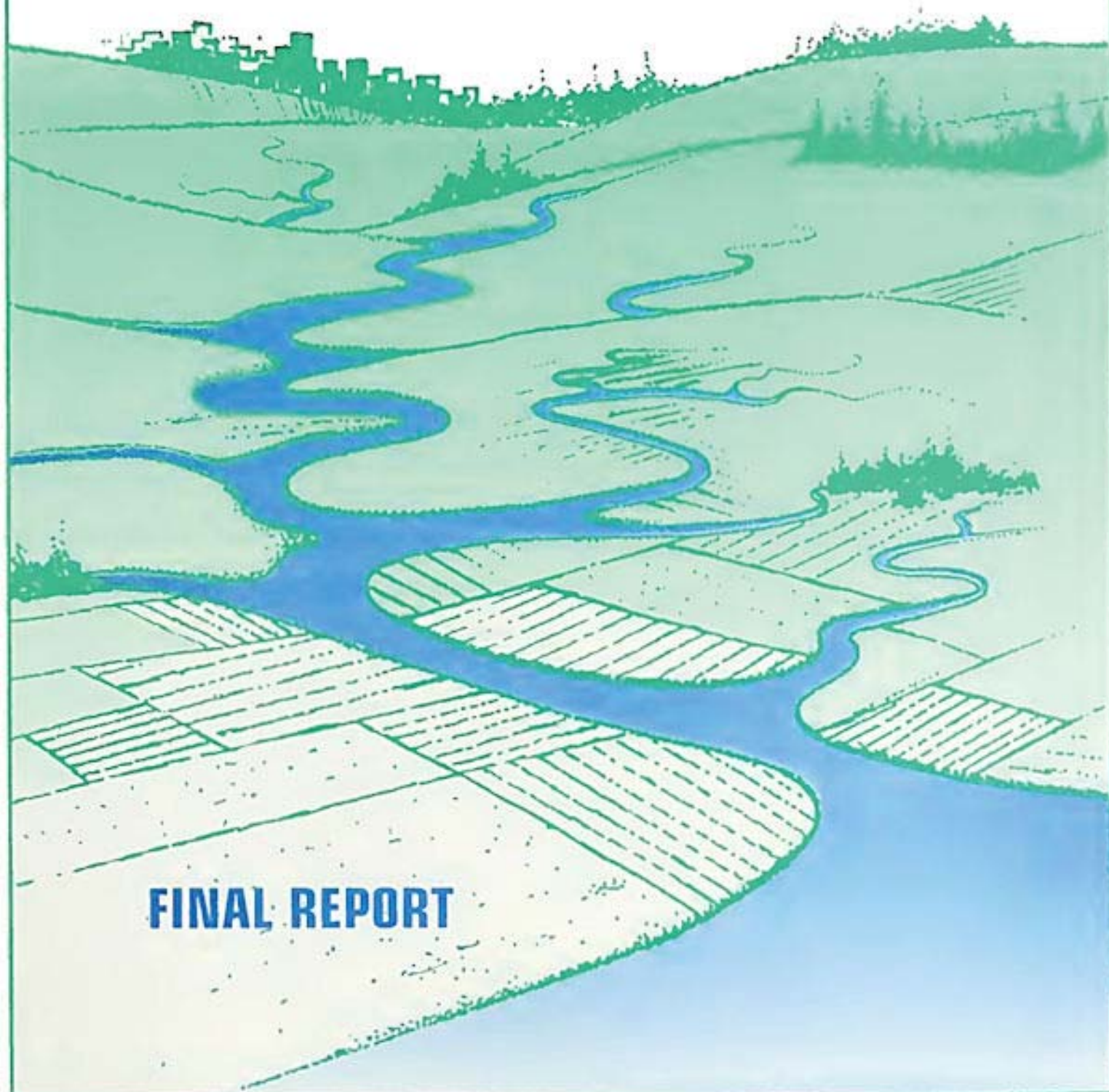


Watershed Planning Initiative



FINAL REPORT

Coordination, Resources and Effectiveness Task Group

Watershed Planning Initiative

FINAL REPORT

DECEMBER 1997

Cette publication technique
n'est disponible qu'en anglais.

Copyright: Queen's Printer for Ontario, 1997

This publication may be reproduced for non-commercial purposes
with appropriate attribution.

PIBS 3583E

**Coordination, Resources and Effectiveness
Task Group**

Watershed Planning Initiative

FINAL REPORT

Submitted to the:

Watershed Planning Implementation
Project Management Committee (PMC)

DISCLAIMER

The Coordination, Resources and Effectiveness Task Group Report is one of three Task Group reports prepared as part of the provincial Watershed Management Initiative evaluation project, formerly the Watershed Planning Initiative.

The Task Group was created by the Watershed Planning Implementation Project Management Committee to assess the relevance and responsiveness of watershed management.

This Report represents the views of the Coordination, Resources and Effectiveness Task Group. It does not reflect the policy of any provincial agencies, boards or commissions. Any errors, omissions or opinions are those of the Task Group.

TABLE OF CONTENTS

	Summary	i
1.0	Introduction	1
1.1	Background	1
1.2	Task Group	
1.2.1	Mandate	2
1.2.2	Approach	2
1.2.3	Limitations	4
2.0	Findings and Observations	
2.1	Resources	
2.1.1	Financial	5
2.1.2	Human	15
2.1.3	Information	23
2.2	Coordination	30
2.3	Effectiveness	35
	Appendix A Task Group Members	53
	Appendix B Task Group Evaluation Questions	54
	Appendix C List of Affiliations Interviewed by Project	55
	Appendix D Glossary of Acronyms	58

LIST OF TABLES

Table 1A - Per Component Study Costs
Table 1B - Funding Sources
Table 2A - Committee Structure
Table 2B - Community Involvement Techniques
Table 2C - Lead Agency
Table 2D - Time Commitment
Table 3A - Data Collected
Table 3B - GIS Use
Table 4A - Project Time Frame
Table 4B - Adherence to Guidance Documents
Table 4C - Products of Watershed Planning
Table 4D - Implementation
Table 4E - Effects/Benefits
Table 4F - Monitoring

SUMMARY

This report presents the findings and observations of the Coordination, Resources and Effectiveness Task Group. This is one of the three task group reports prepared as part of the evaluation of the provincial Watershed Planning Initiative (WPI) which was announced by the Ministry of Natural Resources and the Ministry of the Environment and Energy in June, 1993.

The task group's mandate was to examine and document the use of financial, human and information resources in watershed planning in Ontario and to examine the coordination and effectiveness of the watershed planning process in Ontario.

The observations are summarized here and should be considered with the rest of the report:

- ▶ Stakeholders are concerned about the high cost of watershed planning and there is the need for project managers to be able to justify expenditures to stakeholders. There is a wide range of project costs likely relating to variations in project issues, detail and existing data. Current requests for funding for watershed planning projects are 82% beyond the capability of traditional funding mechanisms.
- ▶ There is limited sharing of the financial costs of watershed planning projects and the need to broaden the sources of funding towards a "beneficiary pay" principle is evident. There is no indication of a willingness to pay from stakeholders of non-traditional agencies. Not all stakeholders will be able to contribute financially towards projects but all stakeholders should be able to participate equitably.
- ▶ The main source of provincial funding for watershed planning projects (MNR-CA Transfer Payments) is not identified for activities which are traditionally the mandate of other ministries (e.g., OMAFRA, MOEE, MMA).
- ▶ Watershed planning committees should be small with steering and technical functions separated to ensure meeting efficiency, should recognize in-kind contributions from participants and should include empowered multi-agency membership with a range of expertise and interests.

- ▶ Stakeholder involvement throughout the study is important to achieve project "buy-in" and study recommendation support and stewardship during project implementation. Community involvement techniques which directly involve the public (e.g., workshops, focus groups, community liaison committees) are the best methods of ensuring quality input from stakeholders.
- ▶ Watershed planning projects require a full time coordinator with facilitation skills to ensure that the broad spectrum of issues are addressed and all stakeholders views are obtained. CAs (where they exist) should take the lead for watershed planning projects.
- ▶ Information needs are project specific and are dependent on the conditions and issues of the watershed being studied. Existing data consistently included hydrology, fisheries, flood plain mapping, erosion, wetlands, and base mapping. Water quality and hydrogeological data were consistently generated through projects.
- ▶ There is a need to improve and coordinate information availability (what exists, where it is, how to access it, formats, costs) for use in watershed planning projects.
- ▶ While GIS is consistently used for the storage and display of data, it was not used to its full capacity. Improved standards, conversion technology and increased training may lead to improved data availability, sharing and analysis.
- ▶ Guidance for watershed planning projects in the form of documentation and communication to project managers is required with respect to:
 - ▶ The role of project participants (including lead and provincial agencies)
 - ▶ How to better involve stakeholders
 - ▶ How to manage overall project costs
 - ▶ How to manage the allocation of existing funding to priority projects
 - ▶ How to effectively allocate project funding to project components
 - ▶ Hydrogeological research (surface/ground water interactions, quality/quantity, location, cross watershed boundary information)
 - ▶ What resource information exists, how to access it, formats, costs, and other related information
 - ▶ Sample reports, terms of reference, and recommendations
 - ▶ Appropriate amount of time to spend on project components
 - ▶ How to deal with development applications for the duration of the project
 - ▶ Responsibility for implementation and monitoring

- ▶ Information and education for stakeholders about the benefits of watershed planning will:
 - ▶ increase the likelihood of financial support for the studies (ie. from financial institutions)
 - ▶ improve private land stewardship initiatives in support of project implementation
 - ▶ garner support from boards and tribunals (e.g., OMB) for project implementation
- Definition of the provincial role in watershed planning is required and should include the role of coordinating the timely provision of guidance about watershed planning to project managers and stakeholders and coordination of resources (financial, human, information) for watershed planning. A strong provincial commitment of staff time and resources for watershed planning is lacking.
- Watershed planning provides a strong tool for coordinating related initiatives and establishing relationships among agencies and stakeholders. While good linkages exist between watershed planning and the municipal (land use) planning process, there is room to improve linkages with other initiatives such as Environmental Farm Plans, Environmental Impact Studies, Environmental Assessment process.
- The provision of information to stakeholders about the requirements of the CA Act, Planning Act, Environmental Assessment Act as they relate to watershed planning could greatly assist in coordination and would gain support for planning on a watershed basis.
- Study recommendations were the most actionable when linked with municipal land use planning processes but other successful implementation methods were reported as well. In most cases, implementation committees or partnerships were set up to oversee implementation.
- Achieving objectives such as maintaining or enhancing ecosystem health was seen as realistic by all. Economic and social benefits were less understood, but included examples like greenspaces, improved recreational opportunities and still allowing development within the watershed in an environmentally sustainable manner.
- Monitoring is generally being done by the CA and/or the municipalities, however, other agencies and stakeholders were also identified as assisting in monitoring. Monitoring issues included the need for resources and expertise to carry out tasks as well as the need to define performance targets for monitoring.

1.0 INTRODUCTION

1.1 BACKGROUND

In June 1993, the Ministry of Natural Resources and the Ministry of the Environment and Energy released three guidance documents that established directions for the wise management of water and related resources. The documents were released for voluntary application of watershed management planning throughout the province on a two year interim period. The concept and proposed process of ecosystem, watershed based planning was to be evaluated at the end of the two year interim period, and recommendations on the future direction of the Watershed Planning Initiative (WPI) were to be developed.

In order to carry out this evaluation a number of Committees were established. A Provincial Steering Committee with representation from MNR, MOEE, OMAFRA, MMA, MTO, MNDM and Ontario Native Affairs Secretariat (ONAS) was set up to provide direction, ensure evaluation and make recommendations. A Project Management Committee, with representation from MNR, MOEE, OMAFRA, MMA, ACAO and AMO was also formed to manage the WPI, under the direction of the Provincial Steering Committee.

The *Watershed Planning Initiative Evaluation Plan* was prepared and identified five evaluation issues, including: need and relevance, responsiveness, resources, coordination and effectiveness. Based on the issues identified, sources of information, required expertise and cost considerations, three task groups were formed to collect and analyze data, and report findings and recommendations to the Project Management Committee. These include:

Science & Technology - to demonstrate state-of-the-art science related to watershed planning and examine its relevance and applications in Ontario;

Responsiveness and Relevance - to explore ways of involving the public and increasing the responsiveness of watershed planning to public needs; and

Coordination, Resources and Effectiveness - to document and examine the utilization of financial, human and information resources to watershed planning in Ontario, and examine the effectiveness of the watershed planning process (as described in the three watershed planning documents).

A Coordination Team was also established to ensure consistency with the evaluation plan.

1.2 COORDINATION, RESOURCES AND EFFECTIVENESS TASK GROUP

1.2.1 Task Group Mandate

The mandate which was established for the Coordination, Resources and Effectiveness Task Group was to document and examine the utilization of financial, human and information resources in watershed planning in Ontario and examine the coordination and effectiveness of the pilot watershed planning process (as described in the three watershed planning guidance documents).

The members of the Task Group are listed in Appendix A.

1.2.2 Approach

The Task Group used the evaluation questions (see Appendix B) which were identified in the *Evaluation Plan* as well as additional questions which were developed by the Task Group to collect data in order to provide a factual analysis and conclusions to the evaluation issues.

The following data collection methods were used to collect the required information:

Pilot Projects

Seven pilot projects; one watershed and six subwatersheds, were initiated to test the three guidance documents. The project sites were selected based on a variety of resource management issues in urban and rural areas of southern and central Ontario, and included projects which were; MNR-CA Transfer Payment recipients adhering to the three interim guidance documents, and whose participants were willing to participate in the evaluation initiative. The seven pilots were: Chippewa Creek Watershed Management Study, Credit River - Subwatershed #19 Study, Jock River Watershed Plan, Lovers/Hewitts Creeks, Mill Creek Subwatershed Study, Stoney Creek Subwatershed Plan Study, and Nottawasaga Valley Watershed Plan.

Two Pilot Project Chairs meetings were held with the chairs and selected staff from the seven pilot projects to obtain current and relevant information about specific areas of evaluation from those directly involved with the pilot projects. This Task Group was responsible for the organization of the second meeting which was held November 30, 1994. Pilot project chairs were asked to attend this meeting and were encouraged to invite two designates from each pilot to participate as well. It was suggested that municipal or community liaison representatives would be most effective.

Tables 1A - 4F present data about the seven pilot projects.

Interview Questionnaires

Two sets of questionnaires were developed by the Task Group in order to assist in the evaluation and help measure the level of support for the concept of a watershed-based approach to resource management. The questionnaires were expected to gauge stakeholder opinion of the costs and benefits associated with the human, financial and information resources required to undertake watershed planning as well as whether or not watershed planning has been coordinated, is effective, relevant and responsive to required needs.

The first questionnaire was designed by this Task Group (with additional input from the Responsiveness and Relevance Task Group) to get input from interviewees covering a geographic mix and people involved with the pilot projects. Approximately 30 people, most directly involved with the pilot projects were interviewed. The second questionnaire was developed for consultants who have been involved with watershed planning in order to get their opinions and views on watershed planning studies which they have been involved with.

