	1992/07/13	1992/07/13	complexity
· VISION: Keep water clean and aesthetically pleasing.	1992/07/13	1994/06/01	Aesthetics
· VISION: Maintain recreational boating and swimming for citizens and visitors.	1992/07/13	1994/07/01	Health & Sa
· VISION: Develop commercial facilities such as a new wharf and marina.	1992/07/13	1995/06/01	feasibility
· VISION: Develop scenic features of coastal areas as part of a tourism plan.	1992/07/13	1996/06/01	Aesthetics feasibility

STEP 2 -- ASSEMBLE DATA AND INFORMATION

After finalizing the list of objectives, the next step is to identify data and information on the harbour, and to organize it for our use. This step involves carrying out a literature search, reading, evaluating and summarizing a variety of information, and entering it onto forms and/or into *Agenda*, in such a way that the 'paper-trail' can be displayed as required.

To apply *Agenda* in this task, first design a new view (or form) and, in this view, reference each item of information to its source. This will enable the program to produce a listing of the information. This data can be organized in terms of the environmental component and geographic subarea to which the data refer, and be presented as a list (Figure 10).

Creating the list requires you to use the View Manager again to design a new view and also to use a non-standard type of category. Press F8 for 'View Manager' and name the new view 'Data/Information'. The display from 'View Manager' in Figure 11 provides a list of the views which are

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Figure 9. Category Manager showing the hierarchy of categories to date.

```
File: C:\AGENDA\APPS\ACAPDEMO
Category Manager

      MAIN
      Entry
      When
      Done
            OBJECTIVES OR DESIRED USES
                  Preserve fish/wildlife habitat
                  Preserve commercial fisheries
                  Maintain swimming and recreational
                  boating
                  Develop commerial wharf and marina
                  Maintain clean, aesthtice waterscapes
                  Develop scenic features of costal areas
                  Foster good land-use practices
            VALUES
                  Health & Safety
                  Sustainability
                        complexity
                        feasibility
                  Aesthetics - the 'soul' of the place
            REFERENCE
            ENVIRONMENTAL COMPONENT
                  Water
                  Sediments
                  Air
                  Biota
                  Fisheries
                  Domestic Uses
                  Recreation
                  Industry
                  Miscellaneous
            GEOGRAPHICAL SECTOR
            DATA QUALTIY or GAP
                  Good
                  Fair
                  Poor
                  GAP
            EQA
            DATA OR INFORMATION
```

already available. Naming a new view in 'View Manager' also leads to the 'View Properties' menu.

The distinguishing property of the new view (Figure 10) is that the 'Section Head' (*Agenda*'s term for a column heading in 'View Manager') uses a new category called 'Data or Information'. Columns can be added to this view (for example to show the environmental component to which the

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Figure 10. View of the Data or Information category with corresponding environmental components and references.

DATA OR INFORMATION	ENV COMP	REFERENCE
· Mercury levels averaged 0.3 ug/L off Sandy Point, Folly Bay. Pass CWQG.	water	Leopold, J. 1
· All priority pollutants (metals and pesticides) analyzed (see list). All pass CWQG.	water	Swarofsky, M
· Dissolved oxygen measured near town's sewage outfall. Passes CWQG.	water domestic uses	Env Can, 1982
· Harbour closed to shellfish harvesting.	water fisheries domestic uses recreation	Env Can, 1985
· Harbour is sedimenting in due to a combination of agricultural and other land-use practices.	sediments water	DFO, 1987. Hy
· All levels of metals pass CWQG. (see list.)	water sediments	ACAP, 1992. R
· Fecal coliforms too high for contact recreation.	water recreation	ACAP, 1992. R
· Garbage and oily film near public wharf. Runoff from carwash is a potential concern.	water sediments industry	ACAP, 1992. O
· Odours from unidentified outfalls and seepages from home septic tanks.	air water domestic uses	ACAP, 1992. O
· Significant untreated effluent observed from small vegetable processing plant at mouth of Windy River, Folly Bay.	water air sediments industry	ACAP, 1992. O
· From pastures along riverbank of Windy River, cattle are moving to the river-bank to drink, causing erosion and water contamination.	sediments water miscellaneous	ACAP, 1992. O
· Migrating salmon are diminishing in numbers, 1988 through 1991.	water biota fisheries recreation	ACAP, 1992. R

Figure 11. View Manager showing the views designed and available to date.

View Manager

OBJECTIVES
OBJECTIVES_2
OBJECTIVES_3
VALUES
DATA/INFORMATION
DATA/INFORMATION_2
DATA AND INFORMATION_3
DATA GAPS
DATA GAPS_2
DATA GAPS_3
EQA
CHRONOLOGICAL

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data apply and the source reference) by first leaving the 'View Properties' menu and then pressing ALT-R . The column category labeled 'Reference' shows an additional *Agenda* feature--it is 'unindexed'. This means that the entries--unique 'text values', document references in this case--are not sub-categories (*Agenda* calls them 'child categories') as they would be under a standard column category.

The 'View' presented in Figure 10 could be made still more informative if it also displayed date information, such as when the data were observed ('When'), and when the data might be considered to have expired ('Done'). A column containing an evaluation of the quality of the data would also be helpful. Data may expire because circumstances affecting the particular parameter (e.g. source strengths or dispersing currents) have changed. The data may be of good quality even if descriptive rather than numerical. Systematically-gathered, carefully-recorded anecdotal data which are internally consistent would likely be judged to be of good quality.

An amended view, containing these additions, is shown in Figure 12. The view now displays the available data, the environmental component to which it refers, the quality of the data, the date on which it was observed, the estimated expiry date, and the reference. Building the output in Figure 12 (derived from the View that produced Figure 10), can be achieved almost without invoking new features, by adding the appropriate columns for 'When' and 'Done' using ALT-R or by using the menu. For the latter, press F10 and then select the menu choices: View -> Column -> Add. *Agenda* has an additional feature, evident on Figure 12. If the expiry date of data has passed, the program places double exclamation points (!!) to the left of the item.

STEP 3 -- IDENTIFY DATA GAPS

Assume the group has assembled all the data and information relevant to a particular objective, and that they have organized it effectively (e.g. via *Agenda*). Then it should be apparent what essential information is missing, and how to complete the set of information sufficiently to support an Environmental Quality Assessment of the present (or near-future) state of the harbour. To complete the set of information requires the citizens' group to identify the data gaps and take steps to fill them.

This task amounts to looking at the set of environmental information relating to particular environmental components (e.g. preservation of fish/wildlife habitat), and then identifying the additional information needed to answer the question, "What is the present environmental quality of our harbour in terms of fish and wildlife habitat?" (The question for a later task

Figure 12. As in Figure 6, with the corresponding data quality, and dates of observation and expiry.

	DATA OR INFORMATION	ENV CMP	QUAL	When	Done	REFERENCE
! ! ·	Mercury levels averaged 0.3 ug/L off Sandy Point, Folly Bay. Pass CWQG.	water	good	1972/05/14	1982/12	Leopold,
·	All priority pollutants (metals and pesticides) analyzed (see list). All pass CWQG.	water	good	1989/08/13		Swarofsky
! ! ·	Dissolved oxygen measured near town's sewage outfall. Passes CWQG.	water domesti	good	1982/08/23	1987/12	Env Can,
·	Harbour closed to shell-fish harvesting.	water fisheri domesti recreat	good	1985/06/20		Env Can,
·	Harbour is sedimenting in due to a combination of agricultural and other land-use practices.	sedimen water	good	1987/09/15		DFO, 1987
·	All levels of metals pass CWQG. (see list.)	water sedimen	good	1991/11/16		ACAP,
·	Fecal coliforms too high for contact recreation.	water recreat	fair	1992/07/10		ACAP,
·	Garbage and oily film near public wharf. Run-off from carwash is a potential concern.	water sedimen industr	good	1992/05/02		ACAP,
·	Odours from unidentified outfalls and seepages from home septic tanks.	air water domesti	fair	1992/04/23		ACAP,
·	Significant untreated effluent observed from small vegetable process-ing plant at mouth of Windy River, Folly Bay.	water air sedimen industr	fair	1991/08/12		ACAP,

then becomes, "Is our present environmental quality up to the standard implied in our objective?")

Agenda can assemble the data and information relevant to particular objectives and environmental components to assist in this process, as illustrated in the 'View' presented in Figure 13. A feature of *Agenda* allows us to highlight the need for additional information (prefaced by a 'Q?' in the output). These 'Questions' represent pieces of information which would complete the data set sufficiently to allow a satisfactory assess-ment of the present environmental quality.

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To create Figure 13 required some thought about category hierarchy. Considering Figure 7 and the hierarchy from the Category Manager (Figure 9), it was decided that the 'Objectives' should be repeated as categories as well as items--the *'hybrid' approach*. They have a role as items, and have adoption ('Entry') dates and target completion ('When') dates, to allow them to be compared with actual EQA statements which have different valid ('When') dates. The differences revealed between 'Objectives' and actual environmental quality, which become evident when this list is produced, can be used to stimulate a community response. At the same time it is useful to have the objectives as categories (Figure 13) because they can be used as headings under which to collect the relevant data and information.

Figure 13. View of the data organized by Objectives, with corresponding environmental component. Questions are included which address data gaps required to complete the data set to the point of supporting an EQA for present conditions.

Preserve fish/wildlife habitat	ENV COMP
· All levels of metals pass CWQG. (see list.)	sediments estuary
· Harbour is sedimenting in due to a combination of agricultural and other land-use practices.	sediments estuary
· Dissolved oxygen measured near town's sewage outfall. Passes CWQG.	domestic estuary
· All priority pollutants (metals and pesticides) analyzed (see list). All pass CWQG.	estuary
· Mercury levels averaged 0.3 ug/L off Sandy Point, Folly Bay. Pass CWQG.	estuary
· Garbage and oily film near public wharf. Runoff from carwash is a potential concern.	sediments industry estuary
· Q? What effect are humans having on fish and wildlife? Are fish and wildlife species disappearing?	
· Q? What effect will the wharf and marina have on fish and wildlife habitat? on commercial fisheries? on aesthetic waterscapes? on swimming and recreational boating?	

Preserve commercial fisheries	ENV COMP
· Harbour closed to shellfish harvesting.	fisheries domestic recreatio estuary
· Mercury levels averaged 0.3 ug/L off Sandy Point, Folly Bay. Pass CWQG.	estuary
· All priority pollutants (metals and pesticides) analyzed (see list). All pass CWQG.	estuary
· All levels of metals pass CWQG. (see list.)	sediments estuary
· Garbage and oily film near public wharf. Runoff from carwash is a potential concern.	sediments industry estuary
· Q? What effect are humans having on commercial fish stocks?	

Figure 13 was designed in the *Agenda* View Manager using objectives entered as categories. To do this, press F8 to start View Manager and then specify the various objectives as section heads. Then, in the view itself, add a column for environmental component (ENV COMP). The 'Q?' items in Figure 13 were also assigned to 'Gap', a sub-category of 'Data and Information Quality'. This facilitates filtering for 'Q?' items as has been done to produce Figure 14.

STEP 4 -- ADDRESS DATA GAPS

This step helps the group remedy the data gaps and/or arrange for resources (funds, expertise) to have them remedied. As indicated above, the data gap items can be selected or filtered by *Agenda* to produce an output as in Figure 14, which lists the data gaps together with the date on which the data gathering activity is planned to start, and the date by which it is planned for completion. (Note that the question in Figure 14 about the assimilative capacity of the harbour for various effluents (under the heading 'Maintain clean, aesthetic waterscapes') perhaps goes beyond assessment of present environmental quality and would likely require expert assistance.)

As well as showing the schedule for information gathering, Figure 14 enables the group to scan the list of studies to check for possible overlaps and duplication. (Another *Agenda* file could be developed to consider the data-gathering issues of sampling strategy for specified precision, cost/benefit, etc., but the present *Agenda* hierarchy is not applicable to that task.) When the new information is at hand, it can be inserted as updated information (see Step 2) and will appear in the updated version of Figure 13, which will now provide enough information to support an environmental quality assessment.

To produce the output in Figure 14, enter the View Manager and copy Figure 13 (ALT-F9) using a filter (specified in 'View Properties') for items assigned to 'Gap'. The environmental component ('ENV COMP') column was deleted (DEL) in favour of the 'When' and 'Done' columns.

STEP 5 -- PERFORM AN EQA

For this step the citizens' group will scrutinize their information and write statements describing the present environmental quality of their harbour, geographic subarea by geographic subarea and objective by objective.

Agenda can help by providing an updated Figure 13. The EQA statements can be written with reference to the environmental components and to the objectives.

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Figure 14. As in Figure 9 except showing only the Data Gap Questions with proposed Start (When) and Completion (Done) dates.

Preserve fish/wildlife habitat	When	Done
· Q? What effect are humans having on fish and wildlife? Are fish and wildlife species disappearing?	1992/08/01	1992/10/31
· Q? What effect will the wharf and marina have on fish and wildlife habitat? on commercial fisheries? on aesthetic waterscapes? on swimming and recreational boating?	1992/08/01	1992/09/15
Preserve commercial fisheries		
· Q? What effect are humans having on commercial fish stocks?	1992/08/01	1992/10/31
Maintain swimming & rec. boating		
· Q? By how much are guideline concentration thresholds for coliforms exceeded, how often and for what duration?	1993/07/15	1993/11/15
· Q? What effect will the wharf and marina have on fish and wildlife habitat? on commercial fisheries? on aesthetic waterscapes? on swimming and recreational boating?	1992/08/01	1992/09/15
Develop commerical wharf & marina		
· Q? What effect will the wharf and marina have on fish and wildlife habitat? on commercial fisheries? on aesthetic waterscapes? on swimming and recreational boating?	1992/08/01	1992/09/15
Maintain clean, aesthetic waterscapes		
· Q? What effect will the wharf and marina have on fish and wildlife habitat? on commercial fisheries? on aesthetic waterscapes? on swimming and recreational boating?	1992/08/01	1992/09/15
· Q? Is this report of cattle having access to the river a solitary occurrence?	1992/08/01	1992/08/25
· Q? What is the quality and quantities of the effluents entering the harbour? What is the assimilative capacity of the harbour for these effluents?	1992/09/01	1993/01/31
Develop scenic features of coastal areas		
· Q? How many visitors do we have and what facilities would be required?	1992/08/01	1992/11/30

The following additional steps in EQA (not listed in Figure 5) might be undertaken by citizens' groups and can be assisted by *Lotus Agenda.*

STEP 6 COMPARE PRESENT TO ENVISAGED ENVIRONMENTAL QUALITY

The set of discrepancies between the actual environmental quality (EQ) and the desired environmental quality can be an instrument for motivating a community into action. *Agenda* can help by facilitating the comparison of present EQ to future desired EQ. Figure 15 presents a view containing the various EQ statements. The envisaged long-term EQ (VISION) for a particular geographic subarea, Folly Bay, and target date, are shown. The citizens' groups' present EQ (PRESENT) is included for comparison, associated with an appropriate 'When' date (i.e. its date of applicability. This date will be tentative until data gaps have been filled).

Figure 15 was produced using the environmental objectives as section heads, and filtering to list just the environmental quality assessment statements. The list allows the citizens' group to easily compare the present state to the desired future state. The 'When' column is added to show, by comparison, the time available for achieving the objective.

STEP 7 SELECT SHORT-TERM ACTIONS AND INVESTIGATE LONGER-TERM REMEDIAL OPTIONS.

The same techniques used in the preceding steps can be used with *Lotus Agenda* to assist in selecting remedial options, and will not be discussed further here. There is, however, an interesting connection between choosing remedial actions and EQAs that deserves mention. One step in selecting remedial actions is to predict the environmental quality with the remedy in place (i.e. to evaluate the effectiveness of the remedy in advance as in a cost-effectiveness study). As before, we are comparing EQs, but what has changed is that candidate remedies are being tested rather than data gaps being filled.

This *Agenda* framework can help develop perspective by including the predicted EQ (e.g. as derived from a simulation model) in an updated version of the EQA view (Figure 15). We may wish to examine views which: compare two geographic subareas; list guidelines (official or subjective); show the chronologically-ordered list of entries; or assemble all the information for a particular environmental component (e.g. Industry). *Agenda* becomes more and more helpful as the information base expands and as the environmental planning process advances to include actions, remedial options and choices (Figures 1-4).

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Figure 15. View of the EQ Assessments, organized by Objectives. The envisaged or desired EQ is designated, 'VISION' and the date for achieving this desired EQA is presented. The present EQ is designated 'PRESENT' and the date indicates the target for completing the assessment.

Preserve fish/wildlife habitat	When
· VISION: Maintain/enhance fish and wildlife habitat.	1997/07/13
· PRESENT: In a word the habitat is diminishing.	1992/12/01
Preserve commercial fisheries	
· VISION: Preserve commercial fisheries in harbour.	1997/07/13
· PRESENT: Commercial stocks are being depleted.	1992/12/01
Maintain swimming & rec. boating	
· VISION: Maintain recreational boating and swimming for citizens and visitors.	1994/07/01
· PRESENT: The bacterial contamination, though in excess of guidelines, is not as extensive in time and space as feared.	1994/01/01
· PRESENT: According to present plans the wharf/marina developments will not present negative impacts on habitat, fisheries, swimming, or appearances, but rather will enhance boating and commercial fisheries and tourism.	1993/01/15
Develop commerical wharf & marina	
· VISION: Develop commercial facilities such as a new wharf and marina.	1995/06/01
· PRESENT: According to present plans the wharf/marina developments will not present negative impacts on habitat, fisheries, swimming, or appearances, but rather will enhance boating and commercial fisheries and tourism.	1993/01/15
Maintain clean, aesthetic waterscapes	
· VISION: Keep water clean and aesthetically pleasing.	1994/06/01
Develop scenic features of coastal areas	
· VISION: Develop scenic features of coastal areas as part of a tourism plan.	1996/06/01
· PRESENT: The present situation is that many visitors stop momentarily and then continue on because there is no signage, history, nor picnic tables or washrooms.	1992/12/15

3.0 Description of Program Operation and Hardware

Lotus Agenda organizes by taking 'items' of information and assigning them to various categories. Just as for a written form, an *Agenda* file has data, structure, and connections. As in a form, the data in *Agenda* are made up of items and notes. In a form, the structure consists of categories--perhaps two or three. *Agenda* also uses a structure made up of categories--many of them--and a category hierarchy. Both in a form and in *Agenda*, the connections are the assignments of items to categories.

