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Local governmental and non-governmental responses in natural resource conservation and planning in northwestern Michigan

Watson, Leon Archie, Ph.D.

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300 N. Zeeb Rd.
Ann Arbor, MI 48106

LOCAL GOVERNMENTAL AND NON-GOVERNMENTAL RESPONSES IN NATURAL RESOURCE CONSERVATION AND PLANNING IN NORTHWESTERN MICHIGAN

By

Leon Archie Watson

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ABSTRACT

LOCAL GOVERNMENTAL AND NON-GOVERNMENTAL RESPONSES
IN NATURAL RESOURCE CONSERVATION AND PLANNING
IN NORTHWESTERN MICHIGAN

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The question of local land and water resource protection and management is the central focus of this dissertation. Investigation centered on documenting locally based public and private activities which sought to identify local concerns, for resource protection, conservation, planning, and management. The emergence of non-governmental, natural and cultural resource focused organizations was a key phenomena.

This dissertation uses a documentary and community field research approach for the analysis of the processes of community involvement in preservation, protection, and management of local natural and cultural resources. The scope of the study documents changes in the community from problem analysis stages, through institutionalization of the emergent organizations. Most of the data is primary, derived from questionnaire responses, work with agencies, observations, and follow-up over a three year period.

The study finds that the region had been lacking in

action to protect or manage its resources in a comprehensive local, or regional approach. This need was recognized by the residents and officials who undertook extensive efforts to correct the situation. Governmental efforts demonstrated proactive, committed involvement to understand local concerns and problems. By instituting locally derived and identified initiatives, the officials have conceived a solid approach to acquire comprehension and develop meaningful plans and solutions for management and protection of the resources.

The public and private efforts for resource protection evolved separately but simultaneously. Whereas in 1988 the region had no local watershed councils or land trusts, by 1991 a total institutionalization of non-governmental organizations had emerged for managing, and protecting the local land and water resources. Officials have benefitted from updated information, and new private institutions have emerged, but coordinated actions are necessary.

Now that the appropriate institutions exist in the region and the concerns are articulated, the community appears capable of effective planning and management of its natural resources. It is essential that everyone continue their involvement after such a comprehensive and propitious beginning.

ACKNOWLEDGEMENTS

The author would like to acknowledge the unremitting assistance and encouragement of his advisor, and committee chairmen, Dr. Milton H. Steinmueller, and Dr. Paul Nickel, Department of Resource Development, Michigan State University. I would also like to acknowledge the assistance of the Northwestern Michigan Council of Governments, especially Ms. Patti Fisher; and the numerous local officials and concerned citizens in Antrim County, and the Elk River/Chain of Lakes Watershed, especially Mr. Pete Garwood and Ms. Connie Sutherland.

This document focuses on the continuing effort of many people to manage, preserve and protect the area of Northwestern Michigan they call home. Antrim County and the region would not have its existing natural legacy without the efforts and love of its people. Their concerned stewardship is a gift to fellow citizens and the earth as they struggle to maintain their own corner of the world as God created it. I salute some local heros, especially Allan Pecar, Burt Stanley, William Weiss Jr., Warren Studley, Barbara and Matthew Houghton, and the members of the Elk River/Chain of Lakes Watershed and Project Antrim Citizens Advisory Committees.

Finally, as in any prodigious effort, there are those who have supported, cajoled and consoled me . . . my mother and father, my sisters and Aunt Irene and Uncle Elmer. In addition I must recognize three great men without whose example, direction, and care, I never would have completed this document or my PhD program: Dr. Milton Steinmueller, Prof. Louis Twardzik, Dr. Joseph Straubhaar. I survived and persevered because of you, I cannot thank you enough. May God bless and keep you.

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CHAPTER ONE

INTRODUCTION

During the last thirty years there has been an intensification of concerns for the management and preservation of natural resources. At the same time an increasingly mobile and affluent population is putting more pressure on these resources as they wish to exercise more choices about where to live, work, and recreate. Areas considered to be especially desirable include those whose natural beauty is intact and uncompromised, and which represent the combination of amenities and opportunities that would seemingly allow for greater use. Human occupation or an increase in the rates of use of natural resources can result in conflict, and if the resource base is to be maintained in the face of potential degradation or destruction, certain measures must be undertaken. In the case of old growth forests in the Pacific Northwest, the controversy centers on species diversity, juxtaposed with economic development and the harvest of old growth timber, valuable both to humans in their endeavors, and to the owls that dwell in the forests. In Michigan, issues such as wetland protection and local government attempts to control

growth in urbanizing areas point to the emergence of policy and actions to attain the necessary balance.

This dissertation is focused on one facet of this overall concern. Specifically, what is presented here represents an examination of how people in a determined area used certain approaches to secure a more desirable pattern of resource management seeking to achieve the kind of balance that would accommodate growth and development on one hand, and the preservation and protection of the resource quality and environment on the other.

The Study Area Problem Focus

The area of study is located in the Northwestern portion of Michigan's Lower Peninsula. Commonly called Northwestern Michigan it is also known as the Grand Traverse Region. The area borders on Lake Michigan, and as a planning region covers ten counties. For the purposes of this study, the focus is on the Elk River/Chain of Lakes Watershed (ERCOL) and specifically on Antrim County located on the east side of Grand Traverse Bay at the edge of the rapidly urbanizing Traverse City metropolitan area.

All indications are that growth and change in an unprecedented form and intensity is occurring in Northwest Michigan. While most of the population growth statistics focus on the Traverse City area, the Grand Traverse region, the Antrim County, Chain of Lakes region is also changing rapidly. Antrim County statistics as reported by the

Northwest Michigan Council of Governments, show a 9.9 percent 1980-1989 change for the county as a whole, while within the county rates vary from a high of 23.8 percent growth rate in Milton Township, to losses of 6.5 percent in Jordan Township. The source of this change is a steadily increasing residential population especially as a destination for retirement, plus an increasing demand for recreational homes, vacation property, and resort experiences. Although specific numbers are unknown, millions of tourists visit the region with demands for services.

Typical changes in the land use of Antrim County comes with increased residential, and resort-second home developments for vacation or seasonal use, especially along the lakeshores. Recreation use of the lakes and conflicts between users are increasing, along with more intense use of the lakes and density of development. Agriculture and forestry as well as open space areas with general uses for recreation, hunting, and areas for wildlife, etc. are rapidly changing to new land uses in an extensive pattern as a form of suburbanizing (1990 interviews with Antrim County planning officials).

More people living in and visiting the area means an increasing demand for land and intensification of uses of land and water resources for recreation, housing, transportation, and related public and private community

services. The problem is how local people, government, and communities seek to preserve and protect their high quality natural resources when faced with rapid change and pressures brought on by increasing population and land use changes.

Several options exist: first is to ignore the problems and deal with the effects (negation). Second is to respond by seeking outside help to manage the problem for the local community (abdication). Third is to develop local capacity and expertise (action). The hypothesis posed in this study is that local people in a community in Michigan, if they choose option three, can have a great deal of control over their destiny in terms of resource use and management.

It is difficult to specify a specific theory beyond the inductive process of observation, finding a pattern, and arriving at conclusions. However, the following list of elements expresses how the activity was organized: specification of the topic, range of phenomena and community definition, identification and specification of major concepts and variables, development of propositions from and among information collected, and then logical reasoning applied to specific topics under examination (Babbie, 1977).