See Appendix C for a list of the affiliations interviewed by project.

Content Analysis

The Task Group utilized a combination of:

- interviews with selected watershed planning project contacts, and
- a review of watershed planning project documentation to determine the level of incorporation of recommendations from the watershed plans into official plans, secondary plans, district plans, zoning by-laws, site plans, CA regulations and environmental policies.

The projects (Collins Creek and Laurel Creek) were selected for content analysis based on the fact that they had different lead agencies, levels of implementation, represented geographic locations across the province and rural/urban land uses.

Watershed Planning Forum (WPF)

A number of organizations representing a cross-section of interests in natural resource management, environmental protection, land management, as well as urban and rural ownership and planning were invited to participate in Watershed Planning Forum sessions. The purpose of these sessions was to bring an invited group of representatives and individuals with an interest in watershed management for their feedback and input to the Watershed Planning Initiative to date. Information obtained from these sessions was also considered as part of the Task Group's evaluation.

1.2.3 Limitations

Pilot Projects - Data about the pilot projects are presented in Tables 1A-4F and throughout the report (summaries of the tables and findings from representatives of the pilot projects). The pilot projects are not necessarily reflective of all watershed planning projects completed or ongoing in Ontario. As the task group was limited by time, much less information was obtained by the task group from representatives from non-pilot projects (interviews, content analysis, forums).

Interviews - Interviewees were chosen who were known to be involved with watershed planning and an attempt was made to interview people with various perspectives. The task group was limited by time and conducted approximately 30 interviews and 2 content analyses. The majority of the interviewees were Conservation Authority, municipal, provincial ministry (mostly MNR) and consultant representatives. Other stakeholder groups were represented to a lesser extent in the interviews (e.g., developers, agricultural sector, private industry, NGO's, public). Stakeholder comments are therefore considered individual comments and not given on behalf of the entire stakeholder group.

Watershed Planning Forum - The three fora were well attended by various stakeholders. The purpose of the fora was to present findings in a summary format and as such specific comments from individual stakeholders were not evident. This report therefore presents the findings from the fora in a general way and does not attribute specific observations to the stakeholder groups.

2.0 FINDINGS AND OBSERVATIONS

This chapter presents the findings and observations based on the information which was obtained through the various data collection methods. In an effort to keep this report as brief and concise as possible, findings are presented as a synthesis of the responses received. The detailed responses are compiled separately by the task group chairs.

2.1 RESOURCES

2.1.1 Financial Resources

A/ Findings - Financial Resources

Overall Project Costs

- Table 1A - *Per Component Study Costs* indicates that the average project cost for the seven pilot projects was \$275,469. The range of costs was \$160,300 (Chippewa Creek)-\$420,000 (Mill Creek). The cost of the one pilot project which was a watershed plan (opposed to a sub-watershed plan) was \$184,500 (Nottawasaga Valley).
- The average total cost of the 15 watershed planning projects reported on by the consultants who responded to the consultant questionnaire was \$238,000.
- The **Watershed Planning Forum participants** expressed concerns about the high cost of undertaking watershed planning projects and advised that funding could be more effectively allocated within projects, used for smaller cost projects or not used for planning at all. Other participants felt that projects were cost-effective because they prevented the much higher costs of remediation. It was recommended that funding be redirected from remediation to watershed planning and that criteria should be developed to prioritize where watershed planning should be done across the Province. The need to examine the issue of providing compensation to landowners for rights lost through the watershed planning process was identified (e.g. the right to build on privately owned property).
- **CAs** recognized that watershed planning is proactive and can avoid expensive problems in the future and therefore there may be a need for watershed planning in areas where environmental quality is still good.
- **MNR representatives** reported inefficient use of funding. Studies were being done in too much detail and project funding was being used to complete work usually funded through other sources (e.g., on surveys usually required with a development application). More focus on in-house or smaller studies was recommended, although specific examples were not given.

- **Consultants** reported that budgets were generally inadequate for project Terms of Reference (e.g., time frame, study needs and scope).
- **Consultants** suggested that CAs could prepare the background study and administer a pre-study monitoring network prior to the preparation of the Terms of Reference. Significant project cost savings would result from completing these items by CAs ahead of time.
- **Agricultural interests** reported that funding should be put towards action oriented initiatives which result in environmental improvements like Environmental Farm Plans (e.g., program oriented) opposed to planning studies (e.g. regulatory oriented).

Allocation of Funding Within Project

- Table 1A - *Per Component Study Costs* shows the per component study cost for the seven pilot projects. Component costs were as follows:

Study Component	Average Component Cost	Range Of Costs (low - high)
Background Data collection	\$30,479 (11%)	\$13,500 - \$ 48,700
Hydrology/hydraulics	\$23,293 (8%)	\$0 - \$ 59,900
Ecological Resources (Aquatic/Terrestrial)	\$30,107 (11%)	\$ 3,600 - \$ 54,100
Hydrogeology	\$38,679 (14%)	\$0 - \$113,800
Other Studies	\$20,100 (7%)	\$0 - \$ 57,000
Analysis	\$42,661 (15%)	\$ 2,000 - \$ 88,500
Public Consultation	\$17,793 (6%)	\$ 5,500 - \$ 34,300
Project Management	\$63,500 (23%)	\$24,000 - \$111,000
Other Costs	\$ 8,857 (3%)	\$0 - \$ 41,500
Total	(100%)	

- There were varying opinions as to whether funding was allocated effectively to study components once study funding had been secured. Views ranged from funding being allocated efficiently (**municipal representatives, agriculture interests, consultants**) to the watershed planning process being seen as a duplication of effort and a waste of resources (a ratepayer).
- **Consultants** noted that the guidance documents and experience gained from participation in previous studies provided information about the appropriate allocation of funding to study components. **Consultants** reported the need for flexibility to reallocate costs while the study is under way, as cost distribution and total costs are difficult to accurately predict ahead of time due to complexity of studies and changing pressures and priorities.
- **CAs and municipalities** reported that funding allocation was made more efficient by maximizing partnerships and obtaining outside expertise (especially professionals) at no cost to sit on project committees.

Hydrogeology (Ground Water)

- Table 1A-Per *Component Study Costs* indicates that on average for the seven pilot projects, of all the technical studies completed as components of the watershed plans (hydrology/hydraulics, ecological resources, aquatic/terrestrial, hydrogeologic and other studies) approximately a third of the cost (34%) was for hydrogeological studies.
- **Municipal representatives** reported hydrogeological studies as expensive components of watershed planning projects. They were found to be underfunded.
- **CAs, developers and NGO's** reported hydrogeological studies as essential component to address in order to achieve a successfully completed study in accordance with the "ecosystem approach" and found that additional resources were required for hydrogeological studies.

Public Consultation

- There was wide acceptance that public consultation is an essential component of a successful community supported subwatershed planning project and that sufficient financial resources should be allocated to this component.

Analysis

- Table 1A-Per *Component Study Costs* shows that for the seven pilot studies an average of 15% of the project cost was spent on analysis (includes the development of options and recommendations).

- Concern was indicated that insufficient financial resources are being spent on analysis of data.
- **NGO's** emphasized greater need for graphical analysis of data.
- **Developers** called for more resources for analysis (e.g., functional relationships of terrestrial data).

GIS

- With increased awareness of GIS technologies, funding requests were in excess of availability. GIS costs were not necessarily tied solely to the watershed planning project as GIS could be used for other purposes.

Monitoring and Implementation

- Collins Creek project respondents reported scarce resources for implementation and monitoring and that poorer project products result. Laurel Creek project respondents reported that project recommendations are being implemented despite lack of funding through partnerships with NGOs and the private sector.

Sources of Funding

- Table *1B-Funding Sources* indicates the primary sources of funding for the seven pilot projects as being MNR (through CAs) and local municipalities. These 2 agencies contributed the majority of project funding, usually up to 50% each. Exceptions include the provision of funding to a much lesser extent from CA internal funding (2%), federal employment programs (6% of the funding for the Chippewa Creek project) and MMA (13% of the funding for the Subwatershed #19 project).
- In 1995, CAs applied for funding from MNR (through CA Transfer Payments) for approximately \$3.3 million of watershed planning projects and received approximately \$0.6 million in grant (18%, 13 studies). CAs also applied to MNR for approximately \$2.8 million for subwatershed planning projects and received grant funding of approximately \$0.5 million (18%, 11 studies). Additional funding (not yet determined for 1995) is available to CAs from MNR (through CA Transfer Payments) to apply to their approved local priority projects. MNR funding to CAs (through Transfer Payments) is matched with local funding in Southern Ontario and shared at 60% MNR and 40% local funding in Northern Ontario.

Pay = Say?

- **Forum participants** questioned whether the fact that an agency contributes financially to a project gives that agency enhanced decision making power.

- **CA and MNR representatives** indicated that there is a perception that the level of financial contribution may be linked to an agency's decision making power and right to participate during the study.

Ability to Pay

- **CAs** noted that certain municipalities (e.g., rural, headwaters) had problems meeting financial commitments to the study (e.g., basic mapping needs relating to the new Planning Act).

Non-Traditional Sources of Funding

- **CAs** indicated that hydrogeological studies were not funded or underfunded by MOEE, planning was not funded or underfunded by MMA and that private sources (e.g., fishing clubs, aggregate industry) could not be enticed to participate.
- There was wide acceptance by stakeholders that the sources of funding should be broadened and that all study benefitters should pay for the study. Examples provided by stakeholders of non-traditional sources of funding which have been or could be utilized were: per capita levy (general mill rate); a charge as part of a building permit fee to be directed to the project; development charges by-laws; developers upfronting costs and being reimbursed by the municipality through development charges; having costs assessed through the Drainage Act; water royalties charged to industry; MNR for aquatics; MOEE for hydrogeological studies; NGOs (e.g., for monitoring equipment); financial institutions (for rehabilitation projects) and "In-kind" contributions.
- **Municipal representatives** noted that per capita levies for watershed planning would have to be traceable and fair. **Municipal representatives and CAs** said that there will be increased requirement to demonstrate the benefits of watershed planning and to ensure good products from the process if non-traditional sources were expected to pay. Municipalities are now seeing value for their contribution in the form of technical reports and good mapping. It was acknowledged that such benefits are often difficult to demonstrate.
- **CAs** noted that developers or development charges could not always be a funding source as not all projects are development related. **Developers** noted that if growth is not pending it may be difficult to raise funding for the watershed planning project.
- **NGO's** suggested that project funding should be openly solicited.

Provincial Commitment

- **Forum participants** noted that disincentives for watershed planning exist because current provincial programs are reactive not proactive. For example, C.U.R.B funding is available only when the watercourse or lake has been degraded.
- **CAs and municipal representatives directly involved with project management** indicated satisfaction with provincial funding contributions for the pilot projects but indicated that the province is not providing enough funding for other non-pilot watershed planning projects.
- **Municipal representatives** noted that MMA funding was absent from the projects despite the strong link between watershed planning and the new Planning Act.

B/ Observations - Financial Resources

Overall Project Costs

- The concern about the high cost of watershed planning projects is likely to escalate with the threat of ongoing provincial funding constraints. The realization that watershed planning projects can not be excessively expensive and detailed is evident.
- Project managers will likely be increasingly called upon to justify watershed planning related expenditures to stakeholders. As agency budgets face increased pressure increased scepticism about the value of planning now to avoid the future cost of remediation versus undertaking projects in the absence of planning is expected.
- Current funding requests for watershed and subwatershed planning projects from CAs are approximately 82% beyond the capabilities of the traditional funding mechanisms. MNR (CA Transfer Payments), which is matched with local funding contributed a total of approximately 18% of the funding requested from CAs in 1995.
- The range in overall project cost among the pilot projects may be due to the varying complexity of issues in the watersheds, the varying level of detail of study, the varying amount of available existing data.
- There is a range of opinion about whether the pilot projects have received adequate funding.
- There is the need to keep overall project costs manageable to ensure that projects will continue to be affordable (and will be initiated) and to ensure that stakeholders will see that their financial contributions are being put to good use. While respondents were calling for less expensive projects, specific examples for how to downsize projects were not provided. Options to assist in managing overall project costs include:
 - ▶ Establish funding mechanisms to set limits to project costs and component costs.
 - ▶ Provide information to project managers regarding the scoping of the project to ensure only essential components are undertaken but at a reasonable level of detail. Essential study components will be dependent on the issues pertaining to the watershed studied.
 - ▶ Provide a generic introduction for watershed plans regarding impacts of urban development, rural drainage, tree removal, etc.

- There is a need to manage the allocation of existing funding for watershed planning projects. Options include:
 - ▶ Review all projects which are proposed to ensure they are true watershed planning projects (comprehensive). This will eliminate single purpose studies and free available funding for watershed planning studies and will eliminate the need for more costly individual studies in any area.
 - ▶ Formalize a method of determining provincial priorities.
 - ▶ Coordinate the allocation of provincial funding. For example, provincial funding related to watershed planning projects (RAPs, EFPs, Green Plan, State of the Environment Reports, CURB, CA Transfer Payments) should be directed to provincial priorities to reduce duplication of effort and maximize declining dollars.
 - ▶ Redirect provincial funding efforts to proactive, preventative projects like watershed planning from single focus reactive projects wherever possible.

- The opportunity exists to more effectively allocate funding within project components to ensure that existing funding "goes further" than it has been. For example:
 - ▶ essential study components which tend to not receive the required proportion of the project budget include hydrogeology, analysis and public consultation.
 - ▶ Project management tended to receive a disproportionately high amount of the project budget.
 - ▶ Development of monitoring and implementation plans (identifying what will be done and who will pay) tended to be overlooked in the project planning.
 - ▶ Opportunities to obtain "In-kind" contributions should be explored and in-house efforts should be made wherever possible to make most efficient use of the budget (e.g., CAs could conduct the data collection and analysis component prior to finalizing the study Terms of Reference).

- There is an opportunity to communicate how to more effectively allocate project funding to project components (e.g., enhanced communications and networking). Enhanced costing information for all projects (not just the pilot projects) is required. While project committees are responsible for assigning the proportion of funding to each component, a range of typical costs would be helpful.

Sources of Funding

- There is currently limited sharing of financial costs of watershed planning. Not all participants are bringing financial contributions to the table for components which deliver their programs. There are other potential sources of funding and opportunities to solicit funding from non-traditional sources. Examples provided by stakeholders of non-traditional sources of funding which have been or could be utilized were: per capita levy (general mill rate); a charge as part of a building permit fee to be directed to the project; development charges by-laws; developers upfronting costs and being reimbursed by the municipality through development charges; having costs assessed through the Drainage Act; water royalties charged to industry; MNR for aquatics; MOEE for hydrogeological studies; NGOs (e.g., for monitoring equipment); financial institutions (for rehabilitation projects) and "In-kind" contributions. Financial benefits could be realized from charging for information developed through the watershed/subwatershed study to those who did not contribute financially or "in-kind" information sharing.