In *Agenda*, an item can be assigned to several categories. The program replaces the task of filling in a form with information perhaps copied from other forms, by 'filtering' the information base of items to produce a view, or new form, containing the selected items. An appropriate set of views enables the citizens' group to see their information in many ways while the complexity stays manageable.

You need the following hardware and software to run *Agenda*:

An IBM personal computer or 100% certified compatible, or a PS/2 series computer

A hard disk having approximately 3 MB of free memory

640K RAM

MS-DOS, version 2.1 or higher

Documentation provided with *Lotus Agenda* gives detailed instructions for installation, setting up printers, running starter applications, managing back-ups, and writing macros. Instructions are also provided for transferring between separate *Agenda* files. To export outputs to a word processing program, we have found that exporting to a text file without printer codes works best in our set-up (IBM compatible with Canon BJ-10e Bubble Jet printer).

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Part 3

Tough Choices: Selecting Your Solutions

Table of Contents

1.0 Introduction

TAKING STOCK:

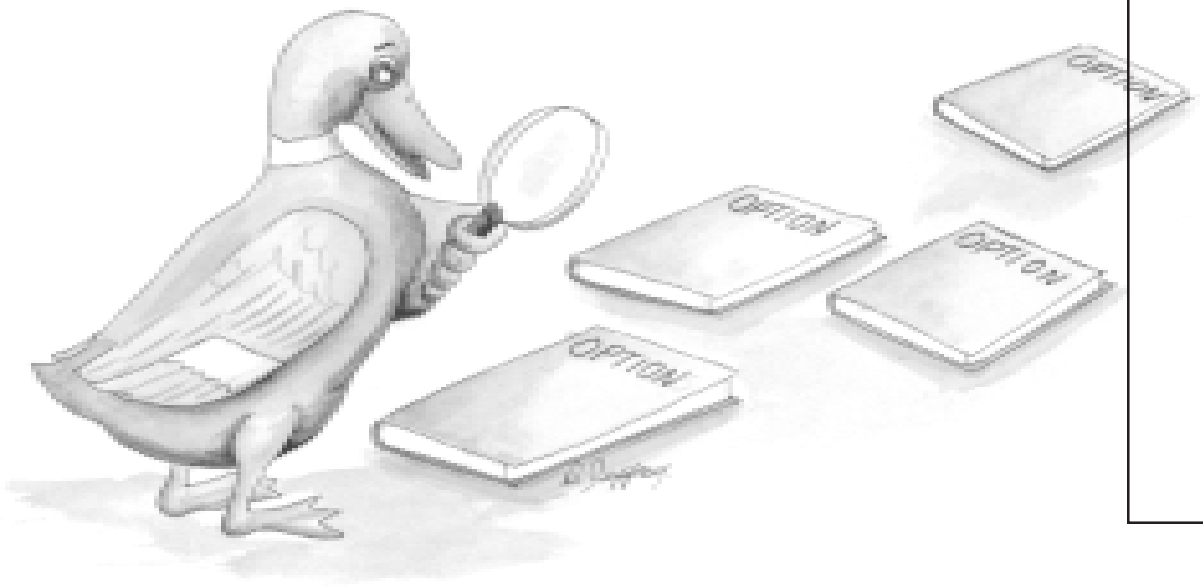
You've come a long way in the ACAP process. Your Multistakeholder Committee is up and running. You have used consensus to develop a vision and your use objectives. Through the Community Environmental profile and the Environmental Quality Assessments you have figured out what environmental problems you are facing in your area.

Now you are ready to look for some solutions. The solutions you will be choosing are generally called remedial options. In all likelihood your list of possible options will be long. Some options may be better than others at fixing problems. Others may have very high price tags. Some may require other steps before they can be implemented. In other words, you will need to examine all the options, pick the best ones, and among those, to set some priorities. Doing that in an organized way is what evaluation is all about.

Your evaluation differs from most others in your use of consensus to reach your final decision. That automatically makes your decision convincing. In your evaluation, focus on making sure that all the stakeholders understand the options, and that your method helps the group to come to a consensus. Keep it as logical and simple as you can.

SOLUTIONS AND MORE SOLUTIONS:

What are remedial options? Right off the bat, remedial suggests **clean-up**. One example of clean up is dredging sediments that are contaminated with toxic chemicals. But environmental quality can also be improved by



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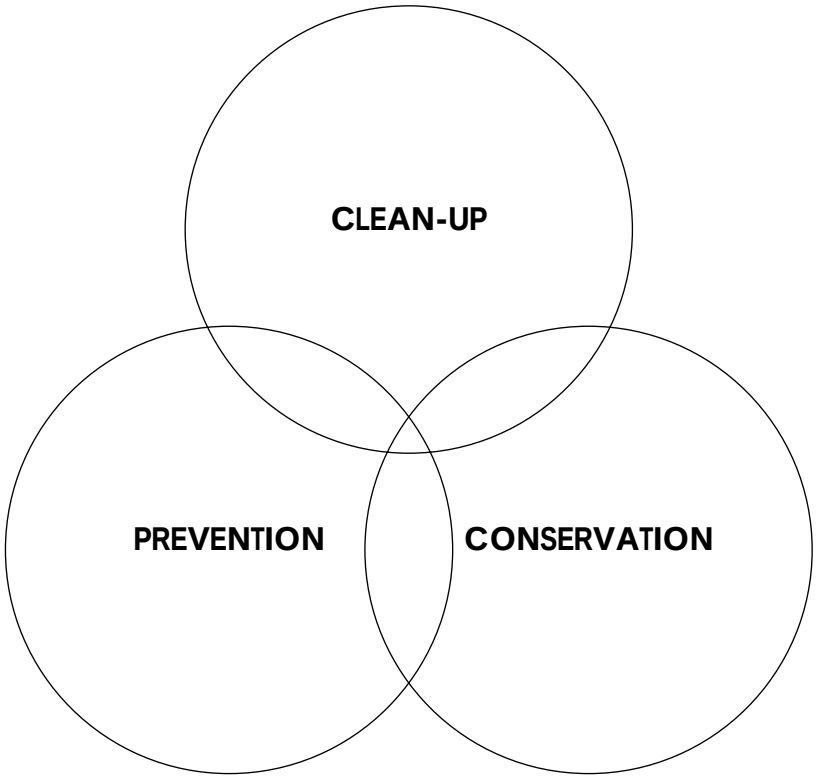
preventing problems before they happen. Suppose a factory on the coast switches to use non-toxic chemicals that can be recycled inside the plant. That would prevent more chemicals from getting into the ocean. This kind of pollution prevention often saves money and makes the plant more competitive.

Remedial options also include **conservation** measures (see Figure 1). Conservation measures aim to use resources wisely, so that your great grandchildren can still enjoy them. A soil conservation program keeps the soil where it belongs — on the fields. Conserving the soil also reduces the environmental problems that come from soil erosion, such as too much silt in the water. Conservation saves resources and prevents new environmental problems from occurring. It is rare that one remedial option will do the trick, because most environmental problems have many sources. You will likely find that you need a mix of clean-up, prevention and conservation options to achieve your vision and use objectives.

Figure 1: Kinds of Remedial Options: Finding the right mix



This chapter focuses on how to find, evaluate and choose remedial options to solve the problems facing your area. It is intended to help you tailor an evaluation process to your needs. It sets out what factors you need to consider when you design your evaluation process, and what tools you will need to carry it out. Then, it charts the steps along the way and possible stumbling blocks. Finally, it gives some suggestions on creating an implementation plan.

1.1 WHY EVALUATE?

Introduction

Through the Environmental Quality Assessment you already have some agreement on the main environmental problems facing your area. For each of these problems however, there may be many possible solutions. How do you choose? The brief answer is to evaluate all the possible options against a set of objective measures, or criteria which you, as a group, will develop. Using the evaluation criteria is like asking the same set of questions about each option. How much improvement in water quality can be achieved? How much will it cost? Is the technology available and proven? By asking the same questions of all possible options, the options can be evaluated fairly and consistently.

Evaluating helps you find out more about your options:

Evaluating your options in an organized way will identify information gaps. You may not be able to answer all the questions for every option. If this is the case, your evaluation process will highlight the important areas where you must find more information. You may be able to fill these gaps through further research or pilot projects.

Evaluation also provokes discussion. Each option is examined using a set of criteria that the group has agreed on. The discussion becomes a learning experience as your stakeholder committee gets a better understanding of the options. By questioning each option closely, you may also discover both positive and negative side effects that no one had thought of before.

Evaluating helps you develop consensus:

Going through a structured discussion with your committee will also help you to pinpoint areas of agreement and controversy. The criteria help you figure out exactly what committee members don't like about an option. That makes it easier to find consensus. Even where differences remain, the evaluation process gives them a sharper focus. Further discussions with other participants can then concentrate on these key issues.

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Evaluating helps you set priorities:

Evaluating your options will also help you to set priorities. At the end of the day, cleaning up your harbour or watershed is going to take time and cost money. However, there may not be enough money available to do everything at once. As a group you might decide to put the highest priority on options that address a particular problem (eg. fisheries) or that can be funded through existing government programs.

Evaluating helps you tell others how you picked your options:

People who have not participated closely in the plan will want to understand your final recommendations. It is extremely helpful if they can follow the steps leading to your conclusions. A well documented evaluation process lets others reach their own conclusions about your work. If your final plan recommends actions that require regulatory approval, or will be reviewed in a formal hearing process, then conducting a thorough evaluation now, will save time retracing your steps later.

Evaluating helps you feel confident about your choices:

Perhaps most importantly, a good evaluation process gives you confidence in the options and priorities you have chosen. You will need to spend time as a committee discussing the benefits and drawbacks of each option. That will allow each member to understand the issues well enough to support and help implement the final plan in the years to come.

1.2 HOW TO EVALUATE:

The basic approach:

Evaluation methods can get very complicated, but complicated does not always mean better. A lot of evaluation methods have been developed for problems similar to yours. In every case, the decisions on solutions had to consider a wide range of factors. It could be planning what to do with garbage, finding a route for a new hydro line or deciding on a forest use plan. A lot of evaluation methods were designed for the organizations which have to deal with the garbage, build the hydro line or manage the forest. With their evaluation method they have to convince a lot of people that they have found the best solution. That is why they get complicated. The more scientific their method is, the harder it is to criticize their decisions.

Your decisions on the options have one major advantage over the decisions that such organizations make: you will have the consensus of a wide

cross section of the community. That automatically gives your decisions a lot of weight. If you can show that the stakeholder committee understood the issues and chose the options by consensus, then your recommendations will be convincing. **Your evaluation does not need to be complicated.** Aim for something that is logical and easy to follow.

The evaluation process described here includes the essential parts of the process professional planners use. The steps are shown in Figure 2. You will find more information on the following steps in the chapters to come:

- Organize your evaluation process: Decide what you want to do and who will do what at each step.
- Pick your criteria: You choose the questions that every option must measure up against.
- Find your options: What are the possible solutions? Gather the information you need for each option.
- Test and modify the criteria and decide how to apply them: Make sure your evaluation will work the way you want it to.
- Evaluate your options: Ask your questions (evaluate against your criteria).
- Select your preferred options: Choose the best options, then set your priorities.
- Prepare an implementation plan: Who will do what and when to begin acting on your recommendations.

As you read on, treat the suggestions as you might a recipe. If the recipe calls for turnips but you have a lot of carrots or something else you would like to try, go ahead and experiment. The suggestions that follow are based on other people's experience. It would be very surprising if it all applied perfectly to your situation.

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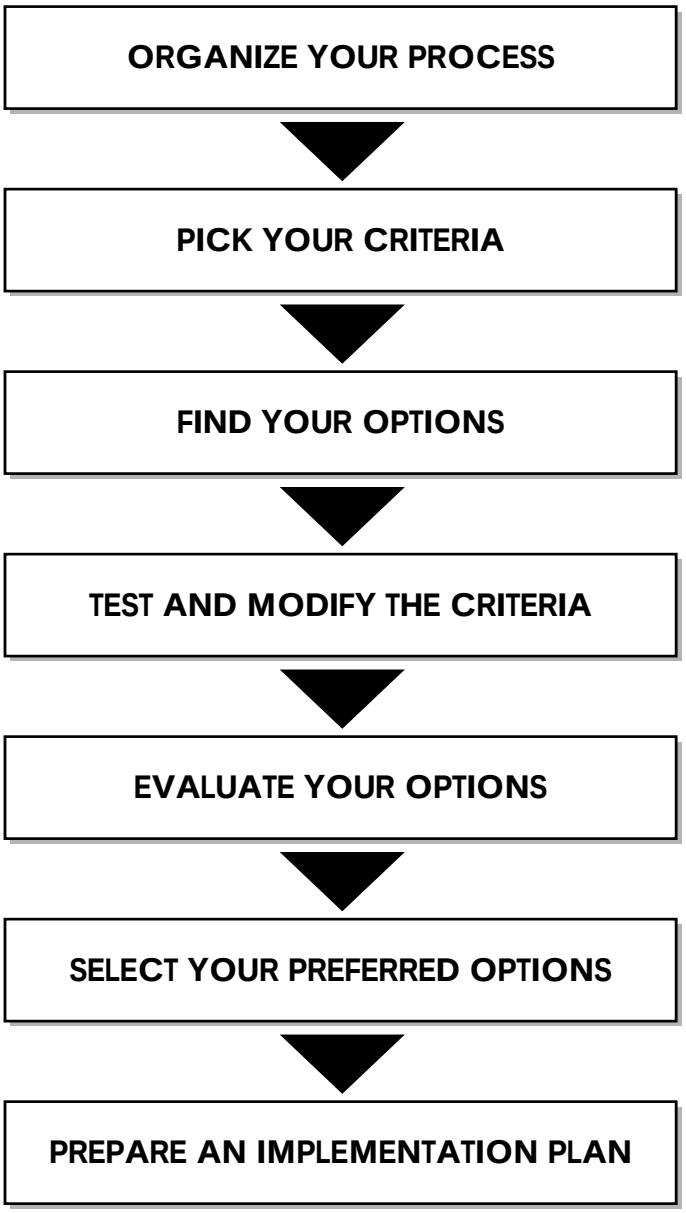
Figure 2: Steps in Evaluating



2.0 Planning Your Evaluation Method

Before you get into the nitty-gritty of evaluation it is a good idea to know who will do what and when. Planning your evaluation process will save time because you will not need to repeat tasks or do work that turns out to be unnecessary. If you know that some tasks take a long time, you can plan to let a subcommittee begin them early on. That way you can work on other tasks at the same time while you wait for the results. You can give some tasks to subcommittees so the stakeholder committee does not waste time on small details. A well planned process also makes understanding and choosing options easier for your stakeholder committee.

DIVIDING UP THE WORK:

Give the right jobs to the right people. For any job you have two options: do the work in the stakeholder committee as a whole, or let a subcommittee do it and then bring the outcomes back to the stakeholder committee for approval. A clear definition of the role and responsibilities of each committee is necessary. For now, suppose you have one subcommittee called the options subcommittee.

The options subcommittee can do much of your legwork. That includes things such as preparing reports, fine tuning the wording on decisions the stakeholders have made, and gathering information.

If there is too much work for the options subcommittee, consider striking one or more additional subcommittees. Break the work down into logical bite size chunks and make it clear who will do what. More subcommittees means more time needs to be spent coordinating the work.

The stakeholder committee as a whole works more slowly but its decisions carry more weight. It should make the major decisions. It is also a good source of ideas and can be used to brainstorm options and criteria.

WHO DECIDES WHAT?

The major decisions your stakeholder committee should make are questions of values, rather than technical questions. Suppose you are choosing between two options - one does a better job of cleaning up the environment, while the other creates more local jobs. Your decision will depend on how people feel about the issues. There is no right or wrong.

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For this kind of decision you want the consensus of the stakeholder committee.

On the other hand, suppose you have more technical decisions to make. Which technology will create less pollution? Will a particular option do what we want to achieve? These kinds of questions often require a lot of background knowledge. It is important that you consider all the relevant technical detail to make your plan credible. However, members of your stakeholder committee may not be able to learn everything they need to know to judge all the technical questions that come up. If you can give this kind of question to the options subcommittee you will save time.

Some decisions involve both values and technical questions. For instance, imagine you are trying to predict how many people would respond to an education campaign to promote non-toxic cleaning products in the home. You might have an expert educator give you an opinion based on similar campaigns elsewhere. But most people on your stakeholder committee will also have an opinion based on their knowledge and feelings about people in the community. There are no hard and fast rules for these kinds of situations.

When your stakeholder committee passes on evaluation decisions to the options subcommittee you might consider two factors. Does the options subcommittee know enough about the option? If not, you should consider asking outside experts for an evaluation. Secondly, do the values of the options subcommittee reflect those of the larger committee? In other words do the members of the options subcommittee generally have similar concerns as the stakeholders, or are some concerns not represented? If not, then you should carefully review any decisions that might involve these concerns in the stakeholder committee.

Think about your roles in a stakeholder meeting. Experiment with different ways of dividing the responsibility. You can always go back and change a decision that the options subcommittee has made.