The task is arduous and not without cost in time and effort spent to achieve these goals. It contains several stages; first is recognizing and defining the problem. Following that is seeking assistance for clarification, and organizing to develop solutions to upgrade existing

processes, or to develop the new institutions and mechanisms to effect the changes. The final stage is the need to put the changes into practice, by implementing the necessary ordinances, or public and private management plans and programs.

The decision makers in a community in the democratic system are the elected and hired officials who constitute the government. However, every resident, especially property owners, make decisions daily which effect their community and the natural resources of the area. Their management objectives may be different. Accordingly, what the individual is trying to attain, and what they are trying to retain could be very difficult to ascertain. In the case of Antrim County the desires of the officials and the residents are to maximize their quality of life by promoting or sustaining their economic growth, while retaining the high quality of the natural resource base.

As part of a 1989 survey of Township Officials, when asked what was most valuable or what first came to mind in relationship to Antrim County their responses were overwhelmingly the water, lakes, and natural resources of the County (NWMCOG, 1989). Water related issues therefore were indicated as key to the management of the region.

In a 1991 citizen opinion survey (Lichty and Watson, 1992) a random sample of Antrim County residents responded to questions in the areas of community services, the local

economy, the environment and land use, and other community issues. They also reiterated their identification with the natural features and beauty of the area as the emotive identifiers for the region.

Data Collection

Data for this study was collected during and after the author's tenure as a regional planner in N.W. Michigan. Additional research occurred with the agencies, groups, and individuals involved in, or interested in resource protection or planning in the area. Field work and questionnaires were undertaken during 1988-89, during the summer of 1990, and throughout 1991 to describe and capture changes occurring in the region, to allow time for evaluation of some of the key projects, and to document the institutionalization of conservation and preservation efforts by local governments and organizations.

To approach this problem from both a practical and a theoretical perspective, library and organizational research occurred concurrently, primarily at Michigan State University and Au Sable Institute. Local governments, lake associations and other non-profit groups, plus academic institutions provided the majority of the useful land and water management data, along with the Michigan Department of Natural Resources (DNR).

Data on the status of the land use and surface waters came from contacting individuals at the local, regional,

state, and federal levels. Data sources on erosion and sedimentation and other pollution problems, came from the Soil Conservation Service (SCS), Act 307 environmental contamination sites listings, water quality reports from lake associations, water quality data from the DNR, and the Institute for Water Quality Research data.

Organization of the Dissertation

The dissertation is divided into six chapters. Chapter One provides the overview identifying the problem, stating the purpose and objectives of the dissertation. Chapter Two presents the study area, its geography, and a review of the status of key elements, including a review of existing land and water issues with special attention on water quality problems.

Chapter Three contains a discussion of the Elk River/Chain of Lakes (ERCOL) Watershed Project of 1988-89 and Project Antrim Citizens Opinion Survey as examples of intervention studies and strategies aimed at improving the capacity of local government officials and residents to manage and protect their land and water resources. The ERCOL project data, includes a description of the identification of local problems and solutions. Other government-based programs and projects in Antrim County are described along with observations on the process. Chapter Four presents the institutional setting focusing on the public dimension. Definitions and selected laws and

programs relating to watershed management, land and water conservation, and natural heritage conservation are discussed,

Chapter Five contains an analysis of the efforts in the private dimension, or the involvement of the non-governmental organizations (NGO) in the region, from the perspective of the local level. National level groups, local efforts and the creation of the regional land trust are presented along with commentary and observations on the NGO role and processes.

Chapter Six presents prospects for the future, limitations to the study, summary, conclusions and recommendations, with references following.

CHAPTER TWO

THE STUDY AREA: REVIEW AND RESOURCE STATUS

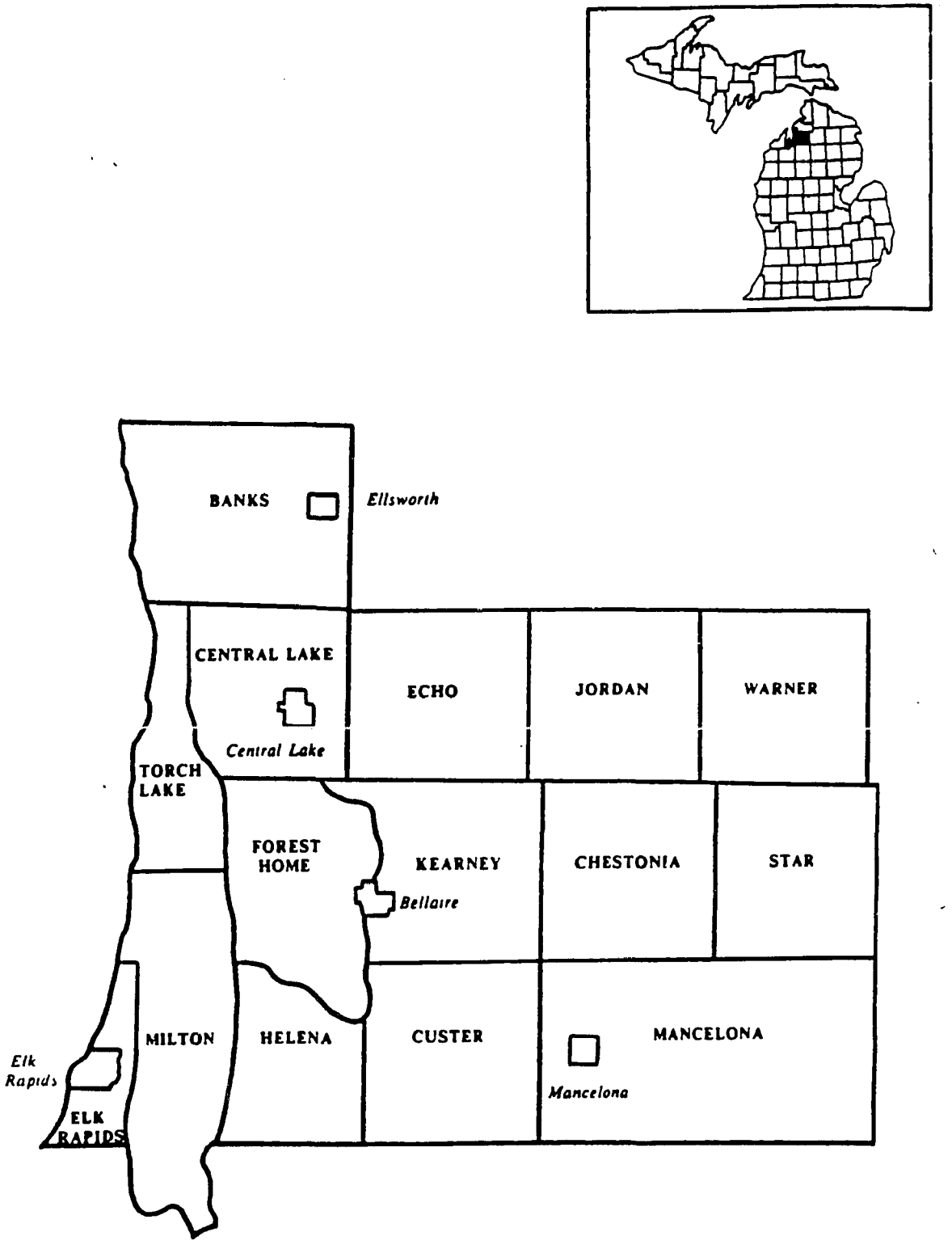
This chapter describes the study area, its geography, problems, and status reports on key elements, with a special focus on existing land and water management issues in the area.