- There was no indication of a willingness to pay from stakeholders of non-traditional agencies but there was a willingness to participate in the projects. This is likely because stakeholders consider the funding of these projects as a responsibility of government.

- There is an education component emerging whereby stakeholders need to increase their understanding of watershed planning and the benefits and effects on them as landowners. This will increase the likelihood of financial contributions from various stakeholders. For example:
 - ▶ There are financial institutions which are reluctant to lend funding to projects as they are not seen as growth related, or the significance of the studies or their importance to growth are not understood. These groups are not directly involved with studies but are in a position to influence the course of the project.
 - ▶ Provincial ministries could benefit from participation in the studies (e.g., hydrogeological information would assist MMA for population forecasts and MOEE and municipalities (or the OCWA) for confirming potable water supplies).

- There is a perception issue whereby the amount of financial contribution was seen to be linked to the decision making authority of any given stakeholder participating with a project. It is recognized that not all stakeholders will be able to contribute financially to the project and this fact should not limit equitable participation with the project.

- The provincial funding of these projects was primarily done by MNR through Transfer Payments. There is an expectation (by MNR representatives, CAs, municipalities) of funding contributions from other ministries for components related to their mandates (e.g., MOEE - hydrogeology studies, MMA - planning). The traditional source of funding for watershed planning projects (MNR-CA Transfer Payments) is not identified for initiatives pertaining to the mandate of ministries other than MNR.

2.1.2 Human Resources

A/ Findings - Human Resources

Project Organization - Committee Structure

Varied Structure

- Table 2A-*Committee Structure* indicates a varied approach to project organization with respect to committee structure, among the seven pilot projects. Project organization ranged from a single committee structure to variations of a multiple committee structure (Steering, technical and/or community liaison/public advisory committees).
- **CAs** noted that joint steering and technical committees can be too "heavy" with political interests and may result in less focused and less effective use of meeting time.
- **MNR participants** noted that optimum project organization consists of a steering committee made up of senior agency representatives and political members to provide overall study guidance. This reduces much debate about study direction at the technical meetings and makes the technical committee (a second staff level committee) more focused and productive.
- **CAs and consultants** reported that small technical working groups (6-10 people) are effective in ensuring that all participants are given a chance to participate. The number of working or sub-groups may be increased to ensure maximum involvement of stakeholders.

Empowerment

- ▶ **Municipalities** noted that empowerment is required at the Steering Committee and Technical Committee level to approve watershed planning components including plans for implementation so that implementation plans will not be later rejected (e.g., by the Province).

Multi-Disciplinary Committees

- ▶ **CAs** suggested that it is important to "hand pick" the technical committee and that they should have good cross-representation of participants from various agencies and disciplines who have each worked with a broad range of disciplines at some time in their past work experience. **Resource based NGO's** added that it is important to ensure appropriate expertise on technical committees so all interpretational work is not left to the engineers. **Municipalities** agreed that technical committees and/or steering committees should be multi-jurisdictional, multi-disciplinary and integrated because ecosystem planning requires all these

elements to be involved.

- ▶ **Municipalities and CAs** identified that community liaison committees or "round tables" should involve all the key stakeholders within the watershed that will be impacted or affected by the final project (e.g., citizens, developers, aggregate operators, farmers, special interest groups, government and academics).

Committee Dynamics

- ▶ **Municipalities** reported friction and "turf wars" on project committees at the time of decision making or when plans were being implemented.
- ▶ **Municipalities** warn that the technical committees should not be a forum to lobby for single issue interests and that proportionate time should be given to all stakeholders to express opinions during the study.

Stakeholder Commitment

- ▶ Table 2D-*Time Commitment indicates the person weeks committed to the pilot projects by project participants*. The average time commitment was: consultants 62 person-weeks, CA staff - 50 person-weeks, municipal staff - 9 person-weeks, provincial agency staff - 8 person-weeks, other staff - 11 person-weeks, and other project participants (volunteers) - 9 person-weeks. Most pilot projects lasted from 23 to 29 months.
- ▶ There were varying and project specific opinions about the satisfaction with the level of commitment by stakeholder to the studies.
- ▶ **Forum participants** acknowledged that achieving equity with respect to the representation of stakeholders' views is a challenge and that improved facilitation or consensus building efforts are warranted. The need for greater stakeholder representation during projects was cited and the challenge of obtaining cooperation among stakeholders was identified as an issue.
- ▶ There was general consensus that participation in a watershed plan involves a significant time commitment. (This opinion expressed by resource based NGO's, developers, CAs, and municipalities).
- ▶ There was general consensus that public participation is less than adequate (This opinion was expressed by MNR and CAs). Reasons given in explanation include that the public loses interests, have single interests, can not make the time commitment, are not contacted or are not given adequate opportunity for participation.

- ▶ There was general consensus that participation from provincial agencies was less than adequate (relating to staff participation with studies, e.g., input, attending meetings and review). MNR representatives cite lack of input from OMAFRA and MMA. Municipalities noted that MMA is absent from projects despite the strong link with planning reform.
- ▶ **A member of the public** indicated concern over MNR's lack of involvement with the studies and possible resultant implications.
- ▶ There was general consensus among consultants that stakeholders were not adequately committed to the projects. Specifically, developers were not seen to be committed. Provincial agencies were seen to have provided poor direction and to have given poor attention and technical input to the projects. It was reported that MNR resources were weak and that MOEE should have better attendance at meetings to share experiences from previous studies.
- ▶ **Resource based NGO's** noted that the project was too rushed and therefore professionalism was compromised.
- ▶ There was general agreement that it is important for stakeholders to feel that they have "ownership" or have "bought in to the project to ensure project implementation. **Municipalities, CAs and consultants** noted that project endorsement sheets (which provide the opportunity for stakeholders to sign a sheet indicating support or approval for project) will signify and help ensure project "buy-in".

Community Involvement

- ▶ Table *2B-Community Involvement Techniques* lists various community involvement techniques and their relative ranking with respect to achieving successful community involvement. All pilot projects used various techniques to involve the public. Techniques reported include public meetings, workshops, displays, newsletter/news releases, presentations and public surveys. Techniques with a less directed audience (e.g., newsletters, displays) tended to score lower than techniques which directly involved the public (e.g., workshops or focus groups).
- ▶ There was wide acceptance that community involvement (education, consultation, participation) throughout the study is essential to ensure the successful long term implementation of the project.
- ▶ **Forum participants** noted that there was insufficient public involvement in the development of the three guidance documents and that there is a need to involve

the public in defining the process of watershed planning. The need to increase public understanding of the watershed planning process and to involve the public through the duration of the project, using various public involvement techniques was identified. The need to address the issue of public versus private landowner rights was raised.

- ▶ **Municipalities** suggested that information provided to the community should be user friendly and make use of graphics. CAs reported that forms have been developed for the community to identify project related issues. CAs noted that water quality issues (wells/septic tanks) are most understood by the public.
- ▶ **CAs** noted that it is challenging to get some groups to participate in the study. Scepticism is sometime encountered by potential community groups as watershed planning is seen as another bureaucratic government process. Project coordinators have to determine the best way to generate community interest in the study. They have to balance moving too slowly with pushing too hard.
- ▶ **Resource based NGO's, municipalities and CAs** reported that community involvement should occur up-front and that the community should participate in the preparation of the study Terms of Reference. Up-front involvement with the community should include education about the process and expected benefits of watershed planning. Community involvement should continue throughout the project.
- ▶ It was generally accepted that using locally based existing information and expertise as early as possible and as much as possible throughout the study will save money and time researching information and in developing community support and stewardship for the project. It is also important to share existing information with the public and local groups.

Role of Participants

Lead Agency

- ▶ Table 2C-*Lead Agency* indicates the lead agency and role of the lead agency for the seven pilot projects. In each case the lead agency is the local Conservation Authority (the lead is shared with the City of North Bay in the Chippewa Creek study). In all cases the lead agency is responsible for study coordination. Project management, neutral chairing or facilitation of committees, study input and study review are other reported responsibilities of the lead agency.
- ▶ **CAs and MNR staff** identified that CAs should lead the study if they have the expertise as they are formed on a watershed basis. The lead agency should

coordinate the study and ensure that participant input is acknowledged. Developers suggested that the project coordinator (manager) should have broad capabilities. Consultants added that it is key for projects to have professional public consultation facilitators as a go-between the public and the consultants.

- ▶ **CAs and municipalities** indicated that projects require full time coordinators. There is general consensus that the role of project participants should be clarified. This would include clarification of the role of provincial agencies (and the role of the various head office, regional and local offices within a provincial agency). Municipal staff reported that they thought some agency staff were presenting personal opinion and not the policies of the agency they represent.
- ▶ **Developers** have suggested that agencies take the lead in education.
- ▶ **MNR regional staff** indicated that they understood their role on project teams was to ensure adherence of the project to the provincial guidelines, to ensure balance of study components and ensure proper funding sources, to contribute to ensuring municipal support for the study, to assess current available information and identify information voids, to assist in preparation of study approach and Terms of Reference and to provide input to the committee(s) structure. MNR local office staff understood their role was to provide information for the background review, to provide comments on all project aspects with respect to MNR policies/guidelines, to provide overall advice as to the project philosophy and to check accuracy of technical information. Local MNR staff indicated that MNR regional staff input would be appreciated for start-up assistance, explanation of roles of the local staff, advice about success/approaches from other studies in the province.

Requires Multi-disciplinary Input

- ▶ Table 2D-Time *Commitment* shows the time commitment by the participants of the seven pilot projects. All pilot projects retained the use of professional consultants and the majority used a multi-disciplinary consultant team (including combinations of engineers, hydrogeologists, planners, hydrologists, ecologists (terrestrial and aquatic) and GIS experts). Of staff time committed, most time was contributed by Conservation Authority staff, even though watershed planning was only a portion of their total job priorities.
- ▶ **CAs** identified that watershed planning projects require a multi-disciplinary team of staff/consultants to address ecosystem and land use planning on a watershed basis. The following required expertise was identified: planners, engineers, biologists (aquatic and terrestrial), ecologists, hydrogeologists, surface water

engineers, geologists, GIS experts, landscape architects, health department representatives, social agencies, farmers, accountants, foresters, property law, facilitation skills, economists, sociologists.

- ▶ CAs suggested that "In-kind" contributions should be made by people from different agencies/groups based on their interest, expertise and familiarity with previous watershed studies and related initiatives.
- ▶ CAs noted that the academic sector could be involved to a greater extent with the projects.

B/ Observations - Human Resources

- ▶ Watershed planning project committee structure needs to be flexible to address differing local circumstances. There appears to be a need to identify and separate the political/direction giving and technical objectives of the study team to ensure efficient use of committee meeting time. Separate steering committees (including political membership to provide general project direction) and technical committees (small, multi-agency, multi-sectoral, multi-discipline working committees) appear to be most desirable to ensure efficient use of committee time. Small committees with subcommittees addressing specific areas of interest appear to be the most efficient.
- ▶ Committee membership is critical to ensure all areas of expertise and interests are represented. Cost savings can be realized by using the professional expertise of committee members. Committee membership selection is therefore important.
- ▶ Community liaison committees, workshops or focus groups seemed to be the best method of ensuring quality input from stakeholders. Community education and involvement before the study, during the Terms of Reference development, during the study and during implementation is considered important to achieve project buy-in, ongoing participation, study recommendation support and stewardship during implementation.
- ▶ Committee membership involves a significant time commitment from all participants. "In-kind" contributions from study participants should be recognized as an important input to the study.
- ▶ Committee members should represent all of their affiliation's interests and have decision making authority.
- ▶ Strong provincial (MNR, MOEE, OMAFRA, MMA) commitment of staff time and resources is lacking even though the province is promoting the "watershed" initiative. The provincial role in watershed planning (e.g., guidance, data provision, study participation, approval and funding) should be stated.
- ▶ Watershed planning project reports and documents are more acceptable to the public and politicians/decision makers if they are written in plain language with suitable visual graphics.
- ▶ Watershed planning projects require a full-time project coordinator with facilitation skills to ensure that the broad spectrum of issues are addressed, CAs (where they exist) are in a position to take the lead for watershed planning projects. Where CAs

do not exist, MNR in cooperation with MOEE could be the lead. The project could be led together with the main municipality of the watershed if that municipality so requests. If appropriate, municipalities could lead the project.

- ▶ There is a need for documentation and communication to project managers regarding the role of the project participants (including the lead agency and provincial agencies) and how to better involve stakeholders.

2.1.3 INFORMATION RESOURCES

A/ Findings - Information Resources

Availability

- ▶ Table 3A-Data Collected indicates that all seven pilot projects incorporated existing data into their project. Existing data consistently included hydrology, fisheries, flood plain mapping, erosion and wetlands. Most studies generated data on water quality, hydrogeology, and updating of existing data. Data which was not acquired as it was too expensive, not a priority or not an issue was hydrogeological data (location, quantity and quality).
- ▶ The **Watershed Planning Forum participants** expressed several concerns regarding data collection. These concerns included the availability of essential data, data sharing, and the necessity for timely access to data.
- ▶ **Pilot project representatives** were looking to the Province for help in identifying what information is needed for watershed planning and where existing information is located. The lack of coordination of information resources was identified. Data was reported to be everywhere, inconsistent, not always accessible and not synthesized. It was identified that better use of existing data should be made and that integration of agency information should be done.
- ▶ The report entitled "**Watershed/Subwatershed Information Report For the Subwatershed #19 - Credit Valley Conservation Authority and Mill Creek-Grand River Conservation Authority, MNR, May 1995**" (Information Report) indicates that the information requirements for a watershed planning project is dependent on the conditions and issues of the watershed. When information needs are established, existing data should be located and new data needs determined. Existing data should be analyzed for suitability to the geographic location, availability in suitable format (e.g., digital, hard copy. GIS versus CAD, proper scale, geodetic datum, coordinate system), age, accuracy and accessibility (e.g., copyright issues, cost).
- ▶ The **Information Report** details data requirements for the Mill Creek Pilot Project and identifies related issues:
 - ▶ Most existing data was available from MNR's GIS in Cambridge. Included was data on ANSI's, Wetlands, ESAs, Rare Threatened and Endangered species, forestry and fish data.
 - ▶ Essential aerial photography was available from the GRCA.
 - ▶ Hydrology information was available from GRCA through the stream gauging program.