GOALS AND RESOURCES FOR THE EVALUATION:

What do you want out of the evaluation? Ask yourselves this question before you get too far along in the process. Set yourself some goals for this part of the ACAP process so that you can focus your activities. Presumably you want to choose some options and set priorities. What else? Consider the following questions:

- Who will you want to impress with your final report?
- What kind of evaluation process might convince them?
- Is it important that everyone on the stakeholder committee understand all the options in great detail?
- Is there already a consensus about certain options on the stakeholder committee?

You should also be aware of your resources. You may not be able to do everything you want to do because your time and money are limited. Ask yourselves questions such as:

- When do you want to be finished?
- Are there any deadlines on government funding programs that you want to take advantage of?
- How often can your stakeholder committee realistically meet?
- How much work can the subcommittee(s) do?
- How much money do you have for research?
- Is there a way to hire experts to prepare reports on options you want to investigate in detail?

After reading the rest of this section, you will have a better sense of which tasks are important for your goals. You will also be able to decide how to tailor the tasks to fit your resources.

WHO WILL DO WHAT?

The following lists summarize how you might divide up the tasks between the stakeholders and the options subcommittee.

Stakeholder committee:

- brainstorm options
- brainstorm additional criteria
- approve final criteria list
- choose the final evaluation method
- choose the options and set priorities
- approve implementation plan

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Options subcommittee:

- find options
- prepare criteria
- collect information on options
- do preliminary evaluation
- write-up final evaluation
- create implementation plan

CREATING A TIMELINE:

Once you have decided who will do what, you can begin to create a timeline. A timeline is like a ruler with months instead of inches. The beginning of the timeline is the present. The end is the date you decide you want to be finished. An example is shown in Figure 3.

The highlights of your timeline will be the tasks the stakeholders carry out together. Mark them in first. Then fill in the tasks the options subcommittee has to complete in order for the stakeholders to do either work. Look at what you have created. Are the expectations realistic?

If some tasks involve too much or too little time, move the stakeholder meetings. You can also have the options subcommittee start earlier to give them more time. If the options subcommittee has too much to do at once, you might create another committee to spread the work around. You may have to juggle things around a few times before you feel satisfied with the results.

Of course, you cannot know ahead of time exactly how much time each task will take. The timeline is only a guide, but it will help you to see if you are meeting your time goal. If a task takes a lot longer than you expected then you have the choice of extending the time, simplifying the tasks, or getting more people to help out.

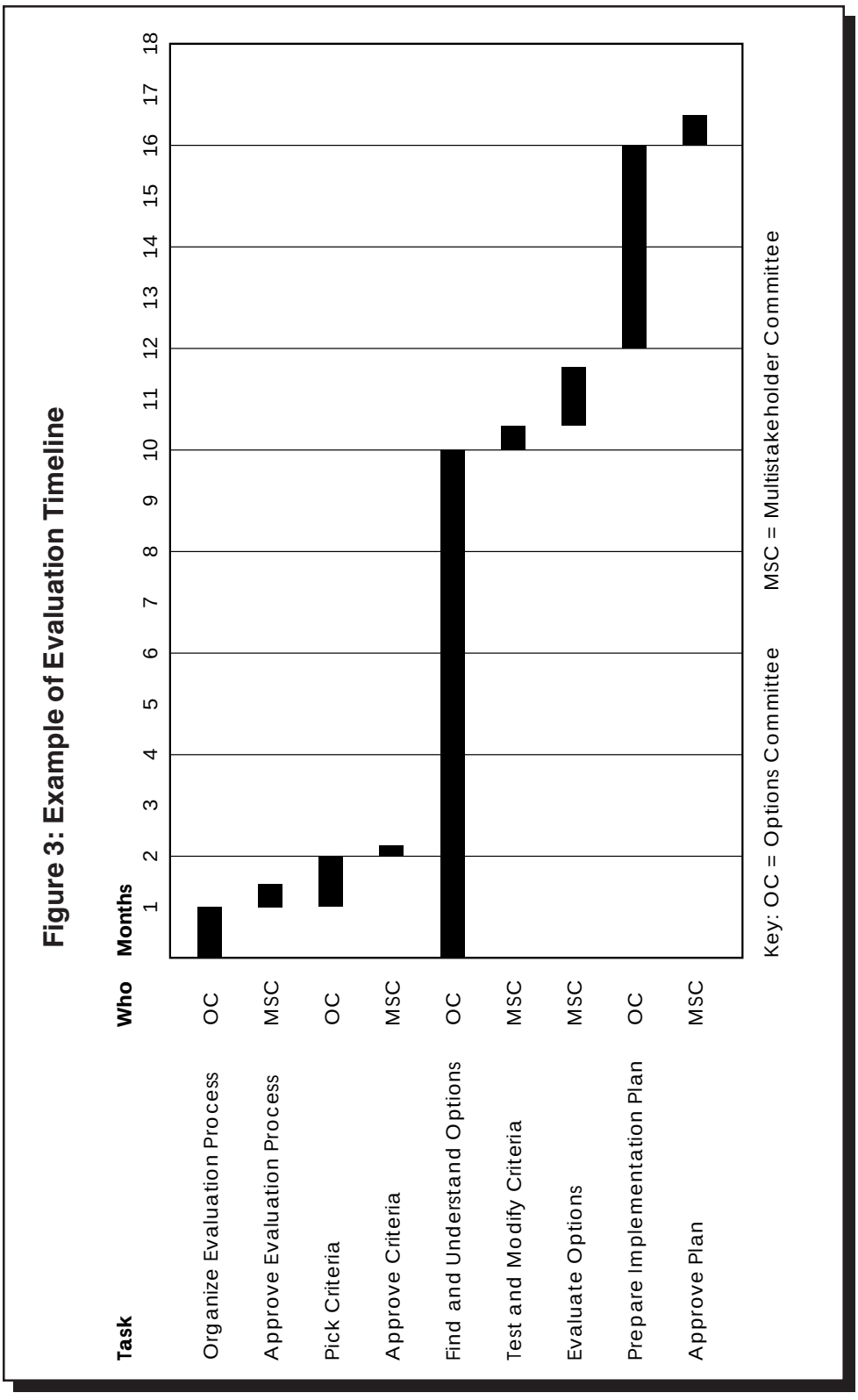
GOING BACK TO EARLIER STAGES:

As you go through the process you may find you need to go back to earlier steps. Suppose that contaminated sediments are a problem that you have identified. When you do your evaluation, however, none of the options meet your criteria. In such a case, use your criteria to define what an acceptable solution would be, and search for options again. If you find nothing that has been tried elsewhere, consider doing some research and development.

We have used this example to show that it is important to be flexible when you are planning. Good planning processes ***are*** flexible. If you find at

any stage that you are not fulfilling your vision and use objectives, then you have the option of going back a step or two, adjusting, and re-doing your plan.

Figure 3: Example of Evaluation Timeline



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3.0 Getting Ready for Evaluation

3.1 DEVELOPING EVALUATION CRITERIA

What Are Evaluation Criteria?

As we noted before, evaluation criteria are questions. To make your choice of remedial options convincing, you will want to be fair to each option. That means you should ask the same set of questions of each option. They will be questions such as: How much will it cost? How much will it contribute towards making the water safe to swim in? Or the fish safe to eat? Criteria can be thought of as short questions about the effects, both positive and negative, of the proposed option. Figure 4 gives examples of criteria.

Who Should Do What?

Your stakeholder committee should review and approve the final list of criteria. You might also do an initial criteria brainstorming together. The options subcommittee can do the rest. That involves everything needed to prepare a list for the stakeholder committee to consider. The steps on the way are described next.

Sources of Criteria:

By setting your vision and use objectives for your study area, you have already done the most important part of the work in developing criteria. Some criteria for your evaluation of options will spring naturally from your use objectives. Let's say one of your use objectives is to improve water quality to the point where the shellfish are edible. The criterion would then be: How much closer do we get to being able to eat the shellfish as a result of this option?

Another group of criteria come from outside constraints. Constraints are things over which you have no control, such as the climate, or which you do not intend to try to change, such as most provincial and federal legislation. Criteria from legislation can be specific or general. For instance, will an option allow water quality standards to be met? Is a particular remedial option allowed under federal and provincial laws? Another constraint is that our resources are limited. For this reason, cost of implementation will be an important factor in comparing options and will likely be a criterion.

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Finally, your committee as well as the community may have ideas on further principles and values to consider when choosing options. These might deal with economic issues, such as who should pay for implementation or political issues, such as whether changes should be forced through regulation, or should be voluntary.

How to formulate criteria:

Criteria should ask a clear specific question. In some cases, the answers to the questions may be clearly measurable. For instance, the criterion, "Does this option make the shellfish safe to eat?" is based on a standard that says how much of which chemical is safe to eat. The amounts of the chemicals can be measured. Other criteria, such as fairness, cannot be measured. They depend on what your stakeholder committee feels is fair. But you can still define what you mean by fair in the criterion.

It is important that you and others understand all the implications of each criterion. Some criteria may in fact be asking a number of questions. For instance if you ask "How much does this option improve the commercial fishery?", you will be asking how much the option increases the fish population, as well as how safe the fish are to eat. As you come up with each criterion, make a note about any important additional questions that are needed to give a full answer to the main question. In this way you will avoid discussions about what you really meant, when you begin the actual evaluation.

Try to formulate the criteria so that they are positive. For example, you might have a criterion that asks: How high is the energy consumption of the option? In this case, the options you prefer have low energy consumption. In other words, answers like "zero" or "very small" are better than answers like "very high". It gets confusing during the evaluation if some "high" answers are good while others are bad. You will make your work easier later if most or all of your preferred answers are of the "high" kind. In our example you could ask: How high is the energy efficiency of the option?

You may not be able to make all the criteria positive. If no one can understand them when you change them, it is better to leave them as they are. You might just group all the negative criteria together in your evaluation to make them easier to interpret.

Each criterion also needs a name. This can be a few words long. The names will help you to talk and write about the criteria later. Examples of names are shown in Figure 4.

Figure 4: Examples of Criteria

The following criteria each have a name followed by a question. Most of them have subcriteria that ask more specific questions

1. **Improve water quality:** Will this option improve water quality?
   - If yes, by how much?

2. **Improvement of habitat:** How much does this option improve or create habitat for fish and wildlife?

3. **Improvement of commercial fishing**: How much does this option improve commercial fishing?
   - Fish population: How much does this option increase fish populations?
   - Fish edibility: How much closer do we get to being able to eat the fish as a result of this option?

4. **Aesthetic improvement:** How much does this option improve the aesthetics of the harbour?
   - shoreline appearance
   - water clarity and colour
   - reduction of odours

5. **Improvement to boating:** How much does this option improve the recreational boating experience?

6. **Compatibility with other uses:** Is this option compatible with the major identified uses of the harbour?
   - Shipping: Is this option compatible with existing shipping uses of the harbour?
   - Industrial water supply: Is this option compatible with use of the harbour as an industrial water supply?
   - Waste disposal: Is this option compatible with the use of the harbour to release treated waste water?

7. **Ecosystem approach:** Is this option compatible with an ecosystem approach to environmental problems? (Does this option reduce or prevent pollution without creating another environmental problem somewhere else?)

8. **Funding possibility:** How high is the possibility of funding this option?
   - Cost recovery: How much of the cost of this option can be recovered by charging for a product or service?
   - Government funding: What are the chances of getting government funding for this option? How much of the total cost will the funding cover?
   - Other funding: How much of the cost will industry or other funding sources cover?

9. **Cost of Implementation:** How much will it cost to implement this option?

   - operating cost: How high are the operating costs (on a yearly basis) of this option?
   - capital cost: How much will it cost to buy land, buildings or equipment required for this option?

10. **Regional economic development:** How will this option affect the regional economy?
    - Local employment: How will this option affect the local job situation?
    - Impact on Business: What effect will this option have on local businesses?
    - Long term savings: What are the long term costs and savings of implementing this option?

11. **Innovative solution:** To what extent is this option innovative and home grown?

12. **Legality:** Does this option meet all applicable federal/provincial/municipal laws and regulations?

13. **Waterfront access improvement:** How much more accessible is the waterfront as a result of this option?

14. **Degree of certainty?** How certain is it that this option will produce the predicted results?

15. **Public acceptance:** How well will this option be accepted by the public?

16. **Fairness:** If this option has negative effects on any person or business, how fair is it that they bear those effects? (For instance, if an option requires that polluters pay the cost of cleaning up their pollution, is that fair?)

17. **Flexibility:** How easy is it to change the option as possible improvements are discovered?

Note that many criteria can have both negative and positive answers. For instance, an option could have a negative economic impact on a region if a business closes because cleaning up would cost too much. On the other hand more edible fish could lead to new jobs in the fishery.

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3.2 FINDING AND UNDERSTANDING YOUR OPTIONS

Options defined:

We have already described three kinds of remedial options. There are those options that **clean-up** an environmental problem. Other options **prevent** pollution that has caused a problem in the past. Finally, **conservation** options focus on using resources more wisely. Conservation leaves more of the resource for future generations and also prevents new environmental problems. You will probably need a mix of these types of options to achieve your vision for the region. This section will give some tips on where and how to look for options and describe what you will need to know about each option.

Who should do what:

Almost all of the work dealing with the options can be carried out by your options subcommittee. This is a big job, especially coming up with the information you need for the evaluation. You could create one or more subcommittees to spread the work around. Each subcommittee could then focus on a different problem. If you do create more committees, you should spend time to coordinate their work. The stakeholder committee might help by brainstorming ideas for options at the beginning of your search.

Where to find options:

Perhaps you should begin with what you have. Look through your notes, your Community Environmental Profiles and your Environmental Quality Assessment. Take note, too, of people you talked to who seemed knowledgeable or suggested possible solutions you didn't note at the time.

Brainstorm with your stakeholder committee to generate ideas. Ask people to work in pairs to come up with three solutions to every environmental problem you have discovered in your area. It doesn't matter at this point whether or not the solutions that committee members come up with can work. You want ideas, not finished products. Gather everybody's ideas, organize them, talk about them and pick the most promising ones. The options subcommittee can pursue these further.

Ask the people who seemed knowledgeable during your Community Environmental Profile interviews for possible solutions. When you talk to them, ask them who else you might talk to and whether they can recommend any written material. Written material might take several forms:

- Reports on how similar problems were tackled elsewhere

- Trade and scientific journals that deal with the kinds of problems you face

- Databases that list possible solutions. These are generally on some kind of computer system. For instance the US Environmental Protection Agency has created a database on innovative clean up technologies. It includes technologies to treat soil, sludge and sediments. The database comes on a floppy disk. Unlike most databases, it is free.

Asking people to suggest other knowledgable people produces a snowball effect. It is a great way to quickly find out what's new and what works. You may want to increase your telephone budget for this stage.

Other sources are government agencies that deal with the kinds of problems you face. Provincial and local governments other than your own are worth investigating. You may also want to investigate what is happening in the United States.

Colleges and especially universities have a mandate to research new solutions. If an academic cannot help you directly, they are usually aware of what their colleagues in the field are doing. Finally, engineering and consulting firms who might be involved in the implementation are usually willing to submit proposals on how they would solve a problem. You may even want to contact several firms and invite them to a workshop to hear and discuss their ideas.

New options may continue to pop up even after you have completed your evaluation. For now, you should regard your list as a solid starting point. It will help your committee get a good sense of what is possible. Evaluating the list, will probably give you a feel for the kind of solutions that fit best into your community.

How broad is your option range?

It is usually easier to find options that use **technology** to treat environmental problems. For instance, if the sewage treatment plant is too small, the normal solution is to expand the plant. You could, instead, try to reduce the amount of sewage that needs to be treated, but fewer communities have tried this approach. You may find that these lesser known ways give you the same result for less money and are definitely worth investigating.

To give yourself a sense of the different types of options that are possible, consider the following list. It lists different categories of possible options.

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These categories are not mutually exclusive; in other words, an option may fall into two or more categories. You will find examples of each type of option in Figure 5. A useful exercise at this point is to go through your environmental problems one by one and see whether you have touched the full range for each problem.

Some categories of remedial options are:

- Technical: technical measures requiring little or no change in people's behaviour;
- Participatory: measures requiring participation by a large number of people, often involving changes to prevent the problem from occurring in the first place;
- Point source: measures to address major identifiable single sources of the problem;
- Non-point source: measures to address problems that have many sources;
- Economic instruments: measures to reward people financially for behaviour that reduces the environmental problem;
- Regulatory: standards set by governments that define unacceptable environmental conditions or actions; and
- Education/awareness programs: measures to change people's behaviour by informing them why and how to change.

To find more participatory options, try environmental organizations specializing in the kinds of problems you face. A survey of existing government programs that can be modified or strengthened can also be a useful starting point.

Figure 5: Untreated sewage: an example of possible solutions

As an example, suppose one of the problems in your area is that untreated sewage is released into the ocean. The sewage is released after every heavy rainfall. This happens because the rainwater in the storm sewers on top of normal household sewage is more than the sewage treatment plant can handle. Some of the mixture is allowed to pass through after only partial treatment. Too much raw sewage in the water makes it unsafe to eat the shellfish. The following list of options indicates the range of possible solutions:

1. Technical Solutions:

- Separate storm sewers from household sewers so that the sewage treatment plant doesn't overflow.
- Build tanks to store the overflow so that it can be treated later.
- Increase the capacity of the sewage treatment plant so that the rainwater and sewage can be treated.

These are also point source approaches because the sewage treatment plant is viewed as the source of the problem.

2. Participatory Solutions:

Water conservation measures get people to use less water. When less water is used, less household sewage is created. The sewage treatment plant has more capacity for when it rains. (Sewage treatment plants are also more efficient when the flow is less).

- Education programs: educate people about how to use less water.
- Economic instruments: raise water and sewage rates to reward people for using less water.
- Regulation: change local building laws to require that people install water-saving toilets and other water conservation devices when building or renovating their homes.