Study Area Description

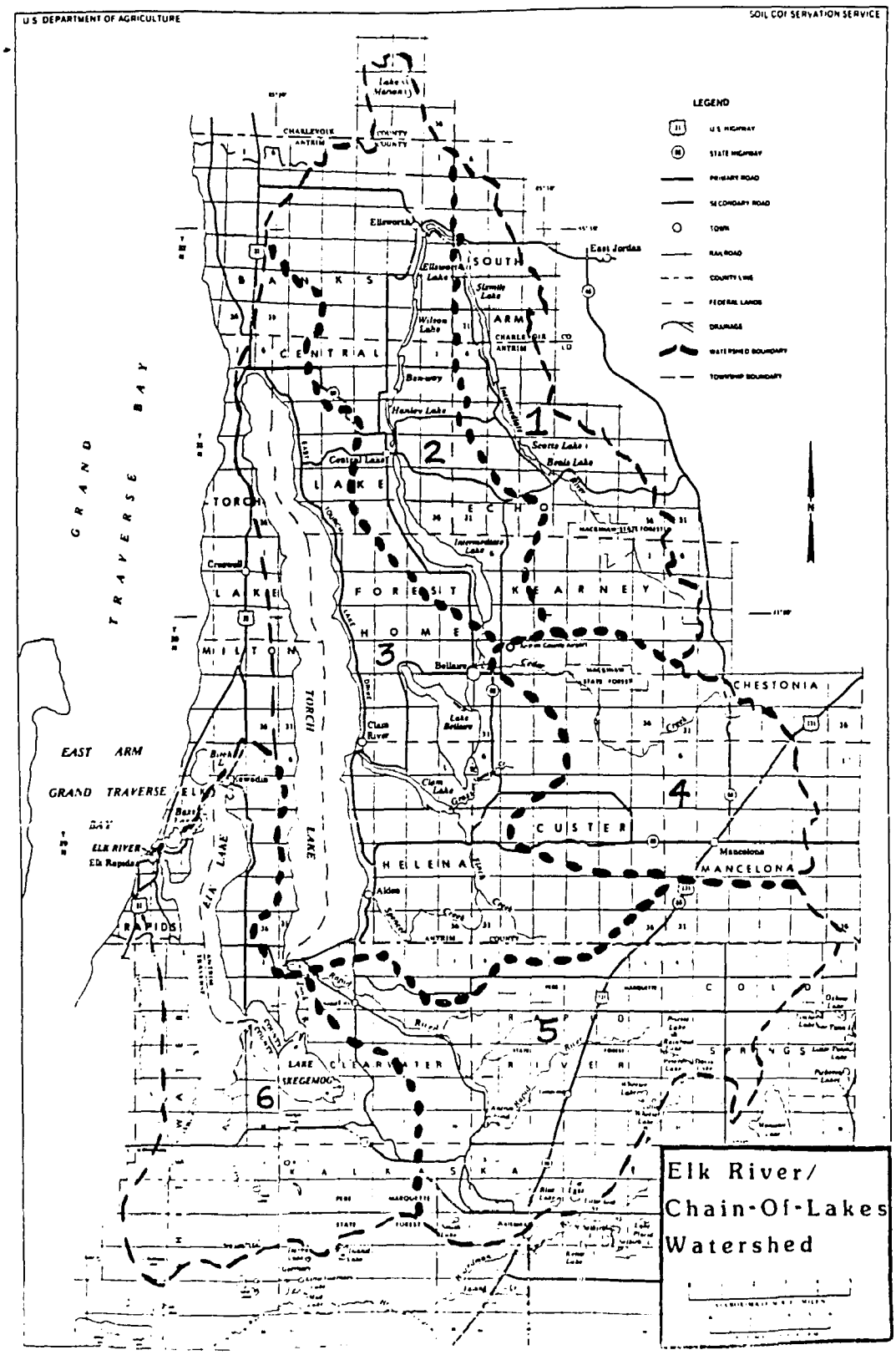
Antrim County, with its fifteen townships and five incorporated villages, is bordered by Otsego and Charlevoix counties on the north and east and by Kalkaska and Grand Traverse counties on the south. The western boundary is Grand Traverse Bay of Lake Michigan. The total land area of 305,280 acres (477 square miles) includes approximately 28,450 acres of inland water (see Map 2.1). Although the watershed as a natural region and the county as a political unit are not entirely coincidental, there is about an eighty-five percent overlap.

Principle towns and villages in the watershed are: Elk Rapids, Bellaire, Central Lake and Ellsworth. The Traverse City metropolitan area is extending into the basin from the southwest. The economy is rural and suburban with a local and county service sector.

Map 2.1 Location of Antrim County, Michigan



Map 2.2 The Elk River/Chain of Lakes Watershed



Description of the Elk River/Chain of Lakes Watershed

The Elk River/Chain of Lakes Watershed is a major Northern Michigan lake and stream system including a diverse mixture of large lakes and interconnecting rivers and streams encompassing over five hundred square miles of land and water (see Map 2.2). Located primarily in Antrim County, the rivers and lakes are high quality, primarily oligotrophic lakes with abundant fish and wildlife. Significant water resources include the Chain of Lakes system, with such large lakes as Lake Bellaire, Torch Lake, Elk Lake, Skegemog Lake and more than 200 tributary streams and connecting rivers.

Also represented within the watershed are the abundant springs, seeps, flowing wells, and groundwater resources. Approximately 23 percent of the basin drainage area is covered by water. There are 30,800 acres of wetland soils associated with more than 200 streams that flow directly into the Chain of Lakes. At least 138 miles of recognized trout streams are within the study area, including 55 miles of Class I trout streams as designated by the Fisheries Division of the DNR.

The watershed includes fourteen primarily oligotrophic (high water quality low in nutrient) lakes and mesotrophic (high quality with more nutrients) lakes in its chain. Included within the watershed are many closed basin or headwater lakes. The lower Chain of Lakes has large deep

lakes with few nutrients and excellent overall water quality as rated by the DNR.