- ▶ Data on land-use, infrastructure and service, and socio-economics were provided by the municipality.
- The **Information Report** details data requirements for the Subwatershed #19 Pilot Project and identifies related issues:
 - ▶ Essential aerial photography was available from the CVCA.
 - ▶ A joint MOEE/CVCA groundwater study provided information on water quality, hydrology, geology, physiographic features and soils.
 - ▶ Data on land-use, infrastructure and services, wells, and socio-economics were provided by the municipalities.
- **CAs** indicated that although much existing information is readily available, in some circumstances it is often not up to date, difficult to understand, not compatible with existing systems or of poor quality. They also reported that essential information may exist but be difficult to obtain, e.g., a barrier to information is Freedom of Information at the Federal level. They reported that information is scattered and not coordinated by agencies.
- **CAs** reported that hydrogeological data is essential to a study, yet most difficult to obtain and often not available.
- Some **CAs** reported that MOEE and MNR did not provide background information in a timely manner.
- **Municipal representatives** noted that provincial agencies were hesitant to provide needed information about the new Comprehensive Set of Policy Statements and that this information is essential to the watershed planning process.
- **Consultants** reported some information from MNR was not easily accessible. Also, some information available through developers was neither asked for nor included in a specific project.

GIS

- Table 3B-*GIS Use* indicates that all seven pilot projects used GIS. The predominant use was for the storage and display/mapping of data. The technology was being used for analysis in only one case.
- The **Watershed Planning Forum Participants** expressed concerns regarding the current data standards and compatibility.
- **Pilot project representatives** identified the need for improved provincial data standards. They saw GIS as an effective tool for data storage and analysis, but one

which could be expensive and time consuming to set up. It was noted that GIS products could be sold to recover project costs.

- **MNR Representatives** recognized that GIS technology was not being used to its full potential. They reported that there were concerns regarding information transfer.
- **A consultant** reported that GIS is proving to be an effective tool for determining relative interdependencies and linkages.
- The **Information Report** stated that GIS systems are presently in place to store, manipulate and visualize data. It is also noted that GIS systems are not necessarily required for all watershed/subwatershed studies, and there are difficulties with regards to compatibility between formats.
- The **Information Report** identified that the CVCA encountered problems with data conversions within their GIS. It was identified that CA Staff felt that GIS was mostly required for larger and more complex watershed planning projects.
- **CAs** reported that GIS technology was not used to its full potential for resource management analysis and decision making as there is still a lack of standards, expertise and the technology is too expensive (e.g., data entry, conversion). CAs suggested utilizing information better and improving the use of existing information, i.e., GIS layer processing, information presentation through graphics for ease of understanding. Also, they suggested that GIS formats should be designed based on individual needs.
- **Fish Habitat Interest** note that GIS/database use could be improved.
- **A developer** indicated that GIS was preferred but not likely critical for the study.
- **A Municipal representative** noted that emphasis on a "smart" information system (GIS) was required for analysis to replace the analysis of data in a rawer form.

Needs

- **Pilot project representatives** identified the need for data on surface and ground water quality, more experts in hydrogeology and improved capability in groundwater modelling.
- **The Information Report** identified areas of concern regarding information

resources for the Mill Creek Pilot Project:

- ▶ OMAFRA soil maps were not compatible with the projects GIS.
- ▶ MOEE well data was not available in required automated format.
- ▶ Updated 1:2,000 scale, accurate base mapping was needed.
- ▶ Additional terrestrial data to determine land cover was needed. The task group survey added that land use and land cover data was weak.

For the Subwatershed #19 Pilot project, the following concerns were raised:

- ▶ Terrestrial resources information was limited to aerial photography and the need was identified for information about forest/woodlot boundaries and composition and corridors, wetlands, and wildlife.
- ▶ Other data gaps were identified: water temperature, pesticides and herbicides, hydrogeological data, morphological data, and updated fish information.
- **CAs** expressed the need for better coordination among agencies in information management, a common information base for the entire watershed, groundwater/surface water interaction guidelines, a benchmark for water quality, detailed stream data and stream inventories, and for more hydrogeological information.

Analysis

- **Pilot project representatives** noted that existing information should be evaluated for relevance and quality.
- **MNR representatives** reported that there was not always the opportunity (e.g., due to time constraints) to confirm study methodologies and review report results. Also, watershed planning led to a rapid expansion of CA programs in the area of terrestrial data collection (e.g., woodlot investigations, wetland inventory, natural heritage linkages). These two points resulted in quality assurance concerns. **MNR representatives** also reported that since project information is maintained by the CAs, MNR does not always have access to the information to ensure that MNR standards are met.
- **Consultants** noted that it is not possible or required to collect everything (all data on all components) to make a decision.
- **Agricultural Interests** indicated that existing information required interpretation and had to be effectively explained at meetings.
- **Fish Habitat Interests** indicated that ample opportunity to analyze data and to provide input regarding data was not provided.

- **Environmental Interests** reported a lot of information for a specific project and noted that the project consultants both summarized the information and detailed the information in appendices.
- **A developer** noted that the analysis and presentation of project information was difficult to understand relative to specific needs.

B/ Observations - Information Resources

- Types of data typically required for watershed planning studies include:
 - ▶ Base Mapping
 - ▶ Boundaries (Watershed, CA, Municipal, etc.)
 - ▶ Land Use
 - ▶ Hydrology (base flow, flow records, rainfall, runoff)
 - ▶ Surface Water (temperature, quality, flood plains, fill lines, erosion sites)
 - ▶ Well Records
 - ▶ Recharge/Discharge Areas
 - ▶ Aquatic Resources (fisheries, benthic communities, vegetation)
 - ▶ Terrestrial Resources (woodlots)
 - ▶ Wetlands
 - ▶ ESAs
 - ▶ Geomorphology

- Information needs are project specific and are dependent on the conditions and issues of the watershed being studied.

- Existing data consistently included hydrology, fisheries, flood plain mapping, erosion, wetlands and base mapping. Water quality and hydrogeological data were consistently generated through projects.

- There is a need to improve accessibility to existing data. Options include:
 - ▶ Coordination at the provincial level of data availability among agencies.
 - ▶ Provision of information to project managers about what data exists, where it is, how to access it, formats, costs and other related information.
 - ▶ Timely provision of information to project managers by the province about related provincial policies and programs.

- Initiatives are currently underway to coordinate provincial information resources (e.g., ONLIS). Initiatives like these should be coordinated with the Provincial Watershed Planning Initiative.

- Hydrogeological data is essential to projects but most consistently unavailable. The need for hydrogeological research and information relating to surface/groundwater interactions, quality/quantity, location, and cross watershed boundary information exists.

- While GIS is consistently used for the storage and display of data, it was not used to its full capacity. This may be due to the fact that GIS is financially out of reach for many watershed municipalities, or due to lack of hardware/software and staff time/expertise. Improved data standards, data conversion technology, and increased training may lead to more effective GIS use.

2.2 COORDINATION

NOTE: In this section the term "linkage" refers to other programs or initiatives with a "common objective" to watershed planning.

A/ Findings - Coordination

Linkages with Other Watershed Plans

- Awareness of linkages with other watershed plans varied greatly. **CAs** and **consultants** were most likely to consider that linkages existed between different watershed plans. These linkages appeared to be primarily in the form of shared expertise and information transfer from one project to another, which occurred on an informal basis.
- The linkages to existing watershed plans were not evident or were considered to be very limited by **residents/landowners, volunteer advisory committees, municipal representatives** or **agricultural interest groups**. However several of these groups felt that linkages would become apparent in future work on watershed plans.

Linkages with Other initiatives

- Typical linkages mentioned by respondents included: Environmental Forum Plans, Municipal Official Plans, CURB, The Environmental Assessment process, and studies undertaken by CAs, such as stormwater management strategies.
- Here again, **CAs** and **consultants** were most aware of the positive linkages with other initiatives whether related to environmental protection or to the municipal planning process. **Municipal representatives** primarily identified links to the municipal planning process in addition to a few other initiatives, such as Environmental Farm Plans.
- **Provincial agencies** saw the interrelationships between studies as potentially problematical. They thought that care should be taken to ensure that information is consistent or does not conflict. **Voluntary advisory committee** members identified links to the municipal and provincial planning processes and to stormwater plans. **Residents/landowners** were not aware of linkages with the official planning process or the Environmental Farm Plans.
- **Forum participants** pointed out that watershed plans needed to be better integrated with other types of strategies, such as farm plans, land-use planning, economic development, and technical strategies.

- **Pilot project representatives** generally felt that watershed planning was the best tool for coordinating related initiatives and agencies. It was noted that the watershed planning process led to linkages with other initiatives and often established or strengthened relationships among stakeholders.
- **Pilot project representatives** reported strong linkages between the watershed planning project and the municipal planning process (development proposals, the new Planning Act, Official Plans, County community based vision exercises, subdivision approval process, severances, master drainage plans, major servicing plans, recreational plans). Other reported linkages were with area plans, environmental farm plans and related CA studies (e.g., Conservation Strategies, previously completed water management strategies, stormwater management studies, groundwater studies, CA fill regulations).

How Coordination Can be Improved

Eliminate Duplication, Create a One-Window Agency to Provide Leadership

- **CA** respondents generally considered that the studies were well-coordinated on a day-to-day basis. However, it was felt that duplication exists between regional governments and **CAs**. Due to the complexity of the issues involved, a one-window agency would allow for better coordination of plans. Since **CAs** have the expertise and the experience with watershed planning, they thought that they should lead these studies.
- **Municipal representatives** felt that coordination by **CAs** was effective but agreed that duplication exists, leading to a waste of energy and money. **Agricultural interests** thought that there was a need for one group to take charge and to show clear leadership.
- **Provincial agencies** said that **CAs** should coordinate the studies. **Developers** thought that the leading role should be given to the CAs and local municipalities. The latter groups are familiar with local needs and desires of the community and are best able to enhance and protect resources.

Improve Coordination with Provincial Agencies

- **CAs** thought that coordination with provincial agencies needed to be improved. Although good coordination existed with MNR at the district level, improvements need to be made at the regional office or main office of MNR.
- Other respondents from this group said that the Ministry of Health should become more involved and recognize the link between health issues, water quality/quantity and the importance of watershed planning. In addition, regulatory agencies should

take a more comprehensive approach. For instance, presently requests for water-taking permits are not assessed on the basis of an ecosystem approach.

- **Municipal representatives** noted a lack of continuity in participation by provincial agencies and thought that coordination could be improved between various governing bodies and universities.
- Certain **provincial agencies** said **that with 15** agencies and over 250 pieces of legislation to consider, it was difficult to see at what level priorities could be resolved. Questions were also raised as to whether a watershed plan could hope to balance provincial and local issues.

Information-Sharing

- **Consultants** said that improvements in information-sharing are needed so that lessons can be learned from completed or current watershed studies. Creating a central repository of these studies would make this information more accessible. MOEE should attend meetings and share their experiences with previous subwatershed studies.
- **Municipal representatives** remarked that instead of each watershed planning study "re-inventing the wheel", it was also important to set common standards and learn from previous experiences. The study group should come together and share relevant information. **CAs** suggested that forming interdisciplinary teams .could improve coordination.
- **Fish habitat interests** said that public communication was the key to better coordination and that there was a need for information on the watershed planning process, different steps in the process, milestones and schedules. **Provincial agencies** thought that the Ontario Municipal Board should also be educated in the process.
- **Volunteer advisory committee** members thought that there seemed to be competing groups involved in the planning process without a clear direction as to where they were going.

Other Concerns

- **Consultants** identified the following areas for improvement in coordination of watershed planning:
 - ▶ paralleling of the watershed planning process and of secondary plans caused problems in scheduling;
 - ▶ changes need to be made in applicable legislation (Planning Act versus the

- Environmental Assessment Act) to remove barriers to planning on a watershed basis;
- ▶ there was resistance to new urban and servicing forms and design.

What Worked well in Terms of Coordination

Leadership

- Some **consultants** felt that adequate coordination was provided by the project managers.

Information-Sharing

- **Agricultural interests** said that members from other **CAs** participated in the discussion and drafting of the plan. **Consultants** noted that partnerships were used to a full extent to collect information and in the production and implementation of the plan. The process was an evolving, learning process for everyone.

B/ Observations - Coordination

- Opportunities for the sharing of information among those involved in watershed planning projects would assist individual efforts and would lead to cost savings by avoiding "re-inventing the wheel" for each new project.
- Watershed planning is a tool for coordinating related initiatives and establishing relationships among agencies/stakeholders. Strong linkages exist between watershed planning and the municipal planning process. Opportunities exist to more clearly define and strengthen relationships between watershed planning and other processes, programs or initiatives with common objectives (e.g., other completed technical studies, Environmental Farm Plans, Environmental Impact Studies, Environmental Assessment Process).
- A lead agency to coordinate local watershed planning projects is required to reduce duplication of effort. CAs where they exist may provide this role, although flexibility is required for local circumstances.
- There appears to be little, if any, ongoing coordination among provincial agencies with respect to initiatives related to watershed planning. Opportunities to improve coordination of provincial agencies and their activities as they relate to watershed planning should be explored: Examples of such opportunities include:
 - ▶ Provincial funding for projects being directed to jointly determined provincial priorities,
 - ▶ Receipt of provincial funding for projects being dependent on the completion of a watershed planning project.
- A central, accessible repository for watershed planning information (e.g., data, completed report, guidelines) could greatly improve coordination and cost-efficiencies.
- The provision of information to stakeholders about the requirements of the CA Act, Planning Act, Environmental Assessment Act as they relate to watershed planning could greatly assist in coordination and would gain support for planning on a watershed basis.

2.3 EFFECTIVENESS

NOTE: The term "effectiveness" was used in surveying respondents with respect to:

- 1) The **process** of watershed planning
- 2) The expected **products or benefits** of watershed planning

A/ Findings - Effectiveness

Adherence to Guidance Documents

- Table 4B-*Adherence to Guidance Documents* reveals that guidance documents were followed by all pilot projects. Some respondents felt the guidelines were adequate but others felt that they needed some fine-tuning.

Followed Guidelines Closely

- Several **CAs** said they followed the Guidance Documents closely and found them useful and helpful. Some **consultants** mentioned that the guidelines adapted well to the local situation. **Municipal representatives** felt that the planning process corresponded to the guidance documents.
- **Other interests (Academic)** said that the process related well to the guidance documents. **Residents/landowners** said that the process was consistent with the documents.
- Some **volunteer advisory committee** members were unsure how the study process related to the guidance documents.

Process Required Fine-Tuning

- **CAs** noted that the guidance documents should require that more background review be undertaken prior to writing the study Terms of Reference. This would allow for greater efficiency in preparing comprehensive and realistic Terms of Reference. **Consultants** remarked that the process required fine-tuning due to Bill 163.
- **Municipal representatives** mentioned that for their projects a more encompassing process than outlined in the guidance documents was used, which dealt across subwatershed and municipal boundaries.
- **Provincial agencies** remarked that the guidance documents were too general. More details would be helpful, for example, on the role of ministry representatives, sample Terms of Reference, sample reports/recommendations. Effective means of public participation should also be clarified.

- **Forum participants** said that the guidance documents do not address certain processes dealt with by the Environmental Assessment Act, and the Fisheries Act. As well, aggregate, shoreline and inland lake management are not sufficiently covered.
- Other **Forum participants** felt that the watershed planning process seems to be limited to drainage planning. Concerns about the need for a broader ecosystem approach and to establish a balance between economic, environmental and land-use practices were also expressed.