When it rains, the storm sewers collect water from paved surfaces. If the water can percolate into the earth, it will not go to the sewage treatment plant. The following measures reduce rainwater arriving at the plant by reducing paved surfaces.

- Economic instruments: reward people who convert driveways and other paved surfaces to materials that allow water to percolate into the soil below.
- Planning guidelines: require plans for new buildings to minimize the amount of paved surfaces.

3. Fuzzy solutions:

Some options don't fit well into either category:

- Best management practices: improve the operation of the sewage treatment plant through worker training and better management so that more of the overflow can be handled.
- Artificial marsh: replace or augment the sewage treatment plant with an artificial marsh that uses living plants to clean the water.

Neither of these last two options require many people to change their habits, but neither do they use technology.

4. Combining Solutions:

Because many of these solutions will not meet the use objectives on their own, the best solution may turn out to be a mix of the options which work well together.

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UNDERSTANDING YOUR OPTIONS

Having chosen an initial set of options and mapped out an evaluation process, the next stage is to get a better understanding of them. In order to evaluate, you will need to define each option in some detail and to assess what its strengths and weaknesses are. Beyond that, you will also find it helpful to determine how each option relates to other options.

You might start by making a list of things you want to know about each option and then prepare a short profile of each option. If the profiles all have a similar format, you will find it easier to compare the options. The profiles should be kept short —one page is a good size. Supporting information can be attached on subsequent pages as necessary. These profiles will be useful for the evaluation, and your final report. Figure 6 shows what you might consider including in such a profile. In Figure 7, a sample profile has been filled out.

Describing the relationships to other options now will help you with your evaluation later. For instance, where you have identified incompatible or alternative options, you will later need to choose between them. Knowing what options are linked to each other will help you when you create your implementation plan.

Figure 6: OPTION PROFILE

Option name: short; to distinguish it from other options
Description: short; what is it?, any restrictions on its use, how is it different from any other similar option, examples implemented elsewhere, names of technology, contact person(s) for more detail.

Results Expected:

- general: what will it do?
- problems addressed: how does it fit with your vision and use objectives?
- side effects: negative side effects and useful spinoffs

Implementation:

- costs: capital & operating
- responsibility: who will decide, who will pay, who will implement?
- management plan: how will it be implemented (steps on the way)?
- potential timeframe or sequence: when can implementation begin, how long will it take?

Relation To Other Options:

- options that are not compatible with or are a clear alternative to this option
- options which need to be implemented before this one can go ahead (prerequisites)
- options that will improve the results of this option
- options that would be improved by implementing this option

Figure 7: Example of an option profile:

Education Campaign on Water Conservation

Description:

This is a campaign telling people why they should use less water and how to do it. The campaign will reach the people of Dooley Harbour through:

- printed materials such as flyers
- public events such as a water saver festival
- outreach efforts such as in-home water audits
- media coverage

It will promote water saving devices of all kinds. It will also promote reusing shower and wash water in the garden. Local hardware stores will be asked to carry and advertise the fixtures people will need. A similar campaign in Nappsville reduced water use by 20% in two years. Contact: Laura Hesland, Public Utilities, Nappsville, (891) 110-1111.

Results expected:

General:
Will reduce water consumption by 20% in two years.

Problems addressed:
The number of times untreated sewage is released into the harbour will be reduced by about 50%.

Side effects:
Two nearby villages want to hook on to Dooley Harbour's water supply. The water saved by the residents of Dooley Harbour is more that the two villages need. The planned expansion of the water purification plant to handle these villages can be cancelled.

Implementation costs:
Operating costs will be $XX,000 per year to pay for one full time coordinator, printing and event costs. The costs can be recovered by a 0.5% increase in the water bill. The water bill increases resulting from the treatment pant expansion can be cancelled.

Responsibility:
The Public Utilities commission will decide, fund and implement.

Management plan:

1. Create detailed proposal with budget
2. Approval by Utilities Commission
3. Hire Coordinator
4. Begin campaign

Potential timeframe:
Begin now. Approve the campaign for two years and then renew the contract if the campaign is successful.

Relation to other options:

- The campaign makes little sense if the sewage treatment plant is expanded.
- No other options have to be implemented first.
- The education campaign would be supported by increases in the price of water and sewer use. A change in the local building code that requires people to install water saving devices when building or renovating would also help.
- The education campaign would support the public acceptance and effects of the measures listed above.

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REDUCING YOUR WORKLOAD:

Once you begin to fill in your profiles, you will probably find that you are tackling a huge task, especially if you have many options. You can reduce the work by focusing on the elements which are necessary and possible. Here are some tips:

Type of detail:

Clearly, it does not make sense to gather information about each option that will not be required for the evaluation. Use your criteria as a guide to what you need to know. If one criterion is "How will the option affect local economic development?", then you should estimate the number of jobs directly created or lost, and how the option will affect local businesses.

Information Gaps:

Some questions about the options will not have satisfactory answers. Often, the best answer you will find is someone who has had experience with a similar measure elsewhere, and can give an opinion. They will be trying to estimate how well the option will work in your circumstances. If you can, get a sense of how certain they are that their estimate will be accurate. You may need to base your decision on their estimate, and will want to know how much weight to give it.

When you carry out the evaluation, you will find some information gaps are more critical than others. For example, a particular technology may seem very attractive because it meets most of your criteria. However, you don't know whether or not it can meet one critical environmental standard. You would give this option top priority if it did meet the standard. Finding this out becomes your first priority.

You may have to proceed with the evaluation even if your knowledge is incomplete. Don't worry, the decisions you make can always be changed as more information comes available.

Level Of Detail:

How much detail do you need for each option? The short answer is: enough to show how it differs from every other option. If you are comparing two sediment dredging techniques, then you will likely have to get into the nuts and bolts of the technologies. On the other hand, if you are choosing between leaving the sediments where they are, and dredging them up, then you don't need that much detail on every possible dredging technology. If you do choose the dredging option, then you will have to go back, find more information on the technologies, and then evaluate

those technologies. What level of detail you aim for on each option requires a judgement call on your part.

Sources Of Information:

Once again your options committee and Environment Canada and Provincial staff can get you started. When you have identified who would be responsible for implementing an option, staff of that organization are often very helpful in mapping out a management plan and can give insight into advantages and disadvantages of the proposed option. Anyone who has carried out a similar measure can also be very valuable in clarifying pitfalls and successes. Any firm that would be involved in installing or implementing the option can be consulted.

3.3 TESTING THE CRITERIA

Who Does What:

Once you have developed your criteria and assembled your remedial options you will need to test the criteria. That should be done in a meeting of the whole stakeholder committee. That meeting would decide if any criteria are missing, if any should be removed, whether they should be simplified and whether they are all equal.

To assist the large meeting, the following tasks should be completed by the options subcommittee:

- the profiles of each option as described in Section 3.2.
- your list of evaluation criteria.
- organizing related criteria into groups and then naming the groups;

The meeting of the whole committee can then turn its attention to the following:

- brainstorming further possible criteria;
- discussing feelings about any suggested criteria and making decisions to accept, change or reject contentious criteria;
- approving a final list of criteria;
- deciding whether or not certain criteria are more important than others; and
- deciding on how to use the criteria in the final evaluation.

Following the meeting the options subcommittee can develop the final evaluation method for stakeholder approval (Section 3.4)

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Are there any missing?

Consider the list of criteria that your options subcommittee has created. Are there any other important questions you need to ask to help you make a decision? Are there any additional principles that you feel all options should measure up against? To begin with, add all the suggestions to the list. In the next step you will discuss them further.

Are there any that shouldn't be there?

Now take a look at the whole list. Are there any criteria you disagree with? Remember that the options will be judged by how they measure up against the questions you ask. If you feel that a criterion is unfair, or disagree with the principle it expresses, then discuss it now. If the group agrees that some criteria should be dropped, then take them off your list.

How many criteria are enough?

Most likely, your criteria list is long. Is it too long? You need to deal with each option fairly quickly. Let's say it takes an hour to evaluate each option, and you have forty options in total. Then your committee will need forty hours to do the whole evaluation. If you do not relish that long a meeting, it may be possible to shrink your list of criteria.

Start by checking whether there is any repetition. For instance, suppose two criteria are "benefits to local economy" and "number of local jobs created." Both of these will be hard to estimate for many options, and essentially amount to the same thing. They can probably be amalgamated into one criterion.

Another route is to try to group the options into categories. These categories can then be named. The category names become the main criteria and the contents of each category are the sub-criteria. This simplifies the evaluation by organizing your investigation. When evaluating, it also allows you to quickly pass over criteria which are not relevant to a particular option, or for which little information is available.

Having a shorter criteria list will make your written plan easier to read. It's nice if all the main criteria fit across the top or down the side of a page in one table, but this is not always possible. Don't sacrifice important criteria just to shrink your list.

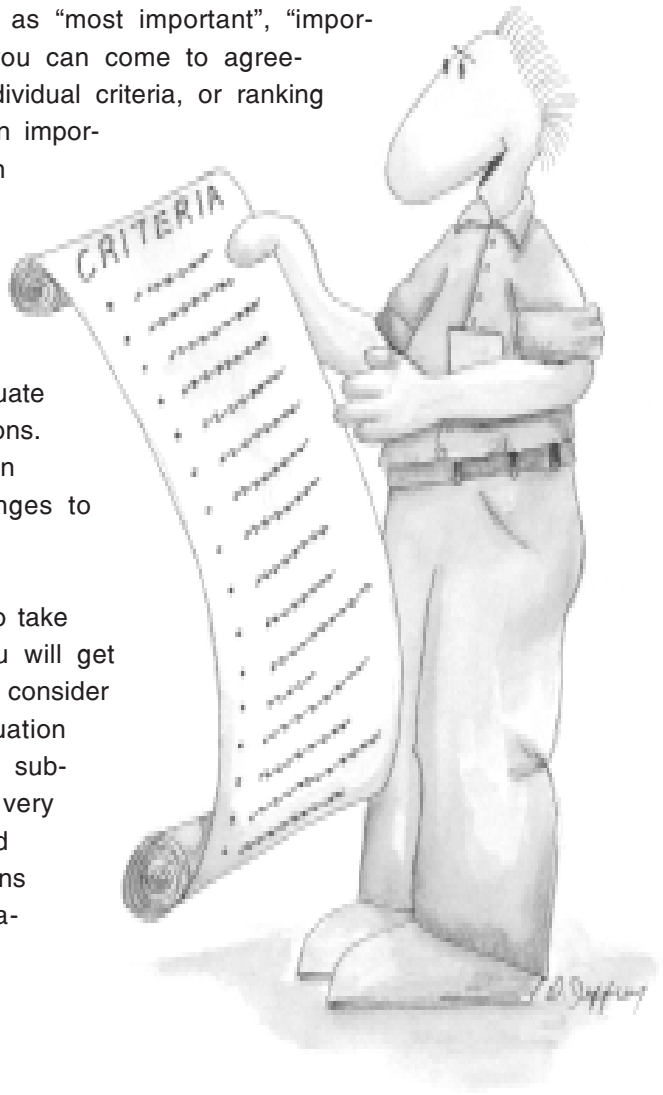
Are all the criteria equally important?

Take a look at your criteria and ask yourselves this question. If you agree that they are all equally important, you can begin the next step. You

may, however, decide that they are not all equal. The hard part now is to agree on which criteria are more important than others. Take time to explore the differences in your committee.

You might start by asking if any criteria are so important that any option must meet them in order to be considered further. An obvious example is that any proposed measure should comply with environmental laws. But you may find others that you agree on, for example no transfer of pollution from one area to another. That would eliminate such options as extending sewage outflow pipes. You might feel that some of your use objectives for the region fit into this category. Remember though, that any one option may not meet these objectives by itself. Generally, only a combination of options will get you to each goal.

What about the remaining criteria? Are some still more important than others? Start by trying to rank them. Ranking creates a list where the first criterion is more important than the second, and the second criterion more important than the third and so on. If you have a lot of criteria, instead of ranking, it may be easier to divide them into categories such as “most important”, “important” and “desirable”. If you can come to agreement on ranking of the individual criteria, or ranking groups of criteria, that is an important step. It will help you in the final evaluation.



Doing a Trial Run

To get a feel for the criteria it is helpful to evaluate a few of your sample options. You can repeat the trial run after you have made changes to the criteria.

If the first few trials seem to take forever, remember that you will get faster with practice. Also, consider whether parts of the evaluation could better be done by a subcommittee. For example, very technical discussions could be carried out in the options subcommittee and summarized for the stakeholder committee. Similarly,

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mechanical steps can be done be a subcommittee. Initially though, it is a good to give everyone a taste of the work involved.

For the trial run you should put the criteria and your sample options up on the wall. Use a large chalkboard or write the criteria on large cards and stick them to the wall. This will allow you to shuffle them around. Put the criteria in a row across the top, the options go in a column on the left hand side. Now you have a table you can fill in. For each option, write a few words that describes how it performs on each criterion. As you work consider the questions above and make any changes to the criteria. You have now begun to create the evaluation matrix which is the subject of the next section.

3.4 APPLYING THE CRITERIA

Now you have criteria and options. You want to apply all the criteria to each option. That can be time-consuming so it will pay to think through the actual evaluation before you carry it out. Figure 8 shows the steps that you will go through in the final evaluation.

It is probably best to let the options committee plan the approach. Your stakeholder committee can then review and approve the recommended approach.

Step 1. Initial screening:

Were any criteria so important to you that all options must meet them? If so, you should run all the options by them first. Think of these criteria as a sieve. If the option meets the criteria, it falls through. If it doesn't, it is rejected. Any option that you reject at this stage doesn't get evaluated any further. This stage is called screening and can save you a lot of work.

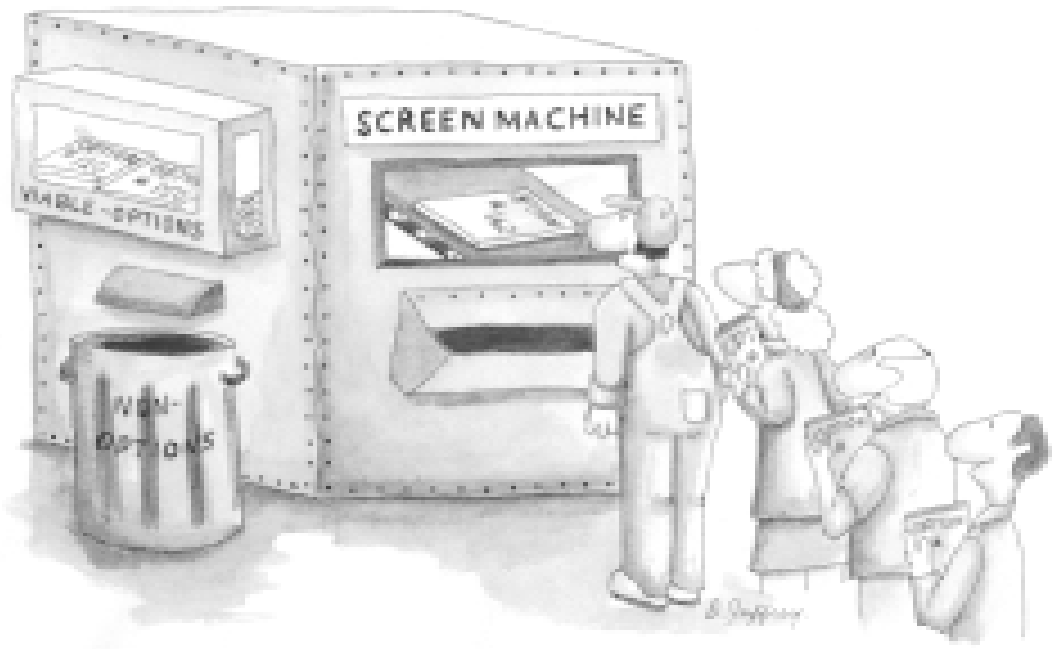

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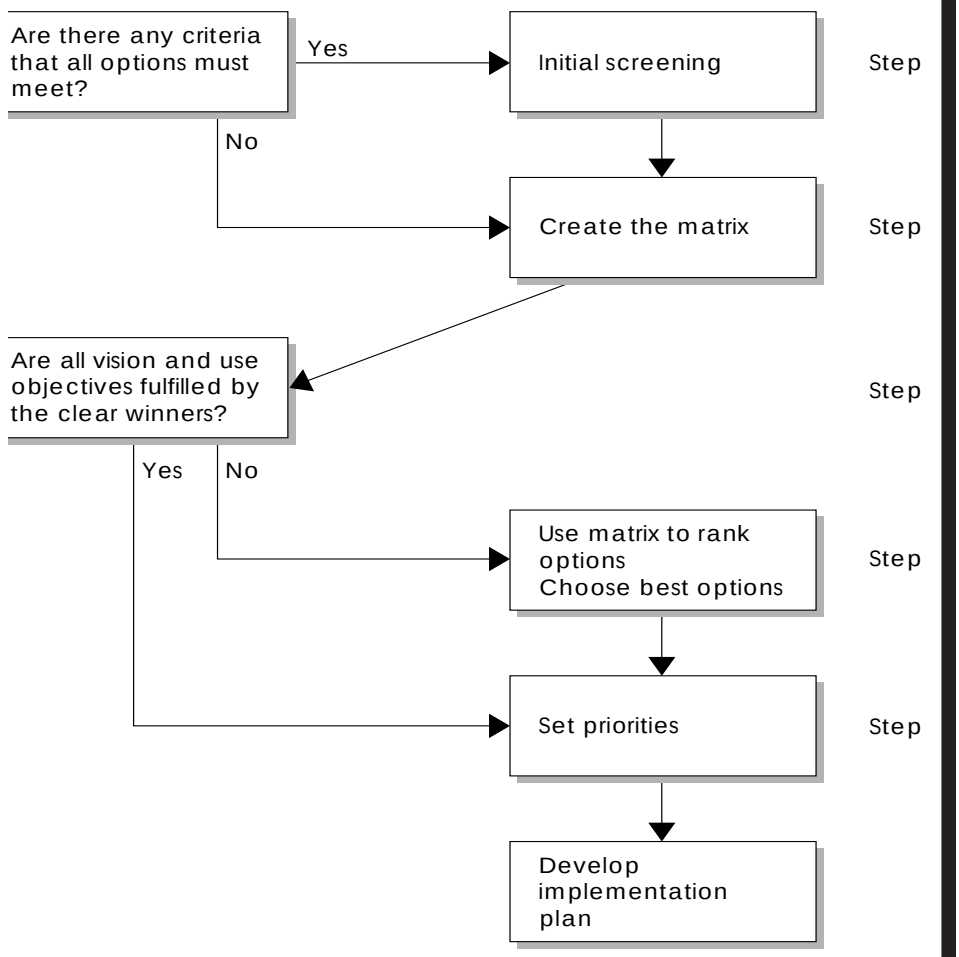
Figure 8: Flowchart for Final Evaluation



Step 2. Creating a matrix:

In the next stages, you want to choose the best option(s) to solve the environmental problems you face. Through the screening, all the remaining options have received at least a passing grade. Now it is their combination of strengths and weaknesses that separate the "all-stars" from those in the "minor leagues".