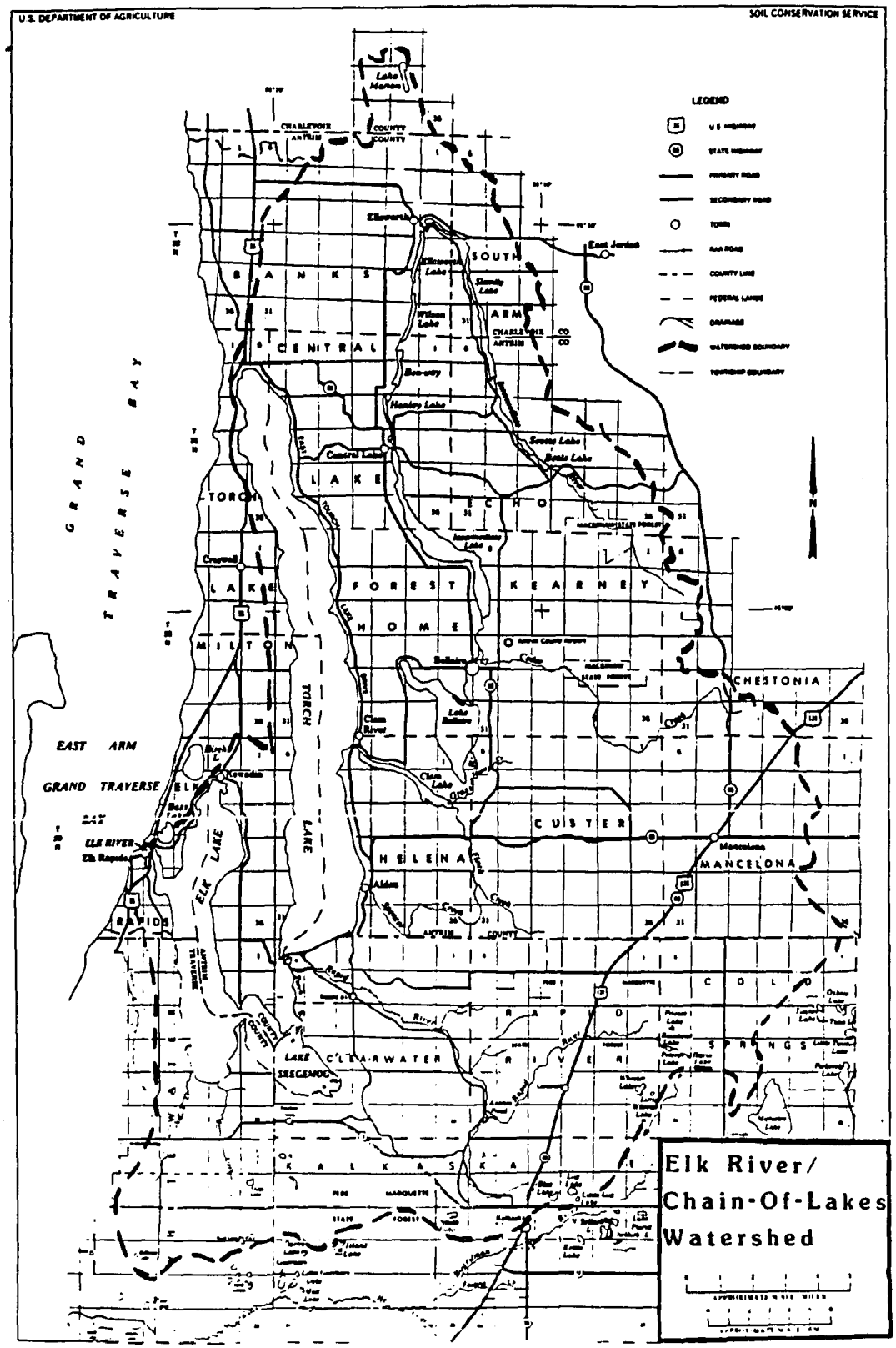
The names of the lakes in the Chain of Lakes from their origin in Echo Township out to Elk Rapids are: Beals Lake, Scotts Lake, Six Mile Lake, St. Clair Lake, Ellsworth Lake, Wilson Lake, Ben-Way Lake, Hanley Lake, Intermediate Lake, Lake Bellaire, Clam Lake, Torch Lake, Lake Skegemog, and Elk Lake. These lakes include more than 65 miles of waterways and 163 miles of shoreline.

Sub-watersheds

Antrim County contains a portion of the Jordan River watershed and a few streams feed directly into Lake Michigan, but the majority of the county is comprised of the Elk River/Chain of Lakes watershed. This basin can be divided into six major sub-watersheds. Portions are lake basins while other are rivers or streams which feed into the Chain of Lakes. The lake basins include small feeder creeks or springs which flow directly into the large lakes. Additionally, groundwater flow and subsurface spring activity occurs throughout the watershed. The sub-watersheds are divided as below: (See Map 2.3)

1. The headwaters of the Upper Chain of Lakes, including the Intermediate River through Beals, Scotts, and Six Mile Lake. This area is in Kearney, Echo, and South Arm (Charlevoix County) Townships.

Map 2.3 Sub-watersheds of The Elk River/Chain of Lakes Watershed



2. The Upper Chain of Lakes in Banks, Central Lake, Forest Home and Kearney Townships. This portion includes tributary streams which begin in Charlevoix County plus St. Clair, Ellsworth, Wilson, Benway, Hanley, and Intermediate Lakes, and the connecting waterways.
3. Bellaire, Clam, and Torch Lake form the Central part of the watershed. Eight townships border on these three lakes and connecting waters. They are Central Lake, Forest Home, Kearney, Custer, Helena, Clearwater, Milton, and Torch Lake Townships.
4. The Cedar River also flows into the Intermediate River in Kearney Township. Its headwaters are in Custer, Chestonia, and Mancelona Townships.
5. The Rapid River feeds into the Torch River and drains four townships in Kalkaska County: Cold Springs, Rapid River, Kalkaska, and Clearwater.
6. Skegemog (Round) Lake, Elk Lake, and the Elk River are the southern-most portion of the watershed in Milton, Elk Rapids, Clearwater (Kalkaska County), and Whitewater (Grand Traverse County) Townships. Numerous small creeks feed directly into these lakes.

Physical Geography

The topography of northwestern Michigan was shaped by glaciers. As recently as 10,000 years ago, the state of Michigan was covered by one thousand meters of ice. As these glaciers moved southward, they abraded the bedrock and soils and gathered sediments. When melting occurred, deep troughs and mountain-like piles of rocks and sediments remained. Geographically the county can be divided into three distinct physiographic regions (Eschman, Farrand, Evenson, 1973). An upland area of ridges and hills called moraines and large outwash plains occupies the eastern portion of the county. Two central valleys, the Jordan River and the Chain of Lakes basins including Torch Lake, trend generally north and south throughout the central and western portion of the county. The land between western shore of Torch Lake and Grand Traverse Bay is a flat area of beach ridges almost a separate peninsula. Torch Lake itself is a lost arm of Grand Traverse Bay (Segall, Sorenson, 1973).

As the glaciers melted, the Great Lakes water levels rose and spread into the Torch and Elk Lake Basins. Meltwaters trapped between moraines sometimes became lakes, as in the case of Bellaire and Clam Lakes. Meltwaters created large rivers, forerunners of the valleys and rivers of today. Large, level, sandy "outwash plains" were also

created by wide expanses of meltwaters. A classic example of this is located north of Mancelona.

As temperatures warmed and the land rebounded back from the weight of the ice, the lake levels went down. Within this watershed, a sandbar and dunes formed between Torch Lake and Lake Michigan at Eastport. Former Algonquin period Lake Michigan shores and beach ridges exist as berms and beach-like terraces, especially along the east side of Torch Lake. The even earlier shores of glacial Lake Nipissing are 7.5 meters higher in elevation and located farther to the east (Witzerman, 1978).

Unique features of interest include numerous springs and the Antrim dells, an excellent example of a drumlin swarm (tear-shaped ridges with steep north facing slopes). Examples of other glacial features such as kames and kettles, eskers and parallel moraines abound throughout the county.

Soils and Water Quality Description

According to the USDA Soil Survey of Antrim County, soils in Antrim County are generally well drained and moderately well drained. Loamy and sandy soils of the Emmet-Montcalm description cover about 30 percent of the county. These are the best agricultural soils. Soils of the Kalkaska-Montcalm series, sandy level to very steep soils cover an additional 30 percent. Very poorly drained Tawas-Ensley muck, covers 11 percent, and Deer Park-

Roscommon sand dune, swale soils cover another 5 percent of the county. The remaining percentage is other sandy type soils. These soils along with climate, limit agricultural potential, but may be indicated for woodlands.