Study Timing

Duration of the Study

- Table *4A-Project Time Frame* documents the study duration and presents comments regarding reasons for delays and how development applications were dealt with during the pilot-project studies.
- Respondents from two projects said there were no problems meeting the original completion date, whereas the rest of the projects reported delays of from 5 to 9 months. If all projects meet the revised completion dates, project duration will have ranged from 13 to 29 months, most lasting from 23 to 29 months.
- Reasons for these delays included: Problems related to GIS requirements (e.g., obtaining and coordinating various digital map sources); large overall project size involving many subwatersheds; unexpected time required for report production and agency review of interim reports; delays due to construction and calibration of groundwater, surface water and water quality models; late delivery of project funding (provincial transfer payments); additional time required for information-gathering.

Time Devoted to Study Components was Appropriate

- Some **CAs** thought that time devoted to study components was appropriate. **Fish habitat interest** respondents said that time taken was appropriate although some backtracking had to be done to ensure adequate data was conveyed to the Technical Advisory Committee. Some **Municipal representatives** said that generally proper emphasis was given to study components.

Time-Consuming Components

- According to some **CAs**, the background analysis took longer than anticipated. Others mentioned that most time was taken in background information gathering, public consultation, and terrestrial field work, which was appropriate. **Consultants** mentioned that field monitoring took the most time since it requires seasonal data.

- Some **Municipal representatives** said that some technical documents were hard to read and so took more time.

Time Devoted to Certain Components was Inappropriate

- **Consultants** remarked that too much time was spent in collecting information and not enough in analysis or in deciding how to present the data to the public.
- **Agricultural interests** said that time was wasted in workshops because key background information was not known.
- **Residents/landowners** felt that much time was wasted in confrontation management because the Conservation Authority was not in a senior enough position to effectively resolve conflict. **Other Interests (Academic)** also said that much time was spent managing confrontation.
- **Provincial agencies** felt that the process had to happen too quickly and reviews of reports were not as thorough as they could have been. Time expectations were beyond the resource capabilities of the local agency office. The duration of studies has presented a coordination problem with development needs.

Study Outputs

- Table *4C-Products of Watershed Planning* presents the products of the pilot projects, which included a range of reports (background, draft, phases, technical, summary, literature review), newsletters and newspaper articles.
- These materials contained information on the current watershed situation (health, function), goals and recommendations for the watershed, study results, mapping, alternatives for the future of the watershed and plans for how alternatives can be accomplished, environmental policies for incorporation into the municipal planning process and priority lists for required projects and programs.
- The Collins Creek Study addressed two aspects affecting the effectiveness of watershed plan recommendations: Ease of application and adequate coverage of the issues.

Does the Watershed Plan Provide Actionable Recommendations?

- Based on the **content analysis** for the Collins Creek Study, there was complete agreement among respondents that the plan provides actionable recommendations. For example, farmers are encouraged to complete Environmental Farm Plans and are recommended to provide buffer zones between agricultural land and streams, creeks and lakes.

- The **content analysis** on the Laurel Creek Study found that the actionable recommendations took the form of requirements in the Official Plan, community based programs with citizens, Environmental Farm plans, plans of subdivision, consents, site planning, community based programs with citizens and environmental farm plans.

Do the Watershed Plan Recommendations Deal with all the Issues?

- The task team's **content analysis** of the Collins Creek Study found that most agreed that the plan covers a wide range of issues including: Measures to improve existing watershed conditions; recommended remediation measures for new developments; and best management practices for agricultural activities.
- However, some respondents felt that although many issues are addressed, not all may be examined as closely as needed. One reason cited was a lack of consensus on the importance of some issues, e.g., groundwater monitoring and agricultural practices.
- The **Content Analysis** on the Laurel Creek Study found that respondents felt that the plan's recommendations did deal with all the issues including such things as; groundwater, surface water, terrestrial protection and linkages, aquatic protection, historical development and agricultural land management and environmental rehabilitation.

Plan Implementation

Planned Implementation Mechanisms

- Table *4D-Implementation* discusses implementation tools and strategies undertaken or discussed by each of the pilot projects. Some, such as integration into municipal planning documents and work done by Implementation Committees, will definitely occur. Others elements were considered to play a key role in successful implementation.

Integration into Municipal Planning Documents

- Since many of the studies are still under way, respondents were not always sure how the results would be implemented. However, most respondent groups expected that essential elements of the plan would be implemented through the municipal planning process and official plans.
- The **content analysis** for both the Collins Creek Study and the Laurel Creek study confirmed that plan recommendations are being implemented through integration with municipal planning documents.

- **Provincial agencies** mentioned that study recommendations should be action-oriented and not "motherhood" in nature. **Forum Participants** said that grassroots input was required to ensure that a "top-down" approach is not taken when writing documents.

Implementation Committee

- **CAs, other interests (Academic)**, and **consultants** said that an Implementation Committee or a continuing liaison team would be responsible for implementation. **CAs** mentioned that a Citizen's Advisory Committee would assist with implementation and monitoring.
- The **content analysis** for the Collins Creek Study found that an implementation committee was in place with two Conservation Authorities and two municipal representatives, and acts to coordinate agency undertakings as recommended in the study. For the Laurel Creek Study an implementation committee has been in place for two years. This committee, The Multi-Stake Holder Task Group, consists of; Conservation Authorities, developers, Ministry of Natural Resources, Citizens Environmental Committee, City of Waterloo and all watershed municipalities.
- The **Content analysis** for the Laurel Creek Study found that the Implementation Committee was in place for two years and consisted of CAs, MNR, watershed municipalities, developers, University of Waterloo and the Citizens Environmental Committee.
- Partnerships to implement the study actually seemed to be formed as a result of the study and that the study process forced stakeholders to reach consensus on what kind of a plan they would support. However, one respondent felt it was too early to determine whether existing partnerships would be lasting.
- Planning reform was also listed as a good forum in which to promote/implement watershed planning as a concept.

Mechanisms in Place to Address Implementation Issues

- **Content analysis** on the Laurel Creek Study found that mechanisms were established with provincial agencies (e.g., research and development into best management practices), private developers (e.g., undertaking sub-watershed studies), local municipality (e.g., implementation policies reflecting community values and culture of watershed), special interest groups (e.g., community-based monitoring), public education initiatives (e.g., pesticide use, naturalization and creek rehabilitation). An Implementation Committee has also been in place since 1993.

Techniques to Increase Effectiveness of Process

Sufficient Political Will and Financial Support

- **Agricultural interests** and **consultants** emphasized that sufficient political will and financial support are essential for effective implementation. **Volunteer advisory committees** suggested that this was especially true due to the many jurisdictional overlaps and cross-boundary issues involved in watershed planning.
- The **content analysis** of the Collins Creek Study found that most respondents felt that their role in maintaining support for the project was limited to the development of partnerships. The responses from the Laurel Creek Study indicated that ongoing public awareness of the benefits of the watershed study would keep the political agenda focused on the recommendations.

Legislative Basis for Implementation

- **Forum participants** felt that there was no legislative basis for implementation. They also feared that municipalities would be stuck with the sole responsibility for ensuring implementation. Guidelines are needed, indicating how watershed plan recommendations should be integrated into municipal planning documents.

Gaining Public Support

- Strategies to gain public support were frequently mentioned as being essential to successful implementation. **Conservation Authorities** thought that forming partnerships with local schools, community stewardship initiatives and peer education could play a big part in implementation. They also thought that local involvement in the process would lead to increased pressure being put on municipalities to implement the plan.
- **Forum Participants** also stressed the importance of promoting private land stewardship education and awareness. They said that training is required to develop expertise. Some thought that this education should begin in elementary schools.
- **Consultants** mentioned that a good first step is to have local residents recognize that everyone is part of the problem as well as part of the solution. They thought that special interest groups could also play a role in public education and implementation. Special projects could also be undertaken by public agencies.
- **Municipal Representatives** said that the title should be changed to "watershed initiatives" rather than "watershed planning" to avoid public cynicism and gain support.

- Other respondents in this group said that making technical aspects more understandable to the general public and to municipalities would help reduce public confusion between Wetland Policy and watershed planning. It was also mentioned that implementation could focus on a high profile issue, to gain public support.
- **Conservation Authorities** said that buy-in will be difficult because of the number of players involved but they hope to get it over time. **Forum Participants** pointed out the need for a fundamental change in attitudes which would better include stakeholders in the planning process.
- **Forum Participants** said that it was important to take implementation needs into account from the outset. First steps in the process include identifying key stakeholders and advising them of the issues, and listening closely to concerns expressed by the public.
- The **Content Analysis** for the Laurel Creek Study indicated that respondents felt if the public were kept aware and participating in achieving the benefits of the watershed plan recommendations then they will keep the political agenda focused and keep participating in implementation.
- Other participants suggested that it was important to strive for stakeholder agreement to share implementation responsibilities versus legislation and regulation. Along the same lines, it was proposed that stakeholders could become members of an implementation team.
- A variety of communication tools were proposed for getting the public involved, such as mailings or public meetings. The public could also participate in non-governmental organizations such as stewardship councils or land trusts.

Gaining Support from the Private Sector/Landowners

- **Voluntary advisory committees** and **consultants** also pointed out the importance of gaining support from the private sector and landowners. **Consultants** said that this may require determining how private resource features would be acquired and cost-shared over a larger development base as well as research into new urban servicing techniques. They also said that implementation must also address the issue of compensation if land were to be set aside for environmental purposes.
- **Forum Participants** underlined the need to recognize the issue of public versus individual landowner rights. They said that more government support and attention should be given to compensation strategies. For instance, beneficial compensation

should be given to landowners facing remedial costs or restrictions to current practices.

Support from the Ontario Municipal Board/Government agencies

- **Consultants** mentioned that significant problems could occur later at the Ontario Municipal Board if the municipality receives less support there, than during the formulation of the plan. They also said that agency endorsement was important to successful implementation.
- **Forum participants** said that the province should continue research into more effective and cheaper best management practices.
- From the **content analysis** on the responses from the Collins Creek study, it did not appear that any significant commitment of provincial agency staff was made to ensure that plan recommendations were being implemented and coordinated on an ongoing basis.

Support from Municipalities

- **Municipal representatives** pointed out that the municipalities involved in watershed planning have different levels of interest, depending on the development pressures they experience. They thought that Conservation Authorities should be more active in communicating the process to municipal councils to drum up support.

Clarity and Readability of Plans and Other Documents

- **Consultants** pointed out that care has been taken not to load down plans with scientific jargon, so they can be easily read and understood by the average resident. Certain plans also provide guidance transferable to planners and fisheries biologists for implementation through other mechanisms such as official plans. The roles and responsibilities of implementation by agencies, groups and private individuals are also spelled out.

Partnerships

- The **content analysis** for the Laurel Creek Study found that partnerships to implement the plan began with the study and will continue because of the effectiveness they lent the process.

Other Keys to Successful Implementation

- **Provincial agencies** said that the important elements for successful implementation are varied and all are significant. This points to the complex nature of implementation and the need to give further consideration to this area of plan

development.

- **Forum participants** said that there was a lack of guidance concerning the responsibilities of the various groups towards implementation. In particular, provincial involvement needs to be clarified. They also felt that attention should be given to how to prevent the process from getting bogged down.
- Participants felt that the plan lacked a process to ensure buy-in from the various stakeholder groups, a lack of clarity of purpose and an adequate framework for implementation. Priorities should be set regarding different aspects of implementation and their cost. It is also important to allocate sufficient time for implementation and indicate standard review periods for plans. A major group or body at the municipal level should be responsible for implementation.

Areas for Further Consideration

Watershed Recommendations that have Already Been Put Into Action

- Examples of actions from the **Content Analysis** of the Collins Creek Study found that implemented recommendations included water quality monitoring, septic system inventories, working sessions to complete Environmental Farm Plans, and finalization of official plan policies.
- In the Laurel Creek Study area, a number of recommendations have already been put into action including: Requiring sub-watershed plans to be undertaken by the development industry prior to new development approvals; undertaking Class EA for manmade reservoirs in the watershed; establishing short term and long term watershed monitoring programs with the University of Waterloo; establishing water quality and quantity targets and triggers; amending the Official Plan to reflect the study's final recommendations; creation of an Implementation Advisory Committee; creation of a citizen's creek committee; development of a rehabilitation strategy; woodland purchasing; creation of terrestrial and aquatic linkages; training for consultants and municipal staff, and sorting and establishing long term watershed monitoring programs with the University of Waterloo. As well, over 40% of developable lands were set aside permanently to be protected.

Opportunities and Constraints with Implementing Recommendations

- The **Content Analysis** from the Collins Creek Study found that respondents agreed that cutbacks in agency staff and funding severely impacted on their ability to proceed with implementation. Other constraints listed include: lack of political support, the local economic situation (farmers not willing to complete Environmental Farm Plans) and resistance to the study by affected land owners and developers.

- The Laurel Creek Study area is experiencing public sector buy-in and financial support, political will, public support, and strong partnerships. As well, planning reform reflects an ecosystem approach now incorporated into the Official Plan and subsequent secondary plans. Constraints include lack of ongoing resources, expertise, equipment and funding to implement certain recommendations. Also, there is lack of sufficient scientific knowledge in some areas (e.g., woodland buffer determination, land use designs and densities on groundwater recharge areas and near woodlands and wetlands).
- The **Content Analysis** for Laurel Creek also found that in the future, implementation may rely more heavily upon community volunteers rather than consultants. Study meetings are very expensive and consume a large part of the study budget.

Does implementation reflect a balance of environmental, economic and social needs/values of the watershed community?

- The **content analysis** for Collins Creek Study found that most respondents felt the implementation to date reflected a balance.
- The **content analysis** for Laurel Creek found that most respondents felt that implementation addressed these issues as well as addressing aesthetic and heritage values.

Expected Improvements to Ecosystem Health in the Study Area

Improve Ecosystem Health

- CAs perceived the study as having the most positive impacts on ecosystem health. The following positive impacts were mentioned: Some improvements to water quality conditions, ongoing protection of a reasonable cold water fishery, localized improvements such as increased riparian cover and pond rehabilitation.
- **Fish habitat interests** expect better protection of water resources (quantity and quality) to ensure they meet provincial standards. Some **volunteer advisory committees** mentioned increased water quality, less flooding, creek rehabilitation, and the maintenance of the cold water nature of streams.
- **Municipal representatives** thought the plan would provide benchmarks to measure improvements in ecosystem health. Improvements made to one part of the water system would lead to positive effects in other areas.
- **Other interests (Academic)** said that the resiliency of the system would be improved. The plan will prevent further potential degradation of the system

resulting from the widening of Highway 401, projected changes to the 401/6 intersection, development pressures along the Highway 6 corridor, and from the activities of a gravel extraction industry.