The list of strengths and weaknesses will come from how each option measures up to each criteria. In this stage of the evaluation the criteria are like yardsticks. Each yardstick measures something different. Some may measure dollars, others jobs created, or environmental conditions such as the amount of silt in the water. There is no pass or fail, as in the

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screening. Instead you give grades such as low, medium, and high. For some criteria negative grades may be possible.

To come up with your final team of options, you need to compare all the strengths and weaknesses of all the options at once. To make the comparison easier, the planners use a table that they call a matrix. In the matrix the options are listed in a row across the top. The criteria are listed down the side. Leave out any criteria you used for the screening. Then lines are drawn across and down the page to make boxes for the grades to go in. You have probably seen something similar, for instance in *Consumer Reports* where different products (such as ten different toasters) are tested and compared. An example is shown in Figure 9. This example compares five different options that will lessen the impacts of sewage treatment plants. For more information on the options, see Figure 5.

Step 3. Winners and Losers:

In this step you pick the options that clearly stand out from the rest. Using the matrix, you can see at a glance which options get the most good grades. Some options will readily stand out and will be easy to choose. Those that do poorly everywhere can be rejected. Without much work you have the found best and the worst. The tough ones are the options in the middle. These are the ones that generally do really well, but have a few very low grades in key areas, or the ones that don't shine anywhere, but still do pretty well right across the board.

Now, take a look at the clear winners. If you implement them all, will you achieve your vision and use objectives? If so, you can go right to step 5 (see Figure 8) and set your priorities. If some or all of your vision and use objectives would not be fulfilled, then you should reexamine those middle options using step 4.

Step 4. Making the tough decisions:

If you don't have enough winning options to achieve your vision and use objectives, you will need a way of determining which of those middle options are best. There are two easy ways to help you make your decision: ranking the options and symbol scoring (see below).

Before you start with either method, simplify your matrix. Take out all the options you have chosen as clear winners. Take out the real losers. Have any criteria that were based on use objectives, been met or exceeded by implementing the winning options? You can remove those criteria as well. Now, you need to decide which of the following two methods of choosing you will use.

Figure 9: Sample Matrix

	OPTIONS				
CRITERIA	**Separation of Storm Sewers**	**Expansion of Sewage Treatment Plant**	**Water Conservation Education Programs**	**Funding for Pavement Conversion**	**Creation of an Artificial Wetland**
1. Improve Water Quality	High	High	Low	Low	Medium
2. Improvement of Habitat	Medium	Low	Low	Low	High
3. Improvement of Commercial Fishing	Medium	Medium	Low	Low	High
4. Aesthetic Improvement	Medium	Medium	Medium	Low	High
5. Improvement to Boating	Low	Low	Low	Low	High
6. Funding Possibility	Low	Medium	High	Medium	Low
7. Cost of Implementation	High	High	Low	Medium	High
8. Regional Economic Development	Medium-Positive	Medium-Positive	Low-Positive	Medium-Positive	Medium-Positive
9. Waterfront Access Improvement	Low	Low	Low	Low	High
10. Degree of Certainty	Medium	High	Medium	Medium	Medium
11. Public Acceptance	Medium	Medium	High	Low	Medium
12. Fairness	Medium	Medium	High	High	High
13. Flexibility	Low	Medium	High	Medium	Low

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Ranking:

When you rank the options, you are deciding which option is best, which is second best and so on. To help you rank the options, this method produces an overall score for each option. In theory, the option with the highest score is the best, the one with the lowest score is the worst. This method has a number of pitfalls, so you are well advised to seek expert help before you proceed with this method.

Here's how it works. You give each option a score for each criterion (see Figure 10). That score will be on a scale that you have decided upon, such as between 1 and 5. For each criterion, you then have to decide what each score means. For instance, how much water quality improvement does a score of "1" represent, how much improvement rates a "2", and so on. For any criteria that can have both negative or positive responses, such as "regional economic development" you might extend your scale to include negative numbers. Suppose, that some options would result in a loss of income. You might decide that a loss of less than $10,000 a year rates a "-1", less than $25,000 lost rates a "-2" and so on.

When all the boxes in the matrix have been filled in, try adding up the scores for each option. If you decided earlier that some criteria are more important than others, add up the scores on each option just for the important criteria. Compare the scores. Which option does best on all the criteria? Take these overall scores with a grain of salt, they are not as scientific as they may appear. Use them as a jumping off point for the discussion.

Symbol scoring:

You have probably seen this method in *Consumer Reports* magazine. It uses dots with dark or light fillings, instead of descriptive grades. Using ● for "good performance", ❍ for "medium performance", and ❍ for "poor performance" seems to work best. Note that negative criteria such as "cost of implementation" must be treated differently than in your original matrix (with its high, medium, low grades). A "high" cost of implementation is a "poor performance" and deserves a ❍ symbol. An example of a filled-in matrix is given in Figure 7. To choose the options, discuss the matrix to try and reach consensus. If you have ranked the criteria, remember to give more weight to the important criteria in your discussion.

Using symbol grades makes it very easy to get a sense for the whole matrix at a glance. Dark areas, with many solid dots, show where many criteria have been met. Light areas show where the options measure up poorly.

Figure 10: Sample Matrix With Number Scores for Each

	OPTIONS				
CRITERIA	**Separation of Storm Sewers**	**Expansion of Sewage Treatment Plant**	**Water Conservation Education Programs**	**Funding for Pavement Conversion**	**Creation of an Artificial Wetland**
1. Improve Water Quality	5	5	2	1	3
2. Improvement of Habitat	1	4	4	4	5
3. Improvement of Commercial Fishing	4	4	2	2	5
4. Aesthetic Improvement	4	4	4	1	5
5. Improvement to Boating	4	4	4	4	5
6. Funding Possibility	2	4	5	4	2
7. Cost of Implementation	1	2	5	4	2
8. Regional Economic Development	5	5	1	5	5
9. Waterfront Access Improvement	4	4	4	4	5
10. Degree of Certainty	4	5	4	4	4
11. Public Acceptance	4	4	5	1	4
12. Fairness	4	4	5	5	5
13. Flexibility	2	4	5	4	2

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Figure 11: Sample Matrix With Symbols for Ranking Options

CRITERIA	OPTIONS				
	Separation of Storm Sewers	Expansion of Sewage Treatment Plant	Water Conservation Education Programs	Funding for Pavement Conversion	Creation of an Artificial Wetland
1. Improve Water Quality	●	●	❍	❍	❍
2. Improvement of Habitat	❍	❍	❍	❍	●
3. Improvement of Commercial Fishing	❍	❍	❍	❍	●
4. Aesthetic Improvement	❍	❍	❍	❍	●
5. Improvement to Boating	❍	❍	❍	❍	●
6. Funding Possibility	❍	❍	●	❍	❍
7. Cost of Implementation	❍	❍	●	❍	❍
8. Regional Economic Development	●	●	❍	●	●
9. Waterfront Access Improvement	❍	❍	❍	❍	●
10. Degree of Certainty	❍	●	❍	❍	❍
11. Public Acceptance	❍	❍	●	❍	❍
12. Fairness	❍	❍	●	●	●
13. Flexibility	❍	❍	●	❍	❍

You decide:

Try making a sample matrix using some of your options and all your criteria. Copy the matrix a few times. Fill in different copies using the various methods. Try ranking the options based on each method. Are your results the same for each method? Does any one method appear much easier to understand and use than the others? Can you think of any improvements?

STEP 5. ESTABLISH PRIORITIES:

Once you've chosen your options you will have to set some priorities. Which ones are most important? Which ones do you want to tackle first?

One approach is to use the results from the choosing stage here. The ones you chose first, that were clearly the best, get first priority. Then the others follow in the order in which you ranked them in.

However, you may want to be a little more pragmatic. Perhaps, after all this time, you want to do something concrete to clean up as soon as possible. Is there funding available and a willing organization or person to start something now? Even your list of best options may be more than you can handle at once. Think of what you can realistically do. It may be better to concentrate on one or two options to show everyone that the plan is starting to come to life, than to scatter your efforts. A good discussion in the stakeholder committee may be all that is needed here.

What's next?

Once you have figured out how your final evaluation will proceed, it's time to do it. The next section gives some ideas on organizing this event for the stakeholder committee.

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4.0 Evaluating the Options

4.1 STRUCTURING THE DISCUSSION

You have reached a high point in the ACAP process. With criteria, options and an evaluation strategy in hand you can actually do it! Evaluating all the options with the stakeholders will take lots of time. If possible, schedule a workshop for two or three days. You will need to sift and weigh a lot of information at once. Don't stretch out the meeting over several weeks and months, or you may find yourselves forgetting the beginning before you get to the end.

To make the evaluation meeting go more smoothly the options subcommittee should prepare the following beforehand:

- a list of the criteria including any grouping, ranking and explanations. These should have been approved by the stakeholders (Section 3.3);
- profiles of all the options (Section 3.2);
- the evaluation strategy including a sample matrix (Section 3.4); and
- an agenda for the workshop (see below).

The evaluation workshop should then cover the following steps:

- Discuss the options: Everyone on the committee should have a good understanding of the strengths and weaknesses of each option.

- Screen the options: This should be done if screening criteria were chosen (see Section 3.3). This step might be given to the options committee to complete beforehand for approval by the stakeholders.

- Create the matrix: Using a chalkboard or large cards on the wall, give each option a grade on each criteria. Going through one criterion at a time for all the options may work best for you.

- Choose the best options: Which ones jump out at you? Are the best options enough to meet your vision and use objectives? If so, you can skip the next step.

- Rank the options: Make sure there is enough discussion, especially if you are using symbol scoring.

- Set priorities: What options will you tackle first?

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- Record results: This should happen throughout the meeting. You want to explain to the public and to record in the CEMP how you arrived at your recommendations.

Use the above tasks to set your agenda.

4.2 AN OPTION: ROLE PLAYING

Do you dread a meeting that lasts for several days? Are there already pre-conceived ideas about which options are best among your committee members? You may want to consider role playing as a way to explore the options in the workshop before you make your decisions.

In role playing, you create a make-believe situation and the participants take on roles they don't normally play in daily life. In the example in the box, people take on role in a courtroom situation.

Role playing can put zest in a meeting and help you to come to consensus for several reasons. By now you probably know how most of the members of the stakeholder committee will react to any given issue. Opinions are set. By playing a role that differs from their everyday life situation, people can explore new ways of looking at the world. Because they are just playing, they are free to make statements and ask questions that normally don't come up. In this way they learn to see issues from new viewpoints. Their understanding of others goes up.

Because everyone is just playing a role, people take themselves less seriously. The workshop starts to be fun. People can make fun of their own or others' roles, pretend anger and tease each other without risk. When people are enjoying themselves it is harder to get bogged down in the little details. It is also easier to stick to the evaluation over a several-day period.

What you do in your role playing is up to your imagination. You want to learn about the strengths and weaknesses of each option. Beyond that, it's wide open. A subcommittee should prepare and perhaps experiment with the concept beforehand to make sure it is workable. It might be useful to get some advice from someone who has used the technique before.

Options on trial: a role playing example

Roles: Jury members, judge, court clerk, lawyers, and witnesses for the options

What happens: For each option, one or more witnesses are called. The defense lawyer asks questions to show the strengths of the option and the crown attorney tries to show each option's weaknesses. Their questions are based on your criteria. The judge keeps things moving along. The clerk records the answers in a big matrix on the wall. The jury deliberates and does the evaluation. Your stakeholders might play the jury and have other people from the community fill the other roles. Or you might rotate the roles among committee members. The judge should be a good facilitator. He or she should keep the event on a fact finding basis, and not let the court become adversarial. Wear costumes to give the event a greater sense of theatre. The jury deliberation can resemble a more normal meeting.

This role playing will take you as far as creating the matrix. If it gives everyone a better feel for the option, it should be easier to come to consensus in the steps that follow.

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5.0 The Next Steps

CREATING AN IMPLEMENTATION STRATEGY:

Selecting options is a milestone in the ACAP process. Before you begin the clean-up you have another big step before you. In a nutshell, you need to develop and write an implementation strategy. The strategy is an integral part of the Comprehensive Environmental Management Plan (CEMP). It shows how the options you have chosen will become a reality. That strategy should contain the following parts:

- Action steps for each option: Who will do what?
- Timetables: What will happen when?
- Funding agencies: How much will each option cost and who will pay?
- Further studies and pilot projects: What information is needed to implement each option?
- Monitoring the evaluation: Who will watch over the plan to make sure it is being implemented?
- Delisting criteria: How will you know when the vision and each of the use objectives have been achieved?

ACTION STEPS:

The option profiles you prepared are a good starting point for developing the action steps. At this stage you should describe in more detail the steps that are needed to implement each option. Think too, about who else would be involved in carrying out the steps. If any other options must be implemented first, or at the same time, they should become part of the action steps as well.

TIMETABLES:

For each set of action steps you need a timetable that shows when each step will start and finish. The individual action steps timetables can be put together to make one master timetable. The format of the timetable could be very similar to that of the timetable for the evaluation process (Figure 3). From the master timetable you will be able to check for problems. For example, suppose one organization has been assigned to do ten things on different options at once. A timetable would identify this and alert you to the fact that the organization doesn't have the resources to do it. Developing a timetable allows actions to be coordinated so that everything flows smoothly.

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When you create the timetables, try to be realistic. Most things take longer than expected. You may want to divide the timetable into several phases - short term, medium term and long term. Then you can concentrate on making the short term part as detailed as possible. The detail of the later phases will become clearer as you implement the first phase.

FUNDING SOURCES:

Before looking for funding for each set of action steps, you will need a rough budget. The budget should show capital and operating costs, and when the money will be spent. If the actions will raise money or sell something, then you should estimate and include these amounts as well. Then you can look for funding sources. These might be provincial or federal programs, charitable foundations, donations from business, community fundraising or through existing local taxes and charges such as water and sewer use rates. When you have identified potential funding sources, you will need a proposal to sell your idea. The action steps, timetable and budget will form the core of your proposal.

FURTHER STUDY:

Most of your costly recommended actions will likely need further study to show exactly how and what will be done. People will want to know that it will really achieve what it is designed to do and be certain about the costs. There may still be some options within the chosen approach that require more evaluation. For some questions, pilot projects will be the best way of getting answers.

MONITORING:

Monitoring and evaluation of progress on the plan is vital to its ultimate success. Part of your final task for the plan is making sure that your recommended options become reality. It is also important to ensure that those actions are monitored to see whether they achieve what you hoped for. Promising new options may come to light which should be evaluated and perhaps included in the plan.

In other words, you need some kind of organization to continue your work. Without such an organization your report will collect dust on a shelf, and the awareness you have created in the community will fade away. It might be your stakeholder committee under a new name, perhaps with some new faces. Or a local agency may want to take the lead in ensuring things get done. You might split the work into two: the actual implementation of the plan would be the responsibility of one organization, while others monitor the results. This task creates an important opportunity

to go out into the community with your plan. The interest your plan awakens can be the way to find new faces willing to carry on the work.

DELISTING CRITERIA:

You should also return to your vision and use objectives one more time. This time, state them so that you and everyone else will know when your vision has been achieved. Stated that way, they are called "delisting criteria". They will help you determine when your area can be taken off the ACAP list.

WRITING THE PLAN:

Your plan is a living, changing thing. It may never be finished. But at some point after you have most of the details of your implementation plan you should write a final report. The report will let everyone know what you've done and where you stand. How to prepare that report is the subject of the next chapter.

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6.0 Literature

The following reports all evaluate options to solve water-related problems. They use a wide range of evaluation techniques. For the most part they do not give much detail on how they developed and used their evaluation processes. Each one does, however, show a different kind of matrix.

1. Ministry of the Environment, *Stopping Water Pollution at its Source, MISA: Evaluation of Municipal Sewer Use Control Options - Phase II Effectiveness - Cost Evaluation and Policy Recommendation.* (Prepared by M.M. Dillon Limited), Copyright: Queen's Printer for Ontario, 1989.

   Contact:
   MISA Advisory Committee
   40 St. Clair Ave. W. #400
   Toronto, Ontario
   M4V 1M2
   Tel: (416) 324-4908
   Fax: (416) 324-4908

This report uses a matrix with lots of description to grade each option on each criteria. For each criteria it then ranks the options. The discussion of the process and the reasons for the final recommendation are good.