The water of the lakes is classified as hardwater because the soils contain excess calcium and magnesium which leach into the inflowing water. These natural chemical components are good at bonding with excess nutrients, delivering them into the sediments. In general, the lakes are extremely clear and clean as a result, with little nutrients available for aquatic plants and algae (Gervin and Weiss, 1986). This same chemical process buffers the lakes from the harmful effects of acid rain. The soils and water chemistry of the region therefore have a positive role, naturally aiding the maintenance of water quality.

Climate

Temperatures in the region vary from a January average of 22.6 degrees F. to a summer average of 65.7 degrees F. Average precipitation in the form of rain and snow is 31.43 inches, approximately 60 percent of which falls during the growing season. The average growing season length is between 100 and 168 days with variation at specific sites. Temperatures and freeze dates are moderated by the proximity to Lake Michigan with Antrim County generally recognized as the north end of Michigan's fruit belt.

Population, Housing and Economy

According to 1990 U.S. census data on population and housing characteristics, the Antrim County population is 18,185, with 26 percent of the population under 18 years old. This is a 12.29 percent increase over 1980. Racial breakdown is 98.9 percent white. Sixty-three percent of the total households were headed by married couples, with the average housing unit valued at $53,000. Of particular interest are the large number of part-time recreational housing units. Of a total of 13,145 units, 6,980 (53 percent) were owner occupied and 4,695 (36 percent) were seasonal. Ramifications of these figures could indicate an inherent, pre-built and latent potential for sudden population growth. Retirees make up a substantial proportion (approximately 40 percent) of the population.

The full-time resident population of Antrim County is predicted to grow from 16,194 in 1980 to 21,700 in the year 2000. This figure does not take into account the expected large growth in the resort and second-home population. The 1988 population figures by township and county are found in Table 2.1.

Average annual wage and salary income in 1986 was $14,416 and per capita income 1987 of $8,783, well below the Michigan average of $11,973 (preliminary US Census data, 1990). Average part-time resident incomes were estimated to be between $49,000 and $69,000. (Lichty and Watson, 1992)

Table 2.1 NWMCOG Estimated Population, Antrim County By Townships

County	1970[a]	1980[a]	1970-1980 Percent Change	1989[b]	1980-1989 Percent Change
Antrim County	12,612	16,194	28.4%	17,800	9.9%
Projection to 1995[c]	20,200				
Percent change 1989-1995	13.5%				

Township	1970[a]	1980[a]	1970-1980 Percent Change	1989[b]	1980-1989 Percent Change
Banks	1,231	1,515	23.1%	1,462	-3.5%
--Ellsworth	362	436	20.4%		
Central Lake	1,482	1,766	19.2%	1,886	6.3%
--Central Lake	741	895	20.8%		
Chestonia	368	433	17.7%	413	-4.5%
Custer	381	490	28.6%	514	5.0%
Echo	542	723	33.4%	706	-2.4%
Elk Rapids	1,631	2,086	27.9%	2,279	9.3%
--Elk Rapids	1,249	1,504	20.4%		
Forest Home	1,080	1,333	23.4%	1,462	9.7%
--Bellaire (part)	392	499	27.3%		
Helena	515	781	51.7%	908	16.2%
Jordan	303	410	35.3%	383	-6.5%
Kearney	997	1,241	24.5%	1,442	16.2%
--Bellaire (part)	505	564	11.7%		
Mancelona	2,258	2,720	20.5%	3,207	17.9%
--Mancelona	1,255	1,432	14.1%		
Milton	853	1,271	49.0%	1,573	23.8%
Star	331	453	36.9%	464	2.4%
Torch Lake	391	711	81.8%	817	14.9%
Warner	249	261	4.8%	282	8.2%

Source: [a]United States Bureau of the Census
[b]Northwest Michigan Council of Governments
[c]Michigan Department of Management and Budget

Note: Village counts included in township total

The responses of residents in the Project Antrim Citizens Opinion Survey (Lichty and Watson, 1992) indicated a clear need for broadening the economic opportunities in the county. Comments on job needs indicated a desire for economic activity of all types. The interrelated issues of employment opportunities, the economy and wages were the topics that emerged from the survey as the areas that most needed to be improved in Antrim County. This indicates a strong sense not only of desire for economic expansion, but a frustration with low levels of wages and limited opportunities for all residents. Seasonality of employment also appeared as a factor. The desire for economic development was coupled however with an equally strong interest in protecting the environment.

Responses indicated that a relatively low percentage of income was earned within the County. Of full-time resident responses less than a third (31 percent) earned all of their income from within the county, and almost half (48 percent) earned none of their income within the county. In addition (40 percent) of the respondents were retired.

This response pattern indicates a dependency relationship on outside of county income sources, probably jobs in neighboring counties (bedroom-type community). The low level of income generation within the county shows a shallow employment base. Any loss of income to other places is however partially mitigated by an income inflow through

tourists and part-time resident residents, social assistance payments, and retiree's incomes.

Land Use

The primary industries are agriculture, and forests, including commercial forest land, state forests, and natural protection areas. The county supports an important multi-sector, multi-season recreation industry. Recreational/residential land use, scattered manufacturing and processing industries plus the service sector form the remaining economic base in the watershed.

Land use varies throughout this predominately rural county. Urban areas are small towns, incorporated as villages. Land subdivisions and suburbanization are apparent, especially proximate to the major lakes and streams. Resort developments, the most significant of which are Hilton-Shanty Creek, Schuss Mountain and the Lakes of the North, are also extensive.

Approximately 20 percent of the county land is devoted to farming and livestock enterprises. Fruit crops, including apples and cherries, plus corn, hay, nursery plants, and potatoes are the main agricultural activities. Trends are toward less agricultural activity, but more diversity. Forests, summer homes, recreation land and resorts are other key land uses in the county.

Publicly administered federal and state recreation lands total 44,445 acres or 13.2 percent of the total land

in the county. There are no national parks, wildlife areas or forests in the county, and no state parks or state level wildlife areas. Almost all the state land is in state forest in the western part of the county outside the Elk River/Chain of Lakes Watershed. Antrim County has the lowest percentage of public lands of any county in Northwestern Michigan, approximately 15,000 acres less than Charlevoix County, the second lowest. The county park system is extensive with Grass River Natural Area, and Barnes Park on Lake Michigan adding approximate 2000 acres to the total public land in the county.

Brief History

The area now known as Antrim County formed part of the unorganized county of Meguzee until 1840 when the present name was adopted. The first permanent settlers of European background in the area originated in Connecticut and founded what is now the city of Elk Rapids. Elk Rapids grew to be the largest city in the region with lumber mills and wood-fired iron foundries using the abundant forest resources. The accessibility through the area via the Chain of Lakes was an important industrialization factor.

Antrim County was officially organized in 1843, with other northern Michigan counties separated out of it. In 1879, the county seat was moved to a central location, creating what is now the city of Bellaire.

Original Inhabitants

Antrim County has several important paleolithic sites, primarily at the Pi-wan-go and Fritz Trail chert rock outcroppings along the Lake Michigan shore (Cleland, 1973). Later nations of people included both the Huron and Objibway groups. The region was an important trade area as a land trail crossed the water trail of the Chain of Lakes at the narrows between Elk and Skegemog Lakes. Numerous Native American trading sites and temporary camps and permanent village sites are known in the area. Specific archaeological investigation indicates concentrated activity along the coastal plain and at Elk Rapids, Alden, Kewadin and Torch River. Population density varied with the cultural period, but was relatively high in the Antrim area due to the combination of natural resources; it was probably equal to the current population of the region (Cleland, 1973). European contact resulted in the mixing of cultures and virtual elimination of the native American society. The Grand Traverse Board of Ottawa-Chippewa Band of the Algonquian peoples is the legal remnant of this heritage. They own title to some land in the county, but represent less than one percent of the population.