Maintain Existing Conditions

- Most respondents said that the plan would help maintain existing ecosystem health. **Agricultural interests** felt that the plan would provide benchmarks for actual ecosystem health and show how improvements can be made. **Other interests (Academic)** felt that not much improvement to ecosystem health was to be expected, however there should be better monitoring of water quality.
- **Consultants, volunteer advisory committee** members, and **Residents/Landowners** said that improvements to ecosystem health will not be achieved but rather the objective is to maintain existing conditions. The latter group of respondents thought that improvements to ecosystem health were already occurring through other initiatives such as Environmental Farm Plans.
- Some **Municipal representatives** felt that environmental health would improve regardless of the study because people are increasingly aware of the effects of their activities on the environment. They said that, in any case, municipalities are already subject to environmental legislation.

Effects/Benefits of Watershed Planning

- Table *4E-Effects/Benefits* provides information from the interview process about the expected effects and benefits of watershed planning. Respondents discussed environmental, economic and social impacts, including the prevention of potential deterioration in the future.

Environmental

- **CAs** noted that the studies will benefit all resource areas. **Municipal representatives** mentioned better management primarily of land resources and secondly, of water resources. **Other interests (Academic)** said they expected increased vegetation of shoreline, improved flow rates and improvements to woodland corridors.

Economic

- **CAs** said that some of the direct benefits of studies are related to the existence of proper and timely information to guide development in a sound environmental manner. They also said that, hopefully, future economic development will proceed in an orderly fashion without compromising the environmental features of the watershed.

- **Consultants** thought that developers might be able to market sustainable development to home buyers. However, here is no guarantee that innovative development designs will yield financial returns.
- **Volunteer advisory committee** respondents said that the studies would help maintain a good green space for use by local people while still allowing commercial development in the watershed. Future development will have to respect the watershed.
- **Municipal representatives** felt that the economic benefits of watershed planning are hard to demonstrate.

Social

- **Conservation Authorities** said that direct social benefits of the study are related to an enhanced profile of greenway systems, and improvements in linkages between existing trails and valleylands. They also thought that local residents would feel more comfortable knowing the implications of their choices on the environment. In addition, the watershed planning process helps to resolve conflicting views.
- **Consultants** felt that the watershed planning process would strengthen existing partnerships and create new ones. It also establishes trust and recognition that work must be done within the existing system. They also mentioned that community satisfaction and psychological health would improve through knowledge of how to sustain the subwatershed through tangible actions. In sum, a healthy ecosystem equals a healthy community equals a healthy economy.
- **Municipal Representatives** noted that social benefits would result in the area of improved recreational opportunities, the promotion of alternative life styles, increased awareness of natural resource issues, and increased public incentives to maintain ecosystem health. **Fish Habitat Interests** said the public would gain a feeling of achievement and of reaching goals.

Preventative

- **Agricultural interests** said that watershed plans will identify what needs to be done, allow for better targeting and prevention of problems in the future. **Municipal representatives** thought that the plans would help the government avoid making mistakes in the future.

No benefits

- Residents/landowners said the study will probably not have much effect because it will not likely be implemented by the municipality. One respondent in this group felt that no benefits would result, and that huge sums of money had been spent needlessly while leaving the community divided.

Monitoring

- Table *4F-Monitoring* presents respondent's comments pertaining to the monitoring of the pilot projects. Generally, monitoring was not fully addressed as part of the projects and was to be dealt with upon project completion.

Who Will Do Monitoring?

- Some **CAs** said that Citizens' Advisory Committees will assist with monitoring. Others mentioned that Conservation Authorities will monitor stream flow, water temperature, stream rehabilitation progress, and benthic health (5-year intervals). A local committee would monitor ground water in collaboration with the CA. It has not yet been determined who will be responsible for monitoring water quality. One respondent from this group said that monitoring was not a component of the study.
- **Consultants** said that monitoring would involve regular evaluations by partners and provincial agencies. They thought that the Association of Conservation Authorities of Ontario (ACAO) could assist in monitoring. Another respondent from this group suggested a liaison committee could assist in this task.
- Some **municipal representatives** said they expect the City to look after monitoring. Others thought monitoring would be done by the Conservation Authority and the general public, or by an environmental action committee.
- **Residents/landowners** thought that provincial ministries, such as Natural Resources and OMAFRA, as well as other bodies and farmers would all play a role in monitoring.

How Will Monitoring be Done?

- Consultants suggested that a catalogue of related initiatives should be compiled and distributed for reference. The purpose would be to document opportunities and constraints and demonstrate watershed/subwatershed planning process implementation.

- **Municipal representatives** said that monitoring would be ensured through approval of all planning documents. They also said that municipalities could introduce a levy to establish a reserve fund to monitor septic systems. **Fish habitat interests** said that monitoring will be done through community involvement.
- **Volunteer advisory committees** thought the plan would be monitored by the Conservation Authority. Planners would also have to take the watershed study into consideration. They also said that members of the Committee could monitor it informally by attending a variety of municipal or community meetings to make comments about the study. Some Committee members said they were not sure how monitoring would be done.
- **Other interests (Academic)** said that the impetus will be on Conservation Authorities because the implementation strategy has no teeth.
- The **content analysis** on the Collins Creek Study found that respondents reported that both informal and formal arrangements for monitoring existed. Examples of informal monitoring included sampling for algae levels by shoreline owners and fishing guides. Formal arrangements included information provision by provincial agencies.
- The **content analysis** for Laurel Creek found that a formalized monitoring program which involves affected landowners during the pre-development, development and post development stages. The government agencies now involved (municipality, conservation authority, **MNR** and the Region) are also currently developing a formalized partnership for long term monitoring on a watershed basis.

Processes to Review Recommendations to Keep Plan Current

- The **content analysis** from the Collins Creek Study found that most respondents agreed that the plan needed to be reviewed in light of Bill 163. It was also suggested that the plan be updated on a five or ten year basis to coordinate with official plan reviews. However, some felt that municipalities would not be willing to incorporate updated recommendations in planning documents.
- The review for recommendations in the Laurel Creek Study area will take place through the 5 year official planning review or as community needs arise within the 5-year time horizon, as directed by City Council.

Resources Required to Implement, Monitor and Provide Mitigation on an Ongoing Basis for Recommendations

- The **content analysis** for Laurel Creek reported that resources required included: Scientific knowledge; equipment; a full time watershed coordinator at the local level; financial resources for ongoing monitoring, enforcement and mitigation; and a public awareness and implementation program. This will be achieved through a long term partnership commitment.

Other Issues

- **Forum participants** felt that monitoring was not a strong element of the plan from the outset. They also said that legal, cost and logistical issues concerning long term maintenance and monitoring had not been adequately addressed. In addition, creative sources of funding are required, such as involving public volunteers in monitoring.

There is a need to achieve a consensus on what needs to be monitored and to better define targets for measuring performance.

- Some participants mentioned that the province should define general guidelines which could be refined locally. Municipal policies in this area should recognize differences between urban and rural environments.

General Comments on Effectiveness

- Some **consultants** said that there was general agreement on the need for watershed/subwatershed planning but that there are still some sceptics. A more comprehensive approach was mentioned by some, as was using the Environmental Assessment approach. Other respondents from this group felt that the watershed planning process was effective provided that urban planning processes are integrated and flexible, to allow for incorporation of new findings. Implementation mechanisms must also be supported.
- **Consultants** also thought that there was agreement that an ecosystem approach was required in advance of development. Watershed plans are a good starting point for establishing trust amongst those who mistrust government, for example, farm groups. They provide a good framework for breaking the thinking that big government or big dollars will solve all.
- **Provincial agencies** said that it was difficult to evaluate effectiveness because many of the subwatershed plans are not at the completion stage. However, they thought that considerable flexibility, commitment and understanding of the complexity of implementation had been demonstrated. Another concern expressed

by this group was that, although the public expects the results to be implemented, the Committee of Adjustment can overturn decisions.

- **Municipal representatives** noted that MMA did not recognize that studies can deal with cross-boundary issues. It was also mentioned that the best test of the effectiveness of a watershed plan, is whether a better and more coordinated plan review is taking place.

B/ Observations - Effectiveness

Guidance Documents

- While the guidance documents proved to be useful there is a need for additional guidance to address or detail:
 - ▶ How project cost savings can be realized (e.g.. CAs completing a background review prior to preparing the Terms of Reference);
 - ▶ Compatibility with the new comprehensive set of policy statements,
 - ▶ The role of study participants;
 - ▶ Sample Terms of Reference;
 - ▶ Sample reports/recommendations;
 - ▶ Effective means of public participation;
 - ▶ Linkages with the Environmental Assessment Act and the Fisheries Act;
 - ▶ More details on aggregate, shoreline, inland lake management;
 - ▶ Broader opportunities for implementation (e.g. , beyond the municipal zoning documents);
 - ▶ Aspects of monitoring (who, what, where);
 - ▶ Information on how to integrate watershed plan recommendations into municipal planning documents;
 - ▶ How to take a broader ecosystem approach that would establish a balance between economic, environmental and land use planning processes.

Study Process/Components

- It is important for project managers to prepare a project schedule which clearly states the time to be devoted to each component. Information to assist project managers in determining which components generally require greater emphasis and are time consuming would be helpful. For example, agency reviews of reports, funding delays, etc. Information from the pilot projects may be helpful here.
- Stakeholders need clear understanding of project components and timing in order to ensure a timely study process. However, project managers should ensure that time and resource expectations are reasonable. A greater understanding of stakeholder's interests and needs can also help in balancing emphasis on the various study components.
- Project committees should address how development proposals and other planning applications will be dealt with for the duration of the project.

Implementation

- Study recommendations were the most actionable when linked with municipal land use planning processes and documents as well as other related initiatives including Environmental Farm Plans.

- In most cases, implementation committees or partnerships were or have been set up to oversee implementation.
- Most felt that political will and financial/public support were essential for effective implementation. Education and training of the public about the watershed planning process came across as a key to building public support, and public support was seen as key to ensuring political support.
- Compensation for private landowners facing remedial costs or restrictions was raised as an issue.
- Provincial agency and municipal support for implementation varies. This partially stems from a need to identify expected roles and responsibilities of participants. The roles of participants throughout the process needs to be addressed in the guidance documents.
- Watershed recommendations already being implemented varied according to local issues and needs and ranged from water quality monitoring to permanent protection of lands.
- Achieving objectives such as maintaining or enhancing ecosystem health was seen as realistic by all. Economic and social benefits were less understood, but included examples like greenspaces, improved recreational opportunities and still allowing development within the watershed in an environmentally sustainable manner.

Monitoring

- Monitoring issues included the need for resources and expertise to carry out tasks as well as the need to define performance targets for monitoring.
- Monitoring is generally being or will be undertaken by the CA and/or the municipalities, however, other agencies and stakeholders were also identified as assisting in monitoring through mechanisms like review and evaluation of municipal planning documents and special projects such as sampling algal levels by shoreline owners.
- Most agreed that watershed plan updates and reviews should be coordinated with official plan reviews.

APPENDIX A

TASK GROUP MEMBERS

Rob Messervey, MNR (Co-Chair)

Sue Harrison, MMA (Co-Chair)

Karen Abrahams, MNR (Secretary) (Replaced Rob Messervey as Co-Chair in February, 1995)

Laura Atkins, MMA (Replaced Sue Harrison as Co-Chair in February, 1995)

Karen Jones, MOEE

Graham Whitelaw, MOEE

Steve Klose, MOEE

Don Greer, MNR

Brian Trushinski, City of Waterloo

Rick Goldt, Upper Thames River Conservation Authority

Thank you to Rhonda Gribbon (MNR), Janet Drury (MMA) and Julie Sutton (MNR) for assistance with the preparation of this report.

APPENDIX B

TASK GROUP EVALUATION QUESTIONS

Resources

1. Were/are adequate financial, human and information resources available to carry out pilot projects?
2. If resources were limiting, were priorities set and resources allocated accordingly?
3. Are adequate resources available (type and amount) to carry out watershed planning in priority areas across Ontario?
4. How were project costs shared among stakeholders, and was this appropriate?
5. How can resource utilization be improved?

Coordination

6. Have linkages been established between watershed planning projects, related initiatives and agencies to share information and expertise?
7. Have linkages been established between agencies for facilitating responses to issues?

Effectiveness

8. Was the WPI process, as outlined in the three documents, followed?
9. Have watershed plans been completed for study areas?
10. Are appropriate policies and practices identified in watershed plans?
11. Will/are these policies and practices adequately transferred into official plans, resource allocation and management decisions, environmental approvals and land use practices?
12. Are environmental, economic and social impact indicators identified in watershed plans, official plans and other resource planning documents?
13. Have mechanisms been established for monitoring the above indicators?
14. Will/have recommended resource management policies and practices lead to environmental, social and economic improvements?

APPENDIX C

LIST OF AFFILIATIONS INTERVIEWED BY PROJECT

General Questionnaire

Jock River Project (Rideau Valley Conservation Authority)

Goulbourn Twp.

RCVA

RMOC

Goulbourn Environmental Advisory Committee

MNR

Mill Creek Project (Grand River Conservation Authority)

Consultant

GRCA

City of Waterloo

Stoney Creek Project and London Subwatershed Studies (Upper Thames River Conservation Authority)

City of London

Thames River Anglers Association

Middlesex Federation of Agriculture

City of London

DelCan Consulting Engineers

MNR

Lovers/Hewitt Creeks Project (Lake Simcoe Region Conservation Authority)

City of Barrie

Kerbal Group (Developers)

Resident/Landowner

MNR

Subwatershed #19 (Credit Valley Conservation Authority)

Town of Orangeville

Town of Caledon

CVCA

MNR

Chippewa Creek (North Bay Mattawa Conservation Authority)

NBMCA

Proctor & Redfern Ltd.

MNR

Nottawasaga Valley Project (Nottawasaga Valley Conservation Authority)

Consultant

South Simcoe Soil and Crop Improvement Association

NVCA Board Member

Resident and local councillor

MNR

Joshua Creek Project

Metrontario Group (Developer)

Town of Oakville

East Morrison Creek

Town of Oakville

Collins Creek (Cataraqui Region Conservation Authority)

Storrington Township

Storrington Ratepayers Association

Queen's University

Sawmill Creek

Volunteer Advisory Committee Representative (Landowner)

Content Analysis Questionnaire

Collins Creek Project

MNR

MMA

Kingston Twp.

MOEE

OMAFRA

Laurel Creek

City of Waterloo

GRCA

Consultant

Consultant Questionnaire

Responses from the following consulting firms were received:

Totten Sims

Hubicki Associates

Paragon Engineering

Marshall, Macklin, Monaghan Limited

Triton Engineering Limited

EcoPlans Limited

Philips Planning and Engineering Limited

M.M. Dillon

MacViro Consultants Inc.

CH2M Hill Eng.

J.F. Sabourine and Assoc.