2. Ontario Ministry of the Environment, *Options for the Remediation of Environmental Problems in the Niagara River (Ontario) Area of Concern. Phase II: Screening of Remedial Options.* (Prepared by Beak Consultants Limited and Aquafor Engineering Limited). June 1992.

   Contact:
   Belinda J. Koblik-Berger, Environmental Engineering Officer
   Niagara Improvement Project, West Central Region
   Ministry of the Environment
   Ellen Fairclough Building
   P.O. Box 2112
   119 King Street West, 12th Floor
   Hamilton, Ontario L8N 3Z9
   Tel: (416) 521-7834
   Fax: (416) 521-1601

This report uses matrices with several different kinds of symbol scoring. There is very little discussion of the evaluation method. The report does evaluate many participatory options.

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3. Persson, Lynn et al. *Lower Green Bay Remedial Action Plan: For the Lower Fox River and Lower Green Bay Area of Concern.* State of Wisconsin Department of Natural Resources, February, 1988.

Contact:
Vicky Harris.
Department of Natural Resources, Lake Michigan District Headquarters 1125 N. Military Avenue, P.O. Box 10448, Green Bay, Wisconsin 54307-0448.
Tel: (414) 492-5800
Fax: (414) 492-5913

The Green Bay Remedial Action Plan was created by a multistakeholder committee. This report shows how options can be grouped together to simplify the evaluation. There is not much information on the evaluation process. A fairly detailed implementation strategy is included.

4. Remedial Action Plan for Hamilton Harbour. *Resource book for Analysis of Remedial Measures.* May 1989.

Remedial Action Plan for Hamilton Harbour. *Work Book for Analysis of Remedial Measures.* May 1989.

Remedial Action Plan for Hamilton Harbour. *Goals, Options and Recommendations. Volume 2 - Main Report. RAP Stage 2.* November 1992.

Contact:
Keith Rodgers, Coordinator, Hamilton Harbour RAP
Canada Centre for Inland Waters
867 Lakeshore Road, Box 5050
Burlington, Ontario
L7R 4A6
Tel: (416) 336-4888
Fax: (416) 336-4989

The Remedial Action Plan was also created by a multistakeholder committee. The two work books contain detailed description of a complicated evaluation process. The final report includes a matrix that combines descriptive grades and a ranking of the options. The implementation strategy is quite detailed.

5. International Joint Commission, Project Management Team. *Living with the Lakes: Challenges and Opportunities. Annex F: Evaluation Instrument.* (Prepared by the Evaluation Instrument Task Group). May, 1989

Contact:
International Joint Commission
Great Lakes Regional Office
100 Ouellette Ave., 8th Floor
Windsor, Ontario
N9A 6T3
Tel: (519) 256-7821
Fax: (519) 256-7791

This report is an entire appendix dedicated to the evaluation method. It is recommended for statistics scientists only. It does include a good discussion of the challenges and difficulties of a very scientific planning method.

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Part 4

A Lasting Record: Putting Your Plan in Print

Table of Contents

1.0 Introduction

Your Comprehensive Environmental Management Plan (CEMP) **isn't** a plan until it's down on paper. It's important to start planning to get it there as soon as your ACAP group takes its first breath, even before its first meeting. Paying enough attention to the written document has many positive benefits in planning, cost, understanding, and more. Furthermore, the ACAP agreements with Environment Canada **require** that you have a written plan at the culmination of your efforts. This is not just a formality but acknowledges the value of the final printed plan and the steps taken to develop it, learned from many previous experiences, in the pursuit of a better environment for yourself and future generations.

This chapter of *Sharing the Challenge* will help you with writing tasks in the various stages of assembling your Comprehensive Environmental Management Plan. The final Plan will contain enough detail to tell where you've been and where you are going, from descriptions of environmental conditions and problems in your area to estimates of the cost of carrying out remedial options to agreements by participating parties to implement the plan.

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A written plan:

- provides points of discussion for the multistakeholder group;
- provides a clear record of deliberations and decisions reached by consensus;
- ensures commitment of the parties involved to the consensus decisions since they are publicly presented;
- contains a clear statement of the problems and frame of reference;
- is a 'roadmap' for future environmental activities;
- is a public document, for your community and others to share;
- serves as your business plan for funding requests;
- is a guide for others on how to help their environment;and
- is an organizer, focusing and helping you to come to grips with the whole of the problem at each step of the way.

A written plan is so important for all these reasons that you must take it as seriously as you take the task of evaluating and deciding on the environmental options for your ACAP community.

1.1 WHY WRITING IS IMPORTANT

Writing is a tool and like other tools it can be used in many ways. People write to communicate ideas, as a record, as a way to develop their thoughts, and for many other reasons. In ACAP, writing is valuable for all of these reasons but as well is a tool for achieving consensus. In deliberating and deciding on directions and options for the ACAP area, the members of the multistakeholder committee work together to produce a document that clearly and accurately states the efforts and achievements on which all of you agree. The act of getting the Plan down on paper is a key one in reaching consensus.

Beyond the deliberations of your group, the Comprehensive Environmental Management Plan is one of the main ways to communicate your efforts to others. If you want the document to be understood and be effective, you have to be prepared to allow enough time for careful writing, editing, review and preparation. The work spent here is well worth it. Remember—the only way to effectively pass on your plan to the broader community and to posterity is through a written plan.

1.2 WHERE DO WE STAND?

The ACAP process is a new approach to what is usually an expensive and labour-intensive task. Your efforts, including the writing of the CEMP, can benefit from this previous experience, but you are entering unfamiliar territory. Comprehensive Environmental Management Plans as a means of dealing with localized environmental problems are a recent invention, begun in the 1980s and 1990s and still evolving. Although your Plan has to address many of the same issues and faces some of the same problems that are being addressed the world over, your area and plan will have features and approaches which will make it unique. Your Environment Canada representatives will be able to guide you to publications and materials produced in environmental management efforts elsewhere, in addition to *Sharing the Challenge*, which will give you some insight into the global picture.

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2.0 Of course I can write this!

The Canadian humorist, Stephen Leacock, once said that writing wasn't hard. All you had to do was sit down and write as it occurs to you. Writing is easy. It's the occurring that's hard.

Leacock's statement holds true in ACAP and in the writing of technical documents in general. While a writer of literature has to wring ideas out of consciousness and onto a page, your ACAP ideas and information will, for the most part, be 'cut and dried' before you put them down on paper. By using some simple writing and organization techniques, many of which you already know, and by enlisting help from outside sources when you need it, writing the CEMP can be relatively easy.

A satisfactory CEMP can take a number of forms, depending on your abilities or resources. You could produce a totally satisfactory CEMP entirely in point form plus a few tables and illustrations. Keep in mind, however, your responsibility to communicate your plan to the community. If you choose the simple route, ensure that you produce adequate summaries and supporting materials to let your fellow citizens know about the Plan. Some groups will have considerably more skill at preparing documentation than others and so it is up to you what level you aim for. A good way to decide is to look at model reports of various kinds (available from Environment Canada representatives), note their format and style and find one you can produce. A well-written document can be more readily understood—but a poorly written one can be less useful than a bare outline. If you're not working from a model, use the rule of aiming your first draft text to be the minimum required to change an outline into a written text. Once you have an acceptable draft you can edit and revise it to improve wording and readability.

Keep in mind the main purpose of writing the Plan—to produce a record that can be understood by and communicated to others and to be a clear record of consensus. As you proceed through several years of deliberations for ACAP you want to leave a clear trail of where you've been. You should take care at every stage to make your statements as clear as possible. This means reviewing them several times carefully and not letting up. The work you put into making clear statements and reports pays off in a number of ways—by getting the ideas across to others; by giving you a solid reference; and by allowing you to put documents directly into the final CEMP with little discussion about wording.

For some of you, the skills learned in your public school and university education will have to be dusted off. Many of you, particularly if you have

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worked for a number of years in large organizations or government where styles of institutional writing prevail, will have to unlearn some bad habits. It wouldn't be a bad idea to pick up a book on writing such as Strunk and White's *The Elements of Style* or Sheridan Baker's *The Practical Stylist*, and read it for pleasure to find how you can more effectively communicate through writing.

It also pays to involve at least some stakeholders who are good with language or at least have an appreciation for grammar. If necessary enlist a high school English teacher or local writer for your multistakeholder committee. In addition to helping you say what you mean, including these individuals can be a valuable way to broaden the Committee's perspective.

Before you embark on developing your plan, take a good look at the process that lies before you. We'll deal with it in more detail in the next section, but in general the CEMP will contain:

- a section which gives an *introduction* to the project and the plan. This section should be written early, states where you are coming from, and can be used as a primer and introduction to some of the other sections.

- a section on *community vision*. This section will state how you came to your vision for the community and what your vision is.

- the background and results of your efforts to develop *environmental use objectives* for your ACAP area.

- a description of the *environmental setting*. This will describe the natural, human and economic aspects of the ACAP area to give a frame of reference to the project; will describe the environmental problems—past and present and efforts to correct them; and will contain the results of your Environmental Quality Assessment for the project.

- a section giving background to your deliberations to select *remedial options* to restore environmental quality, and a list of recommended options.

- a strategy for *implementing the plan*. This will include: estimates of cost and financing, a statement of who will be responsible for implementing the recommendations, a candid assessment of how well the measures will work, an implementation schedule, and suggested means of verifying that the actions have been successful.

- a record of *public involvement* in the project. This will include a list of participants and activities of the ACAP multistakeholder committee, as well as a record of public consultations, public awareness and demonstration projects, and public education initiatives.

- a list of definitions—the *glossary* to explain unfamiliar terms used in the Plan.

- the *bibliography*, a list of documents used as sources for material contained in the Plan.

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3.0 Planning the Plan

Planning is one of the keys to a successful Comprehensive Environmental Management Plan (CEMP). You have a long and complex process ahead, as well as a fixed deadline. Careful planning at all stages can help you meet your targets. Planning the final CEMP document can aid in your overall planning efforts too, as the final plan mirrors all your activities and puts them in perspective. It can also save time in other ways, since with proper planning, many of the reports produced at various stages (for example 'Use Objectives') can be used directly or with slight modification in the final CEMP. ACAP groups will have to decide, at the outset, if they want to approach the document in this way.

Under ACAP you're welcome to produce the final CEMP document in your own style, as long as it clearly presents the course of your project and its milestones. It will be to your advantage, however, to follow a more standard style, one known as a technical report. Unlike a work of literature, technical reports usually follow a standard form of organization known as a hierarchy—sections and headings follow some kind of logical order, often bearing numbering which helps to locate where you are in the document. *Sharing the Challenge* is a form of technical report. If you're not familiar with this type of report, ask your ACAP representatives for sample documents.

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Technical report format is good at handling large amounts of information such as you'll be encountering in your ACAP area, and is also more likely to be easily understood by technical experts and government representatives who will review your plan. On the other hand, the format of a technical report isn't good for presenting information to the general public and definitely doesn't make good bedtime reading. As a good compromise, include a concise and well-written *Executive Summary* (see Section 3.1) and try to use occasional illustrations or photographs to lighten the text.

In the following section we will present the key elements required in a Comprehensive Environmental Management Plan in ACAP. The suggested elements are modeled on those used increasingly in the preparation of remedial action plans (RAPs) in other parts of Canada and the United States. Use of similar key elements by all ACAP groups can help your multistakeholder committee put your progress in perspective, more quickly identify and solve problems, and generally improve the effectiveness of your Plan.

3.1 PARTS OF THE PLAN

Your Comprehensive Environmental Management Plan will include numerous elements, some of which are unique to your area and others which are common to other areas. Some of the elements can be reports which you will have prepared at various stages of the process. All of the key elements for a CEMP under ACAP and some optional elements appear in the Table of Contents in Figure 1. The following sections have been given letters which correspond to the letters highlighted in Figure 1.

(A) Open Letters

Your CEMP is a public document—produced for the benefit of your community. Having letters of commitment and support from key public figures—the Mayor, municipal warden, MLA, MPs—lends credence to your work as well as involving them. Letters on letterhead can be placed directly in the document. Alternately you may choose to put them in an appendix.

(B) Introductory Messages

You may wish to address the public. It can make the ACAP committee and the document as a whole bear a closer relationship to the reader.

(C) Table of Contents

The Table of Contents is a useful tool in keeping the ACAP project on track and forces everyone to see the overall picture early in the process. Spend

Figure 1. Sample Table of Contents

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enough time developing it and use it to create a detailed outline for your writing efforts. No matter what model of Table of Contents you use, the exercise will acquaint you with the parts of the CEMP and how they fit together. You may not be able to fill out the CEMP exactly as you plan, but you can come close. If possible, preserve the main structure—the key parts and general headings. These represent the essential steps in the ACAP process, which are common to environmental management programs everywhere and which are beginning to be widely understood and appreciated. Having this general structure will make it easier for outside reviewers as well as Environment Canada participants to review and comment on the Plan. Note that the outline contains various environmental concerns and uses, some of which may not pertain to your ACAP area.

Include development and approval of your Table of Contents in the project planning process. A draft Table of Contents, either ressembling the one included here or in modified form, should be submitted to Environment Canada for comments and criticism. Fine-tuning of the Table of Contents will be required as the project evolves; for example the number or kind of remedial options won't be known until later or may change in the process.

A good Table of Contents and an awareness of the structure of the final document are important in another way—they will enable you organize your interim reports (Community Vision Statement, Use Objectives etc.) to fit together with only minor changes in the final CEMP. A great deal of energy goes into each stage of the ACAP process. Each component is the result of a focused effort and probably represents the 'best possible' effort at addressing the particular problem. Unless you have additional resources, you're not going to have much opportunity to have someone review and modify your reports later in the process. (You should, however, go over your earlier reports at each stage to determine if a significant change in understanding has taken place. If a change to the earlier document is warranted, it should be considered formally by the multistakeholder committee, and changes made before the final CEMP is produced).

(D) Lists of Figures and Tables

Important to make your CEMP accessible to readers and for review, these are easy to generate using word-processing programs which can create them automatically.

(E) Acknowledgements

Here's where you make special mention of individuals or organizations who made valuable contributions to the preparation of the CEMP. The

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ACAP multistakeholder committee and Environment Canada representatives can be acknowledged in different ways, for example by listing yourselves and signing the committee's Introduction to the plan, by placing your names prominently on the inside of the cover, or by listing them in an appendix.

(F) Executive Summary

An executive summary is a 'Readers' Digest' of the plan as a whole, containing only the highlights. It is one of the most important parts of your CEMP since it is often the only part of the document most people will read! This section must be easy to read and arranged so it can stand alone for distribution to a broader readership and the general public. Don't include a lot of detail in the Executive Summary. For example, your list of remedial options and recommendations might be summarized in a couple of sentences or in point form here. In general, follow the same order of discussion as in the plan as a whole and aim for five to ten single-spaced pages in length. A good executive summary requires a lot of work and and re-work, so plan to start writing it as soon as you have completed the preliminary steps in the ACAP process—even as you prepare the main body of the document.

(G) Introduction

The introduction gives the starting point for the project and provides enough key information to tell an unfamiliar reader why and how the project is being done. Include a background statement about the ACAP program, a brief overview of the environmental problems and stresses the project was meant to address, a definition of the project area, a map, the timing of the project and key events, finally culminating in production of this document. This section should be brief, probably less than three single-spaced pages of text plus map. It should clearly state that decisions in the process were reached by consensus.

(H) Community Vision

Here you present an overview of your efforts to reach a vision statement for the community. Include some background (obtainable from Part 2A of *Sharing the Challenge*), a description of what you did to arrive at your vision and finally present the vision statement. The vision statement should be no more than a few paragraphs, and should also appear in the Executive Summary.

(I) Use Objectives

'Use Objectives' presents the results of your efforts to define present and

future desirable uses for your ACAP area. Give an introduction to the process of selecting desirable uses, state your terms of reference and describe how the uses relate to the Community Vision Statement, briefly state relevant land and water uses, and finally list or present in tables the uses you select. This section should be brief, culminating in your presentation of the list of use objectives.

(J) Environmental Setting

This section provides an overview of environmental and social conditions in the ACAP area as background for discussion of environmental problems and impacts. A lot of the information presented here will come from your general knowledge, from information searches and material provided by government and technical committee participants, and from filling in the ACAP Community Environmental Profile workbook. It would be wise to prepare this section early in the project because of the useful information it contains and the perspective it gives you on the project.

This section requires interpretation and a significant amount of knowledge about your study area and you might choose to get outside help in writing it. If you do choose to do this section yourself, consider using simple approaches to information management as described for preparing Environmental Backgound Summaries as discussed in Part 2, *From Objectives to Evaluation*. For the area as a whole or for convenient sub-areas, divide the material into major categories. Don't get carried away with detail but try to summarize what is generally agreed to be evident from the data. Submit the parts for comment and review to knowledgeable individuals in the community and to the representatives from the Provincial and Federal governments on your multistakeholder committee. Parts of this section include:

Description of Area: Provides a brief background to significant features needed for an understanding of the environmental problems of your ACAP area. This section is not intended to be an inventory but rather an overview. It includes, but is not limited to, sections on:

> *Project Boundaries*—describes the geographic extent of the project (frequently a watershed), and includes boundaries of jurisdictions of significance (i.e. counties, international boundaries).
>
> *Watershed and Hydrology*—lists main rivers, streams and significant tributaries and relationships between them, gives a breakdown of flow by major rivers, lists main aquifers and importance of groundwater, states drainage area, general seasonal patterns in precipitation and flow regime.

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Topography and Geology—states main features of the landscape, generalized slope of the land, drainage patterns, significant geology as related to water (e.g. acidic rocks) etc.

Oceanography—describes the main features of coastal water bodies in the ACAP project area, type of estuary, area, depth, type of bottom, adjoining water bodies etc.