Research and Concept Review

When researching land conservation, natural resource management and watershed planning, the analysis requires an interdisciplinary approach derived from several sources. Many areas of theory, research and practice contribute to

both conceptualizing the problem and presenting methods to resolve particular questions. This categorization of the sources of information and data relevant to this study contributes to the theoretical approach and results are in a detailed literature review as part of the dissertation process.

Theoretical Sources on natural resource management and community development provide both quantitative and qualitative approaches. Many of the social sciences contribute their unique perspectives towards management of natural resources and community development. Geography, anthropology, and economics as well as sociology and psychology all advance from their disciplinary perspectives toward applications in resource planning and development. Land use planning as the most empirical approach to development ties these disciplines together along with conceptual designs and site planning, derived from urban planning and architecture. Natural resource management as a concept encompasses social, economic, and environmental considerations, particularly community and regional development.

The definition of community development is (1) a group of people (2) in a community (3) reaching a decision (4) to initiate a social action process (i.e., planned intervention) (5) to change (6) their economic, social, cultural, or environmental situation (Christenson and

Robinson, 1980). Distinction must be made for those involved in community interventions among development taking place in the community, for the community and by the community, in order to select appropriate strategies and to recognize limitations. Community development as a concept is considered here to be a process of improvement, directing growth or change, especially as it applies to social and economic forces in a given area. This development also has the capacity to transform the physical landscape of a region. Community intervention and adoption of innovation strategies provide a relevant theoretical basis for analyzing community problems and responses (Zaltman and Duncan, 1977). In addition, principles and practices in the areas of leadership development and capacity and constituency building contribute towards the resolution of problems and the creation of plans for local constituencies. Physical sciences contribute to land use planning by expressing environmental limitations in such fields as soil and land conservation, water resources conservation, ecology, and watershed management. Environmental and social impact analyses of particular development proposals are pragmatically relevant.

The focus on natural and cultural heritage conservation is particularly important, especially in the establishment and role of local entities of land conservation and protection. Other factors such as tourism, community

imaging, and the governmental or legal bases for land use controls or strategies like planning and zoning are also pertinent.

Case studies of watershed management strategies are a fairly common approach. For the Elk River basin, a soil conservation plan focusing on agricultural water quality problems with improved management practices is nearing completion (USDA SCS, 1989). Technical manuals such as soil profiles of Antrim County and guidelines for lake property owners published by lake associations are available and relevant.

Existing community and township zoning plans, from the files of the County Planning Office, including the County Recreation Plan (Twardzik and Haskell, 1979) and other specific water management or waste water/drinking water plans, etc. were also reviewed as data sources. However the majority of the data for this study was specifically generated through observation, involvement in the process of community planning and development, and gathered in response to a series of questionnaires at the county or watershed levels.

Review of Related Watershed Projects

This section provides an overview of a number of past, existing, or planned projects from nearby areas with similar concerns as the Elk River/Chain of Lakes Watershed.

The Lake Charlevoix Management Plan published in January 1988. The County Planning Department, the Cooperative Extension Service, and a local citizen's planning advisory committee met over a three year period to develop the plan. They resolved to take a serious look at the future of the lake resources through implementing land use controls and recommended that setback, density, greenbelt, and wetlands regulations be incorporated into the township plans. Certain environmentally sensitive parcels were also singled out for special attention. At the time of writing the plan was still controversial with county level planning and zoning taking an advisory position instead of overseeing a coherent overall plan. The townships around the lake are reviewing the recommendations presented in the plan and pieces are being adopted as deemed appropriate.

The Portage Lake Management Plan in Manistee County raised a series of master planning questions to protect land and water resources. The plan includes key changes in local zoning and recommended the implementation of strict controls on land use. Ordinance updates for standards and criteria for environmental protection are also proposed. In 1991 implementation of the plan was proceeding slowly.

During 1988, the Soil Conservation Service (SCS) and the Northwest Michigan Council of Governments (NWMCOG) initiated several projects to protect the quality of lakes

and streams in the area. These two efforts included funding for a technician to work towards comprehensive protection.

The SCS Elk River Watershed Project, a 10 year long project is proceeding through the Antrim County Board of Commissioners, Antrim and Charlevoix Soil and Water Conservation District, and the Village of Bellaire. The project seeks to institute correction measures for 27,120 acres of critically eroding crop and pasture land. Erosion projects within the village limits of Bellaire, and other improvements for the water quality of the Elk River and tributaries are planned.

Financial assistance is available to some land owners as part of a cost-share program to combat the more severe problems in the watershed. Past SCS efforts focused on flood and erosion control projects. Water quality improvement and protection is the main focus of this project.

The Elk Watershed Paleolimnological Investigation focused on an analysis of limnological conditions. Water quality data was sought to explain and evaluate lake protection programs, and to provide a basis for enforcing future compliance with water quality goals.

This study used Clean Lakes Program funds, and State Recreation Improvement Funds, to conduct specific water quality studies in the Elk Watershed. These studies included a paleolimnological analysis of sediment cores from

Elk, Bellaire, and Intermediate Lakes for historical water quality trends, and to evaluate the impact of current development on the eutrophication rate.

This series of baseline water quality evaluations over a one year period will provide comparison with future conditions to help support enforcement of antidegradation rules. A large scale nutrient budget sampling and analysis including a modeling component would identify general areas of high nutrient input which may be targeted for subsequent detailed nutrient budget evaluations. Runoff rates would be useful for stormwater planning and water quality modeling. A self-help pilot monitoring program would encourage participation in this DNR program and additional hydrologic studies would help evaluate the impacts of development.

These series of projects, initiatives and action plans from diverse sources represent a strong coordination of water resource based programs. Coupled with the efforts taken in the planning sector as described in later chapters, it represents comprehensive approach to protection in the watershed.

Review of Local Water Quality Status

Water quality data was collected along with land use information as necessary in a watershed approach, to form an informational basis for documenting the status of surface waters, and for noting any changes or degradation over time. This data is valuable to local planners and residents as

they seek to manage, and plan for land and water resource protection.

Most water quality data available is for the lakes and streams that form the Chain of Lakes. Little information beyond physical descriptions, and general commentary of residents exists for smaller lakes and streams in the county. No long term base line or time series data is available, either for a single lake or the watershed as a whole. Information on existing water quality in the Elk River/Chain of Lakes Watershed is incomplete especially for those lakes without public access, though a number of persons and groups (Canale, 1982 and 1983; Comfort, 1988; Failing, Larson, Wallace and Miller, 1987; Wuychek, 1989) have collected localized information over the past two decades. The larger lakes of this system have had water quality studies done periodically, (Gervin, 1986; Grant, 1984; Norris, 1989; Weiss, 1989; Witzerman, 1978) but they are without consistency and lacking status updates.

In general the surface water quality of the lakes and streams in Antrim County is excellent and the desire is to keep them that way. Some surface water quality problems exist and recent land use changes are impacting the waterways. Land uses are largely rural, residential, and recreational. The primary impact has been the cumulative impact of recreational, residential land and water use. Urban and industrial development is minimal with small scale

processing or production facilities in the cities of Bellaire, Central Lake and Elk Rapids. The areas around Mancelona and Kalkaska have more intensive industrial use, but these are not located on water bodies. Agriculture is primarily dairy, potatoes, and orchards with related non-point pollution potential.