APPENDIX D

GLOSSARY OF ACRONYMS

ACAO	Association of Conservation Authorities of Ontario
AMC	Association of Municipalities of Ontario
ANSI	Area of Natural and Scientific Interest
CA	Conservation Authority
CAD	Computer Assisted Drafting
CURB	Clean Up Rural Beaches
CVCA	Credit Valley Conservation Authority
ESA	Environmentally Sensitive Area
GIS	Geographic Information System
GRCA	Grand River Conservation Authority
MNR	Ontario Ministry of Natural Resources
MOEE	Ontario Ministry of Environment and Energy
NGO	Non-government Organization
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
OCWA	Ontario Clean Water Agency

TABLES

TABLE 1A: Resources - Financial.

Per Component Study Costs.

Component	Project Cost \$ (% of total)			
	Stoney Creek	SW #19	Mill Creek	Lovers/Hewitt Creek
Background Data Collection	\$ 13,500	\$ 39,000	\$ 28,400	\$ 15,500
Studies	\$ 15,000	\$ 17,000	\$ 59,900	\$ 37,550
• Hydrology/Hydraulics				
• Ecological Resources (Aquatic/Terrestrial)	\$ 30,500	\$ 17,500	\$ 54,100	\$ 40,050
• Hydrogeology	\$ 14,000	\$ 98,780	\$113,800	\$ 17,770
• Other	\$ 57,000	\$ 22,000	\$ 35,300	
Analysis	\$ 88,500	\$ 57,500	\$ 40,700	\$ 57,730
Public Consultation	\$ 26,100	\$ 15,000	\$ 34,300	\$ 13,900
Project Management*	\$ 65,500	\$ 24,000	\$ 53,500	\$ 68,100
Other	\$ 20,500	\$ 41,500		
Total	\$330,600	\$332,280	\$420,000	\$250,600

* Project Management Includes report preparation, project meetings, expenses, coordination

TABLE 1A: (continued) **Resources - Financial.**

Per Component Study Costs.

Component	Project Cost \$ (% of total)			
	Chippewa Creek	Nottawasaga Valley	Jock River	Average Component Cost
Data Collection	\$ 48,700	\$ 37,000	\$ 31,250	\$30,479 (11%)
Studies	\$ 3,600		\$ 30,000	\$23,293 (8%)
• Hydrology/Hydraulics				
• Ecological Resources (Aquatic/Terrestrial)	\$ 3,600	\$ 29,000	\$ 36,000	\$30,107 (11%)
• Hydrogeology	\$ 2,400		\$ 24,000	\$38,679 (14%)
• Other	\$ 2,400		\$ 24,000	\$20,100 (7%)
Analysis	\$ 19,200	\$ 2,000 equipment	\$ 33,000	\$42,661 (15%)
Public Consultation	\$ 6,000	\$ 5,500	\$ 23,750	\$17,793 (6%)
Project Management *	\$ 74,400	\$111,000	\$ 48,000	\$63,500 (23%)
Other				\$ 8,857 (3%)
Total	\$160,300	\$184,500	\$250,000	\$275,469 (100%)

* Project Management includes report preparation, project meetings, expenses, coordination

TABLE 1B: Resources - Financial.

Funding Sources.

Funding Source	Project Funding \$ (% of total)			
	Stoney Creek	Subwatershed #19	Mill Creek	Lovers/Hewitt Creek
Provincial				
• MNR (through CA)	\$165,300	\$190,000	\$210,000	\$125,300
• MOEE				
• OMAFRA				
• Other		\$ 50,000 (MMA)		
Local				
• Conservation Authority		\$ 10,000		
• Municipality	\$165,300	\$125,400	\$210,000	\$125,300
• Other				
Other				
Total	\$330,600	\$375,400	\$420,000	\$250,600

TABLE 1B: (continued) Resources - Financial.

Funding Sources.

Funding Source	Project Funding \$ (% of total)			
	Chippewa Creek	Nottawasaga Valley	Jock River	Average by Source
Provincial				
• MNR (through CA)	\$ 72,000	\$ 92,250	\$125,000	\$139,979 (50%)
• MOEE				
• OMAFRA				
• Other				\$ 7,143 (3%)
Local				
• Conservation Authority	\$ 30,000			\$ 5,714 (2%)
• Municipality	\$ 48,000	\$ 92,250	\$125,000	\$127,321 (45%)
• Other				
Other	\$ 10,300 Federal Sect. 25 Program			\$1,471 (1%)
Total	\$160,300	\$184,500	\$250,000	\$281,626 (100%)

TABLE 2A: Resources - Human

Committee Structure.

Committee	# of Committee Members			
	Stoney Creek	Subwatershed #19	Mill Creek	Lovers/Hewitt Creek
Steering Committee			6	16
Technical Committee	22	21	17	
Community Liaison/Public Advisory Committee			10 - 15	
Other		14 Technical sub-committee		

TABLE 2A: (continued) **Resources - Human.**

COMMITTEE STRUCTURE

Committee	# of Committee Members		
	Chippewa Creek	Nottawasaga Valley	Jock River
Steering Committee	18 Joint tech./steering	6	7
Technical Committee			18
Community Liaison/Public Advisory Committee	8	54	77 Open structure "Town Hall" style meetings
Other			

TABLE 2B: Resources - Human.

COMMUNITY INVOLVEMENT TECHNIQUES

List of Community Involvement Techniques and Success Ranking (1-5)			
Stoney Creek	Subwatershed #19	Mill Creek	Lovers/Hewitt Creek
Public meetings (3)	Newsletters to mailing list (2)	Newsletters (2)	Public meetings (Open houses) (3)
Workshops - vision, goals, objectives (4)	Display rotated through public buildings (3)	Public Meeting (3)	Mailings to interested parties (?)
CA public liaison (reports, input) (3)	Watershed partners workshop (2 so far) for all local politicians (5)	Community Liaison Team (4)	Public surveys at open house (3)
Travelling subwatershed display, with Vision '96 (2)	One public meeting and open house so far (3)	"Mill Creek Week" -Education Opportunity for Public School (4)	Mailings to local environmental clubs (4)
Newsletters (3)			

Examples of community involvement techniques include displays, newsletters, public meetings.

Ranking - 1= unsuccessful in achieving community involvement, 5= highly successful In achieving community Involvement.

TABLE 2B: (continued) **Resources - Human.**

COMMUNITY INVOLVEMENT TECHNIQUES

List of Community involvement Techniques and Success Ranking (1-5)		
Chippewa Creek	Nottawasaga Valley	Jock River
Add in local paper asking for volunteers for a public liaison committee (3)	Press releases and editorial coverage in local newspapers at key stages of plan development (3)	Newsletters (2)
Informal public open house (? - an upcoming event)	Displays at local fairs and events (3)	Meetings (4)
Display setup (4)	Conservation Authority tabloid (annual newsletter) (3)	Proposed Jock River Awareness Day
	Presentations <ul style="list-style-type: none"> • North Simcoe Environmental Watch Seminar • NVCAs Full Authority (4) 	Steering Committee Meetings Open to Public
	Watershed /Subwatershed Planning Workshop (4)	
	Planning Team (watershed stakeholders providing direction on plan preparations) (5)	

Examples of community involvement techniques include displays, newsletters, public meetings.

Ranking - 1= unsuccessful in achieving community involvement, 5= highly successful In achieving community involvement.

TABLE 2C: Resources - Human.

LEAD AGENCY

	Lead Agency Information			
	Stoney Creek	Subwatershed #19	Mill Creek	Lovers/Hewitt Creek
Lead Agency(ies)	Upper Thames River Conservation Authority	Credit Valley Conservation Authority	Grand River Conservation Authority	Lake Simcoe Region Conservation Authority
Description of Role of Lead Agency (eg. decision making, coordination, facilitation)	<ul style="list-style-type: none"> • General project management • Co-chair with City of London Vision'96 	<ul style="list-style-type: none"> • General Manager acts as neutral chair of the committee • Staff support/input provided in areas of planning, fisheries, water resources • Developed a conservation services program specific to the needs of the subwatershed • All formal approval (eg. consultant selection) • Ensuring study progression and partner Input 	<ul style="list-style-type: none"> • General project management • Coordination • Staff support in areas of flow monitoring, fisheries, and resource education • Coordination with municipalities and partners 	<ul style="list-style-type: none"> • selection of consultant • coordination of meetings • detailed review of work done to date • coordination with municipalities

TABLE 2C (Continued): Resources - Human.

LEAD AGENCY

	Lead Agency Information		
	Chippewa Creek	Nottawasaga Valley	Jock River
Lead Agency(ies)	North Bay Mattawa Conservation Authority /MNR City of North Bay	Nottawasaga Valley Conservation Authority	Rideau Valley Conservation Authority
Description of Role of Lead Agency (eg. decision making, coordination, facilitation)	<ul style="list-style-type: none"> • Coordination • Facilitation 	<ul style="list-style-type: none"> • Coordinate the preparation of the watershed plan • Establishing a stakeholder group to drive the process • To facilitate planning team meetings • Collect background and technical information • Preparing the document • Presenting the plan to municipalities and agencies • Coordinating the Implementation and monitoring of the plan 	<ul style="list-style-type: none"> • Coordination • Project Management • Funding • Promotion • Facilitation

TABLE 2D: Resources -Human.

TIME COMMITMENT

Participant	Person Weeks Committed to Study Participation							
	Stoney Creek		Subwatershed #19		Mill Creek		Lovers/Hewitt Creek	
Consultants (Identify disciplines- engineering, planning etc.)	All	93	Hydrogeology	8	All	138.7	Engineering	18
			Planning	6			Planning	4
			Hydrology	8			Hydrogeological	11
			Fisheries	5			GIS	6
			Terrestrial	9			Support	30
Staff • Conservation Authority • Municipality • Provincial • Other		11		20		12	CA	
		16		20		8	Municipal	10
		20		20		3.4	Provincial	5
	Township, developer	5						2
Other (identify type of participant-public, NGO, etc)	Public representatives	4	Hydrogeological Advisor	2	Public representatives	4.5		
	Local municipal advisory committee representatives	3	Geomorphological Advisor	1				
Total		152		99		167		98

TABLE 2D (continued): Resources - Human.

TIME COMMITMENT

Participant	Person Weeks Committed to Study Participation					
	Chippewa Creek		Nottawasaga Valley		Jock River	
Consultants (Identify disciplines- engineering, planning etc.)	All Consultants	56	Planner Engineer (Not a project cost)	54	Engineering Hydro-G Ecological Planning	12 8 6 8
Staff						
• Conservation Authority		112		128		60
• Municipality				11		1
• Provincial				6		2
• Other	Sct. 25	72		4		
Other (identify type of participant-public, NGO, etc)	Public liaison committee	20	NGOs Canadian Armed Forces Board of Education Residents	6 1 1 7	Public NGO's	12 3
Total		260		173		112

TABLE 3A: Resources - Information.

Data Collected.

Data Availability	List of Types of Data *			
	Stoney Creek	Subwatershed #19	Mill Creek	Lovers/Hewitt Creek
Existing Data	<ul style="list-style-type: none"> • 1:2,000 digital mapping • Previous hydrologic studies • Limited aquatic, terrestrial • Streamflow (4 years) 	<ul style="list-style-type: none"> • Fisheries • Land use • Terrestrial • Hydrogeological • Water quality (surface) 	<ul style="list-style-type: none"> • Hydrogeological • Wetland • ESA • Land use with transportation corridors • 1:10 000 OBM • Aquatic Resources • 1:2,000 flood plain mapping • Aquatic Resources • Stream water quality data 	<ul style="list-style-type: none"> • Hydrologic • Ops • Wetland mapping • ESAs • Fish habitat study • Erosion sites • Well records
Data Generated through Study	<ul style="list-style-type: none"> • Extended floodlines • Geomorphology • Aquatic, terrestrial Inventories/constraints/characterization • Water quality • GIS • Cultural • Public opinion • 1:10 000 base mapping 	<ul style="list-style-type: none"> • Additional fisheries • Additional terrestrial • Ground water/surface water connections • Hydrology • Baseflow • Water quality (tributaries) 	<ul style="list-style-type: none"> • Additional: floodlines and aggregate mapping, terrestrial, aquatic, water quality information • Base mapping-land use, constraint, green corridors • Recharge/discharge areas • Hydrogeology -data, model, surface water connection • New hydrologic model 	<ul style="list-style-type: none"> • Water quality data • New hydrologic model • Hydrogeological study • Re-evaluation of ESA • New erosion study • New agricultural data • Recharge/discharge study • Hydraulic modelling
Data Not Acquired (data gaps) **	<ul style="list-style-type: none"> • More detailed hydrogeological data 	<ul style="list-style-type: none"> • Hydrology (rainfall/runoff) 		<ul style="list-style-type: none"> • Hydraulic modelling • Fish spawning at creek mouth • use of model to determine ground water pollution potential

* Types of data include base mapping, flood risk areas, erosion sites, hydrology, wetlands, land use, etc.

** Types of data not acquired because it was not a priority, not an Issue, too expensive, etc.

TABLE 3A (continued) Resources - Information

DATA COLLECTED

Data Availability	List of Types of Data *		
	Chippewa Creek	Nottawasaga Valley	Jock River
Existing Data	<ul style="list-style-type: none"> • Water quality • erosion • Flood plain mapping • Hydrology • recreation • Wetland evaluation • Hydrology • fisheries • land use • land ownership 	<ul style="list-style-type: none"> • Flood risk areas • Erosion sites • Wetland / resource mapping • Physiography 	<ul style="list-style-type: none"> • Hydro-G • Hydrology • Ecological Resources • Wetlands • Base Maps • Land Use
Data Generated through Study	<ul style="list-style-type: none"> • Analysis of water quality data • Benthic study • Creek-habitat mapping and assessment • Fluvial geomorphology assessment • Updated Hydrologic model • Woodlot identification • Preliminary archaeological research 	<ul style="list-style-type: none"> • General water quality • Residents concerns (questionnaires) • Watershed map 	<ul style="list-style-type: none"> • Hydrology • Ecology-Fish • Recreational Use • Ecological Units • Base Mapping
Data Not Acquired (data gaps) **		<ul style="list-style-type: none"> • Groundwater quality and quantity (not available) • surface water quality and quantity (specific) • Hydrogeology (area too large) 	

* Types of data include base mapping, flood risk areas, erosion sites, hydrology, wetlands, land use, etc.

** Types of data not acquired because It was not a priority, not an Issue, too expensive, etc.

TABLE 3B: Resources - Information.

GIS USE

Questions	GIS Use			
	Stoney Creek	Subwatershed #19	Mill Creek	Lovers/Hewitt Creek
Was GIS used as part of your study? (yes/no)	yes	yes	yes	Yes
Comment on the use of GIS (eg. - purpose of use, cost effectiveness, ease of implementation, tool for analysis, data sharing capabilities, future use, software used).	<ul style="list-style-type: none"> • GIS in London was being initiated at same time • 1:10,000 OBM digital paid for by City • Other resources often incomplete or delayed in digital form (eg. Agricultural land use, soils) • Predominately used to general layers as opposed to use for analysis • Will be valuable for municipal OP preparation and CA for resource management purposes 	<ul style="list-style-type: none"> • Not able to answer this <u>yet</u> • Good for displays 	<ul style="list-style-type: none"> • Used PC-Arc Info with Arc View • Provided graphic database of natural resources which can be updated • Used for basic analysis, particularly In land cover (% of use) • Easily implemented by consultant • Data will be added to GRCA watershed Information base for resource management • New GIS will be available for municipalities • Long delays In getting OBM product • Should have deliverables clearly Identified in T. of R. 	<ul style="list-style-type: none"> • Purpose - to provide a graphic data base that can be updated in years to come

TABLE 3B (continued): Resources - Information.