Social and Economic Conditions: Summarizes information on:

Population and Growth— major centres, location, population and growth, population trends and evidence of population shifts, role of your area in relation to other centres (i.e. Place 'X' is a bedroom community to Place 'Y'), age structure, problems arising from increasing development and population etc.

Industry and Employment—major industries and location, historical and present importance, employment, composition by employment group, employment trends, government initiatives impacting the project (e.g. county development plan, municipal land use plan), current and predicted pressures from industry, etc.

Land Use—proportion of land in farming, forestry, nature reserves, recreational areas, industrial areas, urban areas etc; sewage treatment facilities and landfills; coastline use by industrial, residential, recreational (including parks and common use property such as beaches) and other activities;

Environmental Implications—key impacts of both historic and present day activities; impacts of population trends, provincial and municipal strategies, land use practices; location of rare or endangered species; influence of local government areas of responsibility; alterations caused by causeways, impoundments, landfilling, highway construction etc.

Environmental Quality Assessment: This section summarizes your efforts to determine whether environmental conditions will allow the use objectives you have set for your ACAP area (See Part 2B). Include an overview of past problems, a statement of current environmental quality, and a summary.

(K) Remedial Options

This section describes how you selected remedial options (courses of action to correct particular environmental problems) and lists the recom-

mended options together with brief commentary supporting their selection (See Part 3).

(L) Implementing the Plan

Include here an introduction in which you briefly discuss the strategy and priorities for implementing the plan and outline: the schedule and anticipated costs of the remedial options; the interest groups (governments, private industry, citizens' groups) which are to take responsibility for the actions; an appraisal of whether the actions are likely to fail or succeed; and a summary table or 'check list' of relevant environmental quality indicators for monitoring the success of your remedial measures.

(M) Public Involvement

Include an introduction stating the role of public involvement in the ACAP process and your efforts to include it. Cite all activities you have undertaken and all participants. This section reaffirms the effort put into gaining the views of the public and is a record of some of the public input. Information for this section can be taken directly from progress reports and itemized by date and type of activity, and can include a description of the undertaking, other relevant details and outcome.

(N) Glossary

A glossary, such as the one found at the end of this manual, defines uncommon terms for the reader. You may have many more scientific terms, than found in this manual, that you want to define. Your Environment Canada representative can provide you with a much longer glossary on diskette, from which you can choose the terms you need.

(O) Bibliography

Keep track of the documents used in producing the CEMP and list them in the bibliography. A bibliography is important so you can verify your information easily, but also serves as a permanent record for yourself and others. Your ACAP efforts may become the most complete environmental assessment for your area and your bibliography the most complete picture of what has been done, so it's definitely worth preserving. Bibliographies can be produced in many formats; pick one that is appropriate and use it consistently. Your ACAP representative can give you advice on an appropriate bibliography format.

(P) Appendices

Appendices are something tacked on. As a general rule, an appendix

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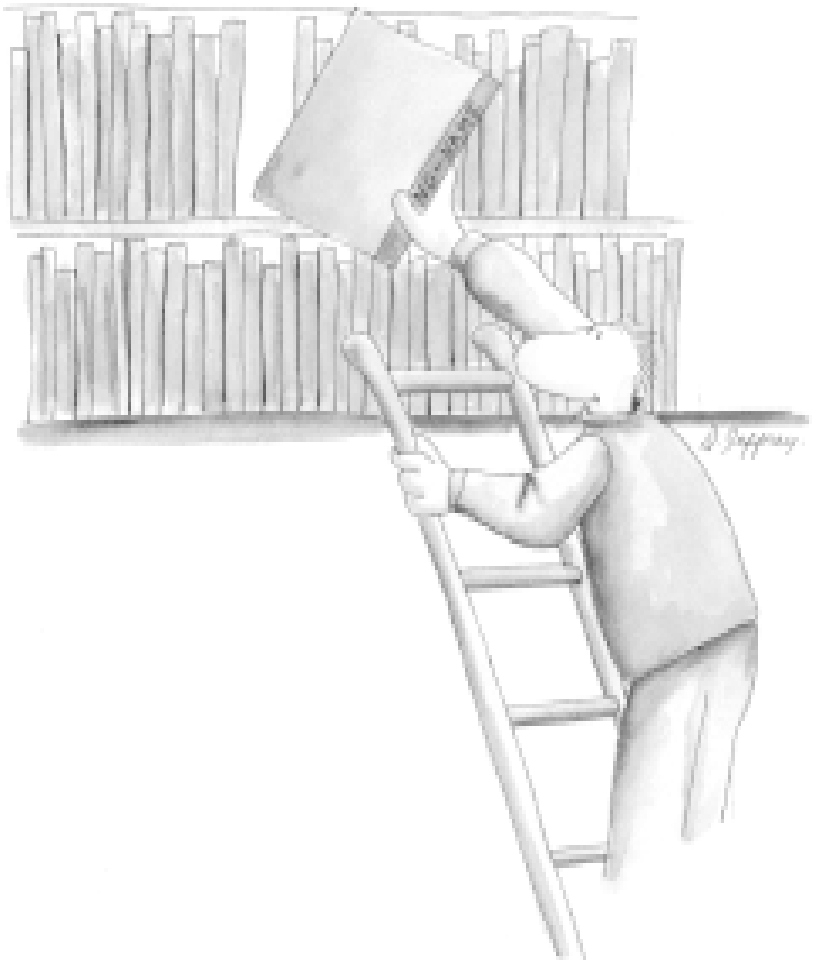
should be created for information that is too detailed for the main body of the report or for any list or table which occupies more than a page. Long tables interrupt the flow of the document and only the key points should be discussed in the text. Some topics you can allocate to appendices are: Glossary, Important Letters, List of Stakeholders, Monitoring Plans, Bylaws of your organizatiion, Land-use Planning Initiatives, Reviewers Comments, List of Technical Advisory Committee Members, Land use and Population Statistics, Lists of Endangered Species, Lists of Water Quality Parameters, and so on.

3.2 BE A COPY CAT

Everyone likes to add a personal touch to a project and your efforts in preparing the CEMP will be no exception. You must attempt to balance, however, your need to be creative with the practical requirement that you have a limited time in which to produce a plan that works. This will be the first time you have produced a document like the CEMP and there's a good chance of overruns and missed deadlines. Under these circumstances, using a generic or 'off-the-shelf' approach to preparing the CEMP (as suggested here) is almost essential. A generic approach also makes it easier for experts, consultants and ACAP representatives to review the document and give you a perspective on your progress. Liken the approach to one of the ways you were taught written composition—by emulating the styles of significant writers.



3.3 MAKE A PRODUCTION SCHEDULE

As part of your planning effort, make a detailed schedule for production of the various components of the CEMP. Such a schedule includes a complete list of elements of the Plan and can include a calendar for implementing it as well as a breakdown of various tasks and responsibilities for completing it. Make realistic estimates for time required for various stages and try to have contingency plans built in. Your production schedule will certainly change in the course of the project so revise it regularly.

3.4 THE VALUE OF PLANNING

It goes without saying that good planning will result in a better outcome for your project. Many of you know this and your efforts under ACAP will show it. If you're inexperienced, give it a try. Seek outside advice on your efforts if you run into trouble. If planning isn't your interest or forte—for example if the members of the multistakeholder committee are more 'doers' than 'sitters and thinkers'—enlist someone in your group who can take a reasonable stab at it. The positive benefits will be more than worth it.

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4.0 About Writing

A lot has been written about writing and style, and you can get pointers and tips from a variety of sources, some already cited here. This section is designed to highlight a few points which will be particularly relevant to your efforts to prepare the Comprehensive Environmental Management Plan for your area.

WRITE COLLECTIVELY

Preparing and assembling a written document is something most of us are used to doing by ourselves. Although it's likely that some of you will have to prepare the components of the Comprehensive Environmental Management Plan in this way, it might be worthwhile, at least for some parts, to consider trying to write as a collective or group. Some of the components more naturally require working together than others. For example, deciding on wording and phrasing of the 'Community Vision Statement' or of 'Recommendations' for remedial options is best done in a group. In this stage of writing, you may adopt a strategy of having one of the members of the stakeholder committee draft the list and then submit them to the group for refinement. You have to reach consensus on the points anyway and this is also one way of coming to an agreement. Another option is to draft each point as you're discussing it—jot it down and refine the wording—and have the Secretary for the group record it accurately. Done in this way, these items can go directly into the CEMP.

Even sections that are written mostly by one individual must be reviewed by the group. The focus of the writer should be not so much to have a perfect document but to ensure that the key points, particularly those agreed upon, are included. There's nothing wrong with producing a short document if it addresses all the points. If you lack enough detail, you can always fill it in later. The document may then be presented to the multistakeholder group. Review the text at one of your meetings or hold a special meeting, preferably during the day or on a weekend when you're fresh. Review and editing of text can be a long, tedious process and one for which you will have have limited resources, so try to keep the text as short and to the point as possible.

WRITING IS EVOLVING

Keep in mind that as the project evolves you may have to change parts of what you have written. You'll also be tempted to make changes as your understanding of the project improves and you see things in a better light. There's a danger in this as any changes result in extra work. Try to

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keep the number of changes to a minimum, deal with only the most significant, and maintain a detailed record since any changes you make will have to be approved by the multistakeholder committee. But don't delay producing some sections because you expect that changes will be made. It's often easier to change a document than to start fresh, and further, the value of writing lies not only in the final record, but in helping in organization and in the development of ideas. So writing your section early, even if it will be revised, is not a waste of time.

GENERALLY SPEAKING

In writing, be brief. Most ideas can be stated concisely. The CEMP must gather as much pertinent information as possible in a short document. Presumably your ideas have been well-supported in the stages leading up to preparing the CEMP so in stating them here you can simply refer to other technical or more comprehensive documents and summarize their conclusions.

Your writing in the CEMP must be understood by a cross section of individuals in your community so keep it simple and don't get too technical. Your multistakeholder group is a subset of the community at large and so write at a level understood by the members of your group. Be careful, however, that you really do understand it and don't hesitate to question.

Writing always involves putting yourself in someone else's shoes. You try to express ideas as simply as possible and to explain any idea which is out of normal experience. Imagine that your audience is an older member of your own family or a student in high school. Try to write so that they can understand. Writing in this way ensures that you can understand it too. The CEMP becomes a concise statement of your deliberations and consensus—something you can go over quickly to refresh your memory or to make a point. Remember, however, that 'writing simply' does not mean aim too low. A good target audience is high school level. Someone in high school can read 'Hamlet' as well as use a personal computer.

Effective writing, can do without buzzwords, jargon or acronyms (words such as CEMP!). A buzzword, according to The Collins English Dictionary, is*: a word, often originating in a particular jargon, that becomes a vogue word in the community as a whole or among a particular gro*up. In the multistakeholder process, you're going to be exposed to lots of separate groups—government, scientists, environmentalists etc—each of which has their own pet phrases. Consider *state-of-the-art, ecological, environmental, ecosystem, remediation, socioeconomic, technology* and so on. Many of these have proper meanings but all too often they're used out of context, for effect, or so broadly that no one really knows what they mean. *State-of-the-art* means modern or new, *technology*, a way of or

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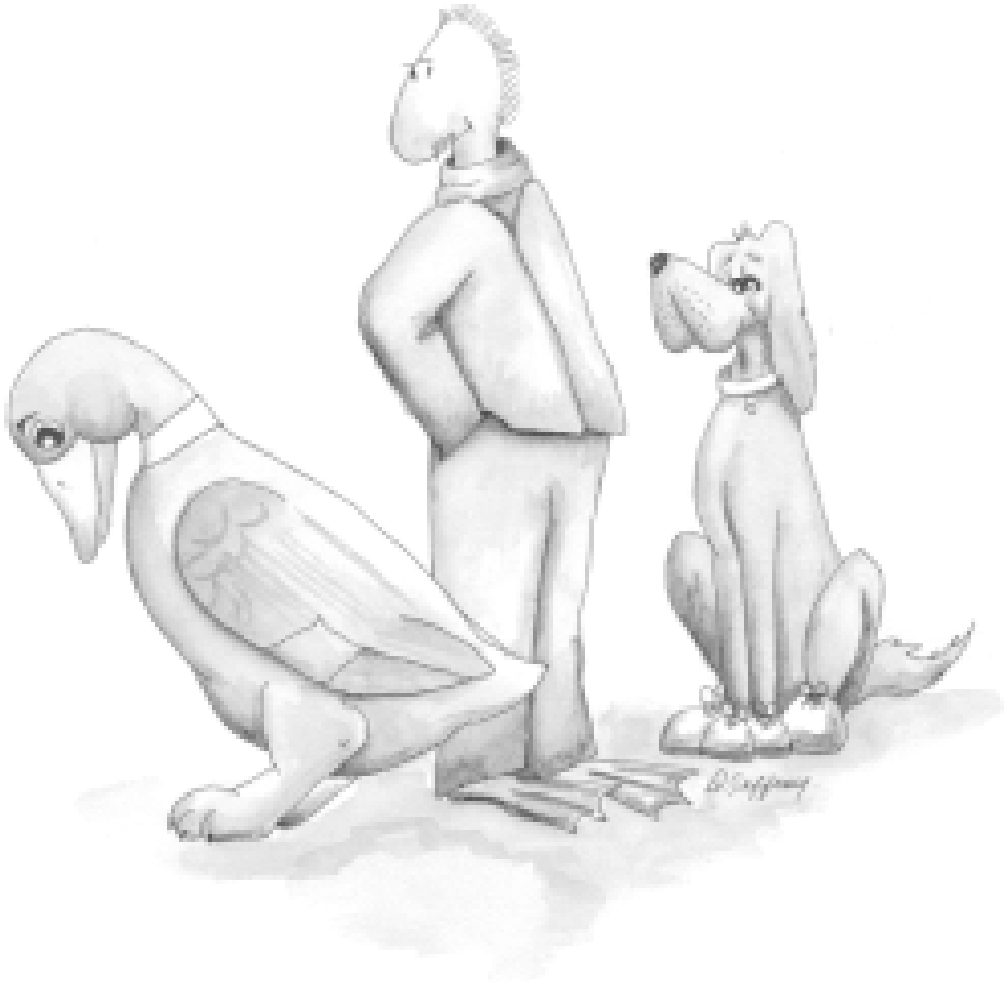
piece of equipment for doing something. Be sensitive about buzzwords and make sure you all understand the correct meaning.

Acronyms (see above) are tools for compressing names in a written text, but they lead to dull documents and can be confusing to the general public. Always state what the letters in the acronym mean and word your text so you don't have to refer to the subject of the acronym so often.



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5.0 The Final Product

*Layout, design, paste-up, clip-art, knock-out, copy, xacto, TIFF...*If these words mean something to you, chances are you've had some experience producing reports for publication and general distribution. Many of you haven't, so this section has been included to help guide ACAP groups who don't have a lot of savvy in these areas. Many excellent books are available on the subject so have a look in your local library or bookstore or in one of the bigger centres in your area. But don't hesitate to find help. There are bound to be many people in your community who either will volunteer their time to help you produce a document or may be willing to show you how.

TYPING, WORD PROCESSING AND PUBLISHING

Ensure you have access to someone having good typing skills and preferably who is skilled in word processing and consider including such a person in your ACAP office staff. Also aim to have some form of computer assistance, such as a personal computer and an industry-standard word processing program, as you will be producing lots of documents. Having any of the more common programs will enable you to more easily exchange documents with others for printing, review, and sharing.

Use a consistent, straightforward and efficient style for your documents and don't get fancy unless you're competent at it or have sought advice

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from someone who is. As with your overall writing approach, a plain document which gets the job done is better than a document having the same content which is poorly designed and presented. To establish a print 'identity' for your group, use a single font (typeface) for all written material. A wide range of fonts are available in word processing programs but only a few are suitable for general purpose publications. Standards such as *Times Roman, Palatino,* and *Helvetica* are 'common sense' choices.

In any case, avoid frills in your documents in the development stages of the CEMP, when there will be frequent changes. Later, when your plan is nearly complete, consider spicing it up. Desktop publishing is a good idea once you have an approved, final version. In addition to the better look and appeal, the desktop version can be more compact. See if you can get a local printer or publisher to set it up for you.

The final product will benefit from well-placed photos and graphics illustrating the topics at hand or showing people doing things (e.g. doing a beach sweep; recycling), and conveying the message that the public is involved. Keep a file of graphics and pictures for including in publications. In general prints are easier to use than slides but if you get into high quality production, slides are often better. Books containing 'clip art'—illustrations to embellish the documents—can be purchased at art supply stores and graphic images are available for use on computer publishing systems. Some of the word processing packages come with graphic images which you can use in your document.

ORGANIZATION

Be sure that the numbering of sections is consistent throughout the document. If you've used the sample Table of Contents (Figure 1) some of the work will have been done for you, but you're still going to have to select lower orders of sections. Planning at the beginning of your effort can eliminate a time-consuming reorganization of the document late in the production process. Follow this general rule for choosing the number of levels of organization: see how much text falls in the lowest level of organization you've alotted. If the amount generally falls between two to three paragraphs and a page, you've done OK. Don't choose levels which result in a paragraph per section. Another good general rule is to limit the numbering of headings (i.e. 3.2.3) to three numbers or less and use unnumbered headings for those at lower levels.

PUBLISHING PLAN

Come up with a publishing plan early. List all the types of materials you will produce and specific requirements. The plan could be accompanied by time estimates for each of the steps in producing the various documents.

In addition to fitting in with your overall planning for the project, the production plan often enables you to reduce costs by allowing you to combine jobs at the printers, to buy paper in bulk, to schedule sharing of publication runs and expenses with other organizations etc.

Figure 2. Sample printing schedule

Type of Material	Quantity	Distribution	Special Details
Brochures	5,000	Towns of X, Y, Z	Blaze Printers, see quote.
Part 1 report	50	Technical committee	@ 25 pages, double-sided, recycled
Community Vision Statement	1,000	Mailing List & General Distribution	@ 10 pages, single-sided, recycled etc.