Resource extraction operations, such as forestry, sand and gravel, and oil and gas are quite active with sites located throughout the area. Within the watershed, but outside Antrim County, oil and gas exploration and production has been a major source of water pollution. Kalkaska County has most of the oil and gas sites, but Whitewater Township in Grand Traverse County near Williamsburg was the site of an extensive hydrocarbon related groundwater pollution problem (1970s). In addition in 1991 large areas of central Antrim County were released for oil and gas exploration and production, precipitating great, but late public concern (Lake Country Gazette, 1991).

Surface Water Quality Status

Despite the incomplete data, existing information reveals overall good and often excellent water quality for the lakes and streams in the basin. The areas with water degradation problems are limited and pollution is not beyond control. Problems in the county include erosion and sedimentation from agricultural activities, and waste and pesticide use from farming practices. Industrial uses such

as food processing, shale pits and forestry exist in the area. Nutrients and phosphorus from residential and commercial development along waterways raise concerns about input from septic tanks, lawn fertilizers, golf courses, and lake surface recreation impacts. These issues are discussed extensively in Chapter Three

The southern and western end of the watershed has large deep lakes with few nutrients and excellent overall water quality. The majority of shallower lakes in the middle and upper portions of the basin are mesotrophic. Minor water quality problems are created by residential development and agriculture. The Land and Water Management Division, of the DNR considers the watershed to be one of the least impacted in the lower peninsula.

Wetland Status

The status of wetlands needs further investigation. Buildup along lakes and streams has reduced the amount of wetlands to an important but unspecified degree. In addition the Chain of Lakes was significantly modified over the last hundred years, although natural in appearance and function the majority of the lakes have had their hydrology significantly altered by dams.

Several areas in the watershed and Antrim County are significant wetlands. The 1,050 acre Grass River Natural Area contiguous to Lake Bellaire and the 2,700 acre Skegemog Lake Wildlife Area adjacent to Skegemog Lake are the two

largest. They are designated natural areas, supporting a myriad of northern plant and animal species dependent on the unique habitat related to the abundant water resources of the basin.

Erosion and Sedimentation Status

Despite the existing high water quality, there are resource problems. The Soil Conservation Service (SCS) is concerned about soil erosion and agricultural waste. They estimate 112,000 tons of sediments erode from cropland and pastureland areas annually. Sediment and nutrients from these eroding areas, plus improper fertilizer management and pollution from animal waste are contributing to a decline in the quality of the water in the basin. The water quality of 55 miles of top quality trout streams is adversely impacted.

Overgrazing of pastureland and animal waste are other problems. An estimated 81,000 tons of sediment from unprotected streambanks and overgrazed pastures is affecting fish spawning and feeding areas contributing to a decline in the water quality of numerous streams and lakes in the basin. Unlimited access by livestock to wetland areas and streams is causing direct pollution from animal waste and streambank damage. Recreational dollars spent in the watershed could decrease if the fisheries resource continues to be threatened by sedimentation. (Interviews with the Antrim Soil and Water Conservation District officials, 1988 and 1991)

Another problem comes from two inactive shale pits and a 1,400 foot strip of eroding streambank shoreline. These shale pits are located adjacent to Ellsworth Lake, south of the Village of Bellaire. The eroding streambank is located along the Intermediate River within the Village of Bellaire. This site alone contributes 11,900 tons of sediment to the Intermediate River. (Antrim Soil and Water Conservation District, 1988, 1991)

The final source of erosion problems in the county are poorly designed road-stream crossings along streams. Runoff from roads, crossings with short culverts, and redirected water courses have increased sediment input and heightened streambank erosion. Erosion during building construction can be an intense if short-term problem. Accordingly the SCS has begun several erosion control projects in Antrim County. Sites have been prioritized and work has begun in cooperation with the county road commission to install sedimentation traps and to reroute or change the grade of roads as reported by the agents in charge in 1991.

Groundwater Status

At least 95 percent of the watershed residents depend on groundwater for their drinking water. The groundwater of this region is in good condition but the watershed does have some contamination sites. Groundwater problems are found at several scattered sites. These include: chemical spills, oil and gas development and leaking underground storage

tanks. Present and future, locations of natural gas pipelines and wells is of growing concern in the county.

The Environmental Response Division of the Michigan DNR identified twenty-seven Act 307 environmental contamination sites involving groundwater in 1989. These sites are divided into two levels of severity of contamination. Group One sites are the most severe and rate on the scale of the Michigan Site Assessment System (a numerical risk assessment applied to the listed incident). Group Two sites are those screened for critical factors and relative risk at the site, but are not scored by the same model as Group One. Published in the Michigan Sites of Environmental Contamination, Priority Lists, Act 307, (MDNR 1990) contamination sites are described by their location, the source of contamination, point of release, types of chemical pollutants, resource affected, their status for regulatory and remedial action, funding type (local, state, or federal), and the need for further site evaluations.

Out of approximately 480 Group One sites listed state wide in 1988, only seven occurred in the study region. Among 1,400 Group Two sites only twenty were found there. Only one site in the basin has qualified for federal assistance out of eighty-one Michigan sites designated and proposed for the National Priority List. The CERCLA (Federal Comprehensive Environmental Response Compensation

and Liability Act of 1980 or "Superfund") program, has begun remedial action for Tar Lake near Mancelona.

Two hundred seventy one underground storage tanks are registered in the county. Of these, ten were reported by the MDNR, Environmental Response Division as leaking in 1989, and one had a clean up in progress. (MDNR, Feb.1990)

Acid Rain Status

Acid Rain does not appear to pose an immediate threat to water quality in the watershed. Most of the lakes have a Ph of 7.5 to 8.9 and most of the soils have a pH of 4.5 to 8.4. (pH is a scale based from 1 to 14 where a value less than 7.0 indicates acidity and above 7.0 is basic or alkalinity), Both water and most soils are chemically, primarily basic (Peterson, 1988). During the spring, summer, and fall, precipitation tends to be more basic while the winter tends to be more acidic. The limestone-rich soils of the basin appear to buffer the waters against the pH changes rendered by an acidic precipitation, thus regional waters can presently neutralize the acid rain. Whether this buffering capacity is permanent or if it will someday be exhausted, resulting in lake and soil acidification, is not known. (Gervin and Weiss, 1986).

Antrim County, Planning and Environmental Management Status

Several elements of local government were lacking in Antrim County in 1988-89. Effective county planning was absent in both Antrim and Kalkaska Counties as neither

county had a planner prior to 1990. Antrim County hired a county official only in 1990, combining both the coordination and the planning functions.

Responsibilities for planning and zoning, and county administration have been vested in with the county commissioners and boards, the individual who managed the Antrim County planning office, the Drain Commissioner, and part time people who operated out of grant funding. Land use decisions were not made as part of a county plan, as none had been approved, but rather as a response to development proposals, problems and concerns presented at monthly meetings (Interviews, 1989).

The impetus to plan almost always comes from developers. They propose to build, and the community reacts to their proposals. The process is not orderly. Land-use authorities, like most other public actors, make decisions in response to pressing problems, and they do so "with haste, poor information, and no theory" . . . If, in a series of deliberations surrounding proposed developments, one group of landowners pushes through provisions favorable to its interests, they establish a set of norms over land use in the community. In other words they establish a system of social control over land use (Rudel, 1989).