GIS USE

Questions	GIS Use		
	Chippewa Creek	Nottawasaga Valley	Jock River
Was GIS used as part of your study? (yes/no)	Yes	Yes	Yes
Comment on the use of GIS (eg. - purpose of use, cost effectiveness, ease of implementation, tool for analysis, data sharing capabilities, future use, software used).	<ul style="list-style-type: none"> • Too early in study to comment on. 	<ul style="list-style-type: none"> • Autocad component was used • Creating mapping in-house • Mapping will be Included in municipal versions of watershed plan and available to consultants • Partnership between NVCA and county of Simcoe in terms of GIS (tapping into information) • In the process of establishing a GIS system, so some Information is being Incorporated Into system to be used at a later time. 	<ul style="list-style-type: none"> • Using GIS files from RMOC planning department • Computer mapping • Little actual analysis with GIS

TABLE 4A:

PROJECT TIME FRAME

	Project Time Frame			
	Stoney Creek	Subwatershed #19	Mill Creek	Lovers/Hewitt Creek
Project Initiation Date (m/yr)	06/93 (4 additional months for project setup)	Committee 06/93 Consultant 10/93	11/93	06/93
Original Anticipated Completion Date (m/yr)	12/94	06/95	05/95	06/95
Current Anticipated Completion Date (m/yr)	05/95	06/95	10/95	11/95
Comments - eg. explanation for/Implications of delays, how development applications were handled during study, which components were most time consuming, etc.	<ul style="list-style-type: none"> delays-development of municipal GIS coincident with studies obtaining/coordinating various digital map sources obtaining agency resource info (many delays may be attributed to overall size of project-12 subwatersheds in London area) Interim developments subject to government/ Industry review committee - approval or deferral to completion of subwatershed process - note that majority of subwatershed planning process addressed areas without current O.P. designations for future development Time consuming -Phase II- detailed studies 	<ul style="list-style-type: none"> not anticipating any significant delays one of the first tasks of the committee was to develop review procedures for Planning & Development applications within the subwatershed - these will apply until completion of subwatershed plan no task has been identified as being too time consuming level of effort reflects sensitivity of resources in this area 	<ul style="list-style-type: none"> delay due to construction, and calibration of groundwater, surface water and water quality models. major developments are in review process, not holdups yet. Final comments will not be given until study is finished. 	<ul style="list-style-type: none"> significant amount of agency comments - revisions - for phase II report submission by consultant additional monitoring required In spring 1995 to fill gaps in 1994 monitoring production of Phase I and II reports took longer than expected development applications still be processed - based on current MNR/MOEE water quality criteria and 1986 water quantity control recommendations for Lovers Creek

TABLE 4A (continued)

PROJECT TIME FRAME

	Project Time Frame		
	Chippewa Creek	Nottawasaga Valley	Jock River
Project Initiation Date (m/yr)	07/94	09/93	04/94
Original Anticipated Completion Date (m/yr)	08/95	12/94	12/95
Current Anticipated Completion Date (m/yr)	08/95	07/95	09/96
Comments - eg. explanation for/implications of delays, how development applications were handled during study, which components were most time consuming, etc.	The most time consuming component of the study was the gathering of Information on Chippewa Creek. The analysis of the massive amounts of Information was also very time consuming.	1993 funding was not received until September, causing an 8 month delay. Background collection most time consuming due to difficulty in obtaining relevant information from resource management agencies. We are still waiting for data re MOEE water quality summary report for the Nottawasaga system.	Much time spent in 1994 on informing participants on what's to be achieved through watershed planning, and on putting the community liaison group together and obtaining public feedback on proposed terms of reference. Steering committee approved terms of reference in November 1994. Considerable time also spent in researching sources of existing technical information; a literature review was conducted in the fall to help us better identify where technical resources should be spent, as much as possible relying on existing Information and knowledge, and minimizing expenditures on inventories and technical background Investigations.

TABLE 4B: Effectiveness

ADHERENCE TO GUIDANCE DOCUMENTS

Project	Comments Pertaining to the Use of the Guidance Documents
Stoney Creek	Guidance documents were followed, For the London subwatershed studies the process was more encompassing - Included several sub-watersheds. Effort was required to maintain a water focus and not stray too much to a land based focus.
Mill Creek	Guidance documents were followed. It is a precise fit.
Chippewa Creek	Guidance documents were followed and were useful and helpful.
Jock River	Guidance documents were followed closely.
Nottawasaga Valley	Guidance documents were followed. They provided a good template and were helpful.
Subwatershed #19	Guidance documents were followed and tailored to specific needs of this study (e.g., partners involved). The Terms of Reference for the study were based on these documents.

TABLE 4C: Effectiveness.

PRODUCTS OF WATERSHED PLANNING

Project	Products of Watershed Planning Projects (Information from interview responses)
Mill Creek	The products were a background report (indicating how the watershed functions), a final report (included mapping at 1:10,000 of wetland, greenspace features, updated floodlines, and vegetative buffer requirements), technical report, general public report, 2 newsletters and various newspaper articles. Included were statements on human Impact on existing environmental conditions.
Stoney Creek	Information on current health of the systems. Additional information In the form of overlays for the Official Plan. Alternatives for the future of the watershed. Plans for how the alternatives could be accomplished. Essential information from results. Recommendations. Technical study reports (mid-study results have been difficult to disseminate).
Jock River	Anticipated products include environmental policies for incorporation into municipal planning process, literature review, interim report on watershed functions and status, identification of required projects, newsletters.
Chippewa Creek	Opportunities/constraints/needs for the watershed, draft goals and objectives
Nottawasaga Valley	A draft plan with recommendations as to how to address watershed problems.
Subwatershed #19	Reports for study phases, summaries of work prepared by consultant for the Technical Committee, presentations by consultant, newsletters, information displays (e.g., for municipalities).

TABLE 4D: Effectiveness

IMPLEMENTATION

Project	Implementation of Watershed Planning Projects (Comments from interview responses)
Stoney Creek	Development of implementation strategies were not given enough time during study. It was expected that Implementation will occur through various mean by various agencies (including Vision '96). The study group will be able to use the results of the study to develop implementation recommendations. The project must be accepted politically, used in the planning process, used as a working document by approval agencies, and by other groups. Financial resources are key factor for successful implementation.
Mill Creek	Implementation will occur politically through the municipal planning process (policies in OP for Guelph, Cambridge and Puslinch Township), through community stewardship initiatives such as schools, incorporated into Cambridge's City Green Strategy, special Interest groups (e.g., creek rehabilitation), through projects undertaken by the public approval agencies, through conditions for aggregate pit licenses, regulations (updated CA fill lines). An implementation committee will be established.
Chippewa Creek	An approach for Implementation will be developed by a citizens advisory committee.
Jock River	Implementation will occur through restriction on development in OP (currently under review) and rest of the municipal planning process (e.g., severences, subdivision plans).Support from local councils is Important to ensure implementation. Support comes with understanding of the watershed planning process. Watershed plan will go further and establish goals for stream restoration, environmental farm plan completion, recreational trails to be Implemented through other agencies. Implementation will occur through various means. Everyone must cooperate in implementation. Farmers shouldn't have the sole burden for changing their ways.

TABLE 4D (continued): Effectiveness

IMPLEMENTATION

Project	Implementation of Watershed Planning Projects (Comments from interview responses)
Nottawasaga Valley	<p>Will be implemented through OP. Implementation will take place through various methods and by various agencies, groups and private interests. Emphasis is on community stewardship programs and cooperation among agencies. A strong educational component is involved (e.g., the Simcoe County Board of Education will use the plan in their educational programs at the Tiffin Outdoor Education Centre). The plan will be implemented by the public through stewardship initiatives. An Implementation table was developed to document actions to be taken and agencies to lead, be directly involved and have an advisory role with implementation. For example, education initiatives, policy development requirements for CAs and municipalities, environmental projects (e.g., fisheries rehabilitation, Inventories), further study requirements (e.g., subwatershed plans) have been identified.</p>
Subwatershed #19	<p>Implementation will occur through planning documents (OP, OPA, zoning bylaws), the development plan approval process, public education (partnerships with schools), stewardship and various other methods. Community stewardship and private sector implementation is important. CVCA programs and projects will implement study (e.g., natural heritage study).</p>

TABLE 4E: Effectiveness

EFFECTS/BENEFITS

Projects	Effects/Benefits of Watershed Planning (Comments from interview responses)
Stoney Creek	<p>Expected effects of the project on the watershed included the maintenance of ecosystem with gradual long term Improvements. Achieving ecosystem stability was a goal. Water quality changes and the ability to effect changes will be the limiting factor. Water resource protection is expected (quantity and quality). The identification of sensitive or non-developable areas prior to development Is a benefit. The plan provides for better management of land resources and secondarily of water resources and provides a planning tool that will help prevent problems in the future. Positive effects to social Issues were expected. Participant have a sense of accomplishment in knowing they contributed positively to the achievement of the plan goals. Increased opportunities for passive recreational opportunities (e.g. - fishing, nature studies) were expected. Watershed planning promotes alternative life styles and provides more awareness of natural resource issues. Improvements to ecosystem health will be dependent on what the City will subscribe to and support. More public incentive to maintain remedial action projects Initiated as a result of the plan will result.</p>
Mill Creek	<p>Expected effects of the project include improvements to water quality conditions, protection of a reasonable cold water fishery, Increased riparian cover, pond rehabilitation, reduced water temperatures, reduced sediment loading to the system. Improved overall system resiliency. Social effects expected Include a healthy ecosystem, healthy community and healthy economy. Psychological wellness and comfort among the community may result knowing that there is a better understanding of the subwatershed, how it works and how to sustain it through tangible actions. Economic effects may Include the ability for developers to market a healthy sustainable development. Home buyers may pay more for this amenity. Innovative development designs (BMPs) may yield financial returns to the developer/builder. Development will be able to proceed In an orderly fashion without compromising the environmental future of the watershed.</p>

TABLE 4E (continued): Effectiveness

EFFECTS BENEFITS

Project	Effects/Benefits of Watershed Planning (Information from Interview Responses)
Lovers/Hewitt Creeks	Maintenance of existing conditions was expected. A local resident thought the conditions were beyond repair.
Chippewa Creek	Economic effects of the study are related to proper and timely information to guide development in a sound environmental manner. Social benefits include enhanced profile of greenway systems and linkages and support for linking of existing trails and valleyland networks.
Jock River	The Jock River Is a major hydrologic connection between the Rideau River and major woodlands In the headwaters. Improved "functioning" of the Jock river is expected as well as expected resultant improvements to the ecosystem health of the Rideau watershed. Improved water quality is expected. Socio-economic benefits expected Included improved quality of life, changes in the way people value wildlife (improvement), healthy water, more recreation, more wildlife, and streamlining of the development approval process.
Subwatershed #19	Expected Improvements to ecosystem health are not quantifiable. It is expected to sustain the current ecosystem (e.g., surface/groundwater, maintain cold water fisheries, healthy wetlands).No further degradation is expected (e.g., to watercourses and to social, economic and other environmental factors). Any Improvements to what's there now would be a bonus. Growth will continue in Orangeville. Benefits of subwatershed planning Include: Social - it provides for changes in philosophies on residents (e.g., perception of infiltration ponds as beneficial versus a hazard and a drainage problem In neighbourhoods), it allows the public's desire for more recreational opportunities to be addressed, it enables municipalities to have better control on development and for water supply to be Improved (e.g., in Orangeville); economically - it helps in avoiding potential environmental problems and the cost of remediation; it provides for long term savings as servicing will be directed; politically it Is impressive to be involved with a new approach to planning.

TABLE 4E (continued): Effectiveness.

EFFECTS/BENEFITS

Project	Effects/Benefits of Watershed Planning (Information from Interview responses)
Nottawasaga Valley	<p>Effects of this project are that local residents have a greater appreciation that everyone is part of the problem and that everyone is responsible for the solution. Partnerships are created or strengthened (e.g., trust between farm group and government is improved). While it is early to gauge, the plan should result in protection and wiser use of natural resources - water quality and fisheries. Specific improvements expected include better water quality (e.g., at Wasaga Beach and other recreational areas), improved farming practices and improved base flows. Economic impacts include expected streamlining of development approvals as developers are provided with a clear direction on what level of development is acceptable, savings from not having to do expensive erosion and flood control works (e.g. using more natural channel and bioengineering solutions). Social Improvements expected include a better living environment, improved tourism and better understanding by residents of the value of natural resources and their sensitivity to adverse impacts.</p>

TABLE 4F: Effectiveness

MONITORING

Project	Monitoring of Watershed Planning Projects (Information from interview responses)
Stoney Creek	Monitoring effort will mirror existing monitoring programs (e.g. - London wetland monitoring). Agencies expected to be Involved with monitoring Included approval agencies, EEPAC, the public and community Involvement (by ensuring that adopted practices (planning/by-laws) are Implemented).
Mill Creek	Study Identified subwatershed targets to be monitored. Monitoring was not fully addressed. The community liaison team will likely be involved in monitoring. The GRCA has been identified to monitor stream flow, water temperature, stream rehabilitation progress, benthic health (5-year Intervals), groundwater (with Puslinch and other local municipalities).
Lovers/Hewitt Creeks	A concern raised dealing with implementation was that the study would not be effective if the municipality did not Implement it properly.
Chippewa Creek	Monitoring was not a study component.

TABLE 4F (continued): Effectiveness

MONITORING

Project	Monitoring of Watershed Planning Projects (Information from Interview responses)
Jock River	The watershed is an appropriate basis for environmental monitoring and reporting (e.g., surface water quality will be monitored according to objectives for water quality set up throughout watershed). Plans for monitoring have not yet been made but will likely include monitoring through State of the Environment Reports and environmental monitoring on a watershed unit. Water quality will likely continue to be monitored by RVCA. Monitoring will be coordinated by a committee with CA and municipal representation. Monitoring efforts in the watershed will improve - it will be done on a watershed basis with identified and established agreement and protocol.
Nottawasaga Valley	The plan is a working, changing document. It will be reviewed regularly to check if its objectives are being met. NVCA will evaluate the plan with its partners and update as required. The environmental report card will be used to evaluate the objectives.
Subwatershed #19	Monitoring would be dealt with in a later study phase. It was felt that a partnership arrangement will probably be used and that the roles of the various agencies need to be defined. All government agencies will be involved. The residents will be involved in monitoring by reporting when things are not working, such as when spills occur and beaches are contaminated. The study would likely identify site specific monitoring requirements which should be done with development.