TABLES AND CHARTS

Tables and charts are tools for summarizing information. Use them frequently. As with written text, pay attention to what you say in a table and edit it as conscientiously as you would your main document. Make sure the captions can be understood—use simple wording that even someone unfamiliar with the project can understand. The appendix at the end of Part 4 contains typical tables which may help you illustrate your plan.

BINDINGS

Each type of binding has its own purpose and you may find that you will use a range in the various publications that arise from your ACAP project. For draft or working copies it is a good idea to use a three-ring binder and loose leaf. This format allows you to add new sections and modify existing ones easily and efficiently. Place an identifier number as a footnote on each page to indicate the date of the revision (e.g. Revision 4, 27 July '94).

For the final printed version of the Plan you have several options for bindings. Small reports can be stapled or coil bound. The coil binding can be 'Cirlux' which has square tabs and rectangular holes or 'spiral' which inserts a continuous coil. A form of binding which uses plastic posts is also commonly used. Your printer can usually do the binding for you but you may be able to enlist a local business or the town office to volunteer their services.

COVERS

Covers are an important element in the Plan and should be designed

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carefully. Specially-designed covers involve more work and cost but are worth the effort if you can produce a good one. Have a local artist or graphics illustrator design the cover, using the project logo if you have one. Alternately, make designing the cover and/or logo a contest for local students. A good design allows you to see the main elements—title, graphic components and logos—at a glance. Ensure that you don't create a design that's too complicated.

If possible, include the ACAP or Green Plan logo together with your program logo on the cover, but use of the 'Canada' logo is not permitted. If you're using a desktop publishing system or word processing program such as *WordPerfect* you can input these easily, either by using an image scanning device or by obtaining disk copies from Environment Canada. The easiest way is to use the examples from other documents and have your printer (or your photocopier) make reduced versions for pasting into the final layout.

The simplest cover has a cutout through which the title block from the first page shows through. You may also use clear plastic, thus using the first page of the document as the title page. Covers can be made of various materials, generally a heavy grade of paper or card stock. Consider using recycled materials.

PAPER AND PRINTING

Use recycled paper if possible, and print both sides. A wide range of papers and weights are available but they are generally more expensive than conventional papers, but economical and attractive ones are available, so look around. Photocopying is a valid option for production of draft and overview documents, but poor copy quality is a disadvantage if you do it yourself. If you lack the access or budget to have the copier maintained frequently, arrange to send your documents to someone who has the facilities. You can save a lot of time if the facility has a high volume copier having collating (sorting) and stapling capabilities. Before contracting the work, see if a local company or organization can donate the services.

DISTRIBUTION

Be prepared to distribute copies of the plan. Print about 50 per cent more than your initial requirements and include mailing costs in your budget. For conventional printing, where plate and film are used for production, the unit cost comes down significantly for runs above a few hundred copies. The price of photocopies, on the other hand, is usually fairly constant across the board, so there is a point where printing becomes much cheaper—usually about 200 copies.

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If you're limited in resources (and very likely you will be), you might consider producing a 'down-to-earth' and 'no frills' CEMP, as well as a good-looking summary of it for public distribution. This may be the Executive Summary or another condensed version written especially for general distribution. Enlist some of the graphics, literary and publication skills in your community and include a good summary outlining the program, the efforts and the specific recommendations, in simple terms. Often this type of publication will suffice for answering queries and giving background to interested groups such as the media.

At least one copy of the CEMP should be given to each organization identified as being responsible for parts of implementation of the plan. The CEMP should also be sent to MLAs and MPs as well as to other key government representatives having an interest in your community. You should also deposit copies of the project documents and the completed plan in your local school libraries as well as in regional libraries, local business development offices, boards of trade etc, and in the Provincial Public Archives, found usually in the provincial capital.

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6.0 Conclusion

Part 4 of *Sharing the Challenge* has focused on assisting you in writing your ACAP Comprehensive Environmental Management Plan. A well-written Plan, thoughtfully prepared, is an important tool for all aspects of your efforts to improve the environment in your ACAP area. Don't worry if your Plan isn't a masterpiece—not everyone will be good at it or will have the time to phrase it in the most glowing prose. But if you've followed suggestions outlined here, you will have a concrete record showing that you've come to an understanding of the environmental situation in your community, and have reached a reasoned plan and workable solutions. Your Comprehensive Environmental Management Plan will be an both an environmental 'business plan', and a vehicle to communicate the ideas to others whose efforts you will need in following through in your efforts to improve the environment. If you've succeeded, the Comprehensive Environmental Management Plan for your area will give you a firm foundation for future efforts in what could be a long and fulfilling process.

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Appendix–Examples of Tables and Charts

Figure 1: Sample Organization Tree

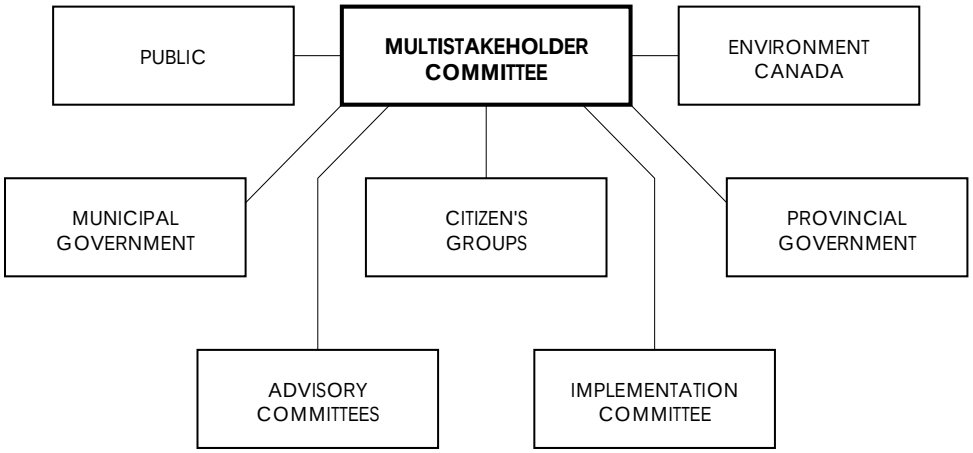

Figure 2: Sample Table of Implementation Costs

Habitat and Watershed Renovation			
Item	Capital Cost Range or One Time Development Cost ($ '000s)	Annual Operating Cost Range ($ '000s)	Comments
Fish & Wildlife Habitat Restoration	6,000-13,000	150-200	DFO, Enviroment Canada
Urban Programs to Reduce Erosion	See Regional Municipal Programs		
Rural Runoff • Tillage Practices • Manure Storage • Buffer Strips (to reduce erosion and pollutant release to streams)	300-500	30-50	Land Stewardship Program Soil Conservation Program, started in 1990-1991. Runs for 3 years. Annual costs accrue to the farming industry
Landscaping	2,000-4,000	150-200	All Harbour shoreline owners. Some work already completed by local business
Totals	**8,300-17,500**	**330-450**	

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Figure 3: Sample Recommendations

Recommendation #1 That dissolved oxygen levels always be above 6 mg/L throughout the Harbour, to increase the fish habitat, improve benthic fauna diversity and amount, and to reduce the toxicity of bottom sediment.

Recommendation #12 That ambient water quality criteria and sewage treatment plant effluent criteria be reviewed to ensure that loadings from sewage treatment plants have no further significant impact on the ecological value of the area.

Figure 4: Sample Use Objectives

Environmental Use Objectives

1. Recreational Boating – That immediate action should be taken to improve water quality for recreational boating, on a continuing basis, for the whole harbour.

2. Water Sports – That for specific areas within the harbour, water quality should be improved to permit increased use for water sports on a continuing basis.

3. Fisheries – That water quality and fish habitat should be improved to permit edible, naturally reproducing fishery.

Figure 5: Summary Table for Environmental Quality Assessment

Use Impairment	Significance	Causes of Impairment	Source of Problem	Information Deficiencies
(vi) Degradation of benthos	The composition of the benthic community is characteristic of a highly eutrophic and urban/ industrial contaminated environment. Both contaminants in sediment and low oxygen conditions (0.5-1.0 mg/1) in summer contribute to the problem.	- High nutrient levels - Low dissolved oxygen - Contaminants in sediments	- Urban and rural runoff - Industry - STPs	Storm loadings of sediment. Time for end of sediment phosphorus reflux. Burial time for capping of contaminated sediments. Redistribution of sediment from ship traffic. Bioassays need to be standardized to define the end point.
(vii) Restrictions on dredging activities	Harbour sediments exceed acceptable limits for open water disposal under Provincial Guidelines. One cannot employ open water disposal for sediment dredged in the Harbour.	- PCBs in sediment - metals, PAHs in sediment exceed guidelines	- STPS - Steel Industry - Combined Sewer Overflows (CSOs)	Quality of current deposits, Source control limits need to be set related to desired sediment quality.
(viii) Eutrophication or undesirable algae	Ammonia and phosphorus concentrations exceed the requirements for the growth of algae at reasonable levels in the Harbour. The algae present an aesthetic problem as they reduce water clarity and foul beaches and rocks. The ammonia and decomposing algae create an oxygen demand that lowers summer hypolimnetic dissolved oxygen to levels averaging 0.5-1.0 mg/l. This, in turn, reduces fish habit, interferes with the normal food chain	- High Phosphorous - High ammonia	- CSOs - STPs - Steel Industry - Runoff	Non Point Source contribution not known accurately enough. Update estimates of impact from phosphorous and ammonia loadings.

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Figure 6: Sample Table of Parties Responsible for Action

Action	Municipal Government	Provincial Government	Federal Government	Private Sector (e.g. Industry)	Agricultural Sector
Sewage Upgrade	X	X			
Urban Runoff	X	X			
Agricultural Runoff		X	X		X
Contaminated Sediment Removal	X	X	X	X	
Industrial Upgrade of Treatment				X	
Fish and Wildlife	X	X	X		
Federal Facilities			X		
Public Consultation		X	X		
Program Administration Research and Development		X	X	X	

Figure 7: Sample Table Showing Objectives and De-listing Criteria

Habitat, Water Quality, and Toxic Substances and Objectives

Objective	Parameter to Measure	Desired Concentration or Level	Where and When	Comments
Reduce toxic contaminants in fish tissue to levels that protect birds and animals which consume fish.	Total PCBs	Less than 0.1 ug/g (ppm)	Everywhere, all times, for whole fish	ACAP Objective
Reduce toxic contaminants in sediments to levels which indicate clean sediments and protects animals which consume fish.	Total PCBs	Less than 0.05 ug/kg (ppb)	Everywhere, all times	Proposed Objective
Reduce bacterial levels to meet Canadian Water Quality Objectives for swimming and recreational use.	Fecal Coliform	Should not exceed a geometric mean of 200 per 100 mL in 5 samples.	Everywhere, summer	Current objective for safe swimming. Desired levels may change with new information.
Reduce toxic contaminants in endangered species to levels that don't impair reproductive success.	DDE	Less than 4 ug/g (ppm)	In Herring Gull eggs, all times	

Fish and Wildlife Population Objectives

Objective	Desired Annual Population	Desired Population Density	Comments
Monitor Cormorant Population Levels	Average: 500 nesting pairs Minimum: 100 nesting pairs	Produce 100 young in each of principal colonies	Colonies at Ferry Terminal and Causeway
Support more osprey	Average: 20 nesting pairs Minimum: 5 nesting pairs	50% rearing success at historical nest sites	

Conclusion

Your plan is finished. After the celebration, take the plan and reflect on what you have accomplished. For starters, you have the plan itself. Because the recommendations were reached by consensus of a broad cross-section of the community after several years of hard work, it is a powerful tool in its own right. Banks and funding agencies will be able to see that your requests are solidly founded. Your proposals cannot be dismissed as the work of an interest group with a narrow focus.

Just as important are the things you can't see. If your stakeholder committee has spent several years reaching decisions by consensus, then you have become pioneers. A group that can work together on a basis of trust and understanding, despite differences in viewpoints and values, has something very special going for it. That something has to do with the sense of personal fulfilment you may get out of meetings, with the constructive work you do together and with the sense of working as a team to meet new challenges.

Beyond that, you and your fellow stakeholders will have become experts on the problems your area faces, on possible solutions and on this kind of planning process. Equally important are all the people you have come to know outside of the stakeholder community. Your discussions with them have raised the general awareness of the need and the possibilities to restore the environment in your area. When you begin implementing the plan, your collective knowledge and the contacts you have made will stand you in good stead.

If you are reading this manual for the first time and are considering a similar project yourself, it may all seem very daunting. There is much to do, most of it is not very easy and it will all take a very long time. Your best bet is to forget the details of what you just read. Focus on your next steps. Don't bite off more than you can chew. This manual gives you a glimpse of what lies ahead. As you focus on your next steps the manual allows you to design what you do now with the future in mind. For instance, the chapter on choosing options underscores the importance of a broad consensus on your vision and of well defined use objectives. Similarly, if you take the time to write reports as you finish each stage, you will have far less work when it comes to your final report.

If you have finished the plan, you may be asking what's next. If you enjoyed the ACAP process, then the news is good. You are in a unique position to help implement the plan. Your experience in working by consensus, your knowledge of the issues and your contacts make you an

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ideal candidate to work with the continuation of the stakeholder committee. Your plan and your experience will open doors and make people listen to what you have to say.

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Glossary

age structure:	the number of individuals of different age groups in a community
aquatic:	growing or living in or near water; having to do with water bodies
aquifer:	a deposit of rock that yields economic supplies of water as a result of its porosity or permeability (e.g. a zone of sandstone, unconsolidated gravels, or jointed limestone)
bacterial count:	the number of bacteria in a water sample; this can be used as an indication of the number of bacteria in the whole water system
baseline protocols:	record or document to be used as a basis for comparison
benthic fauna:	the animals living at the bottom of a body of water (e.g. on the lake floor)
biophysical:	having to do with the physical and biological
brainstorming:	a meeting which encourages the exchange/development/ inspiration of new and different ideas
by-laws:	a regulation made by a municipality
CEMP:	Comprehensive Environmental Management Plans; a plan which sets goals and objectives for environmental management, as well as ways to achieve them
Community Environmental Profile:	an outline of environmental conditions in and around a community, to assist in identifying environmental problems and issues which exist in the community
degradation:	a generally gradual reduction of the quality of something (such as the environment)
dissolved oxygen:	the amount of oxygen dissolved in water
ecosystem:	a biological community and the physical environment associated with it
effluent:	wastewater produced from operations (industrial, sewage) and discharged into a body of water
environmental approval:	approval from an appropriate government agency for an activity that will affect the environment

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EQA:	Environmental Quality Assessment; an assessment to objectively evaluate the conditions/quality of the environment being studied
erosion:	the loss of material (sediment, rocks, soil etc.) due to physical processes
eutrophication:	the degradation of a water body through the addition of too many nutrients. The nutrients cause too much growth of algae. When the algae die and decay they use up the oxygen in the water, leaving none for other plants and animals
estuary:	the coastal portion of a river or inlet, influenced by the tides, where freshwater and seawater mix
fecal coliform:	a type of bacteria typically found in the guts and feces of animals and whose presence in water is used as an indicator of contamination by human waste
flow regime:	factors that govern the flow of a water body
generic:	typical
geometric mean:	an average of the logarithms of values, gives a more realistic estimate of true average for highly fluctuating measurements; or the geometric mean of n numbers is the nth root of their product
groundwater:	water found underground in the spaces between particles of rock and soil, or in crevices and cracks of rock. Groundwater flows through the ground and usually moves downhill. Groundwater is usually fresh but may be salt water in coastal areas.
guidelines:	an indication or outline of policy or conduct; compliance is voluntary (as opposed to a regulation)
habitat:	the place in which an organism lives, which is characterized by its physical features or by the dominant plant types
holistic:	of or involving the whole
hydrology:	the science of the properties of water, especially of its movement in relation to the land
implementation:	putting something into effect
industrial outfall:	the point where industrial wastes are discharged into the environment
jurisdiction:	the extent of territory over which legal or other powers extend

LOU:	letter of understanding - a legal agreement negotiated between two or more parties
matrix:	information organized in a table format; under vertical and horizontal headings
minutes (of meeting):	summary record of a meeting
multi-disciplinary:	involving more than one discipline
multistakeholder:	involving more than one stakeholder
pilot projects:	a demonstration project
point sources:	sources of pollution that are distinct and identifiable
precipitation:	all forms of water from the atmosphere; including rain, snow, hail, dew, drizzle and frost
pristine:	unspoilt, spotless, fresh as if new
proponent:	a person or organization which intends to implement a project
public consultation:	consulting/involving the public in the environmental decision-making process
regulations:	an order issued by an executive authority of a government and having the force of law
remedial options:	options which remedy or improve environmental quality; remedial options may be combined to form a remedial action plan (RAP)
role-playing	acting out an assumed character
sediments/ sedimentation:	the accumulation of sediment on the seafloor — happens in areas where current speeds are small and wave energy is low
seed-funding:	the initial funding needed to get a program going or to attract other funding
signatories:	the signing parties of a letter of agreement
stakeholder:	an individual or an organization who has a direct and/or indirect interest in the environmentally impaired area
suspended sediment:	very fine material which floats in the water

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Terms of Reference:	the terms of reference contain the goal, mandate, and purpose of an organization; all members and potential members must agree with these terms. It usually also contains background information, the role, membership, membership selection, organization, conditions of the organization.
terrestrial:	growing or living on land; having to do with the land (as opposed to aquatic)
topography:	the natural and artificial features of an area; the lay of the land
trace metals:	metals occurring in minute amounts in water
tributary:	a river or stream flowing into a larger river or lake
watershed:	drainage area of a stream or river