Constraints on both the township and county planning boards increased to an untenable position due to an expanding workload, and the complexities of numerous large

development proposals. Most of the counties and townships recognized the need for greater sophistication in their response to these pressures, but expressed a need for technical information and assistance in land and water management, and felt that budget constraints would not allow for expanded local government actions. (Interviews with township and county planners, 1989-90)

This lack of professional planning at the township level was a serious deficiency. Where planning and zoning existed it was limited or structurally weak in almost all cases. (NWMCOG, 1989) See Table 2.2 The professional planning process was lacking and the government administration role was executed primarily as site plan review with zoning initiatives and master plans of second priority. At the township and village level in 1989 to 1991, only the city of Elk Rapids had a planner. Local townships, if they wanted a master plan, operated out of a series of contracts with other agencies.

Reticence on the basis of one or more of the five villages or the outlying townships has thwarted proposals for county administered planning and zoning several times.

Table 2.2 Elk River/Chain of Lakes Watershed: Township Management Status - 1989

Antrim County Townships	Planning/ Zoning	Master Plan	Development Pressure	307 & Other Polluted Sites	Officials Interest	Top Concerns
Banks Twp.	Yes	In Process	Medium	Yes	Medium	Industrial Pollution
Central Lake Twp.	Not Now	No	Medium	Yes	Medium	Septics/Sewer
Chestonia Twp.	Part	No	Low	No	High	Well Levels
Custer Twp.	In process	No	Medium	Near	High	Groundwater & Stream Pollution
Echo Twp.	No	No	Low	No	Medium	Junk Yards
Elk Rapids Twp.	Yes	Yes	High	Yes	High	Septics, Lakes Use
Forest Home Twp.	Yes	Yes	High	Yes	High	Lake Water Levels, Septics
Helena Twp.	Yes	No	High	Yes	High	Septics, Open Space
Jordan Twp.	Part	No	Low	No	Low	Streambank Erosion
Kearney Twp.	Yes	No	Medium	No	Medium	Run off, Septics
Mancelona Twp.	No	No	Low	Yes	Medium	Industrial Pollution
Milton Twp.	Yes	Yes	High	Yes	High	Lake Use, Urban Pressure
Star Twp.	No	No	Low	No	Low	Oil and Gas
Torch Lake Twp.	Yes	No	High	Yes	High	Lake Use, Urban Pressure, Septics
Warner Twp.	No	No	Medium	No	Low	Groundwater pollution

Table 2.3 Elk River/Chain of Lakes Watershed: Township Management Status - 1991

Antrim County Townships	Planning/ Zoning	Master Plan	Develop Pressure	307 Site Other Bad	Officials Interest	Top Concerns
Banks Twp.	Yes	In Process	Medium	Yes	Medium	Industrial Pollution
Central Lake Twp.	Not Now	No	Medium	Yes	Medium	Septics/Sewer
Chestonia Twp.	Part	No	Low	No	High	Well Levels
Custer Twp.	No	No	Medium	Near	High	Groundwater & Stream Pollution
Echo Twp.	No	No	Low	No	Medium	Junk Yards
Elk Rapids Twp.	Yes	Yes	High	Yes	High	Septics, Lakes Use
Forest Home Twp.	Yes	Yes	High	Yes	High	Lake Water Levels, Septics
Helena Twp.	Yes	No	High	Yes	High	Septics, Open Space
Jordan Twp.	Part	No	Low	No	Low	Streambank Erosion
Kearney Twp.	Yes	No	Medium	No	Medium	Run off, Septics
Mancelona Twp.	No	No	Low	Yes	Medium	Industrial Pollution
Milton Twp.	Yes	Yes	High	Yes	High	Lake Use, Urban Pressure
Star Twp.	No	No	Low	No	Low	Oil and Gas
Torch Lake Twp.	Yes	No	High	Yes	High	Lake Use, Urban Pressure, Septics
Warner Twp.	No	No	Medium	No	Low	Groundwater pollution

Political cohesion or an approach that would take a county wide position is difficult to implement and the county politics have always been fragmented. (Leighty, 1991) Antrim County has no single dominant population center, and the tendency is for local residents to not conceive of the county as a whole unit.

In lieu of local expertise, Michigan State University repeatedly acted as a reference for planning and zoning issues, primarily through the Cooperative Extension Service and the Department of Resource Development who provided technical expertise, producing model zoning ordinances, position papers, and a proposal for county wide zoning for Antrim County during 1988-90. (Leighty 1978, 1989, 1990) Further studies by the Department of Resource Development in 1991 would produce a comprehensive local attitude survey related to planning and zoning options (Lichty and Watson, 1992).

Regional planning was also lacking for Northwest Michigan. Funding cuts in the middle 1970s had effectively eliminated a regional approach. Remnants of the planning process were vested in the Northwest Michigan Council of Governments (NWMCOG) in Traverse City. During this period their office coordinated efforts to keep the counties on a planning track. As state law mandated local compliance in such areas as solid waste management and local planning, they hired environmental planners to conduct such efforts as

the Elk River\Chain of Lakes Watershed Project. Positive information networks existed for County planners informally, and through monthly meetings sponsored by the NWMCOG. A similar network of natural resource professionals operated to link the local state and federal groups for discussion.

Profile of Township Officials

As part of a NWMCOG survey in 1989-90 all the township officials in the nineteen townships within the ERCOL watershed were contacted and a profile of these public servants emerged. The following is their sociological profile: The township officials represented a variety of backgrounds. Retired individuals, farmers, housewives, and private business owners or workers were the key occupations of officials; other occupations such as bookkeepers, cashiers/clerks, construction workers/builders, and mechanics were also well represented. Almost half (47 percent) of the township officials were women.

The township officials were newly elected and put in many hours of service. Their average estimate was 45 hours a month in their various capacities. Eighty-three percent of the officials had served less than 6 years, but a few had held their township positions for more than 17 years, at least one person served for more than 30 years.

Area officials were relatively young and well trained. About half were between the ages of 25-50. The most common age range was between 36-40. Retirement aged individuals

made up about 20 percent of the group. Eight-five percent had attended a workshop or training session, many for fiscal or clerical duties, at MTA or MSPO meetings.

The elected officials in the Elk River/Chain of Lakes area were well educated. Thirty-eight percent were high school graduates, thirty-seven percent had some college, and twenty-three percent were college graduates and post-graduates. These statistics showed the decision-making strength in this northern rural area. No survey of local township officials had been undertaken in Michigan up to 1989. (Michigan Township Association, MTA) It was assumed erroneously that the power structure in the rural areas was known to the local constituency. The relatively high educational levels and percentages of women in local government were key points.

Summary

Antrim County appears to be a relatively poor area with a series of small economic units and a dependency relationship on nearby population centers. As a rural area, the recreation and second-home activities and the large proportion of retirees bring additional funding into a region without a lot of economic dynamism but add to social and infrastructural costs.

With reference to the status of the natural resource base, the area has kept its high quality based due to its peripheral location and relative isolation and slow,

diffused land use changes. The process is accelerating and development pressure is increasing.

Local officials are competent, represent a cross section of the community, and are becoming aware that more proactive efforts are needed. Chapter Three details the process by which the local officials have undertaken new measures to initiate planning and zoning and to manage their resources.

CHAPTER THREE

NATURAL RESOURCE MANAGEMENT CONCERNS, PROBLEMS AND SOLUTIONS

This chapter describes the process of problem identification in the study area. It documents attempts to produce and provide information for local planning and resource protection.

Description of the ERCOL Watershed Project

The following section is a description of the Elk River/Chain of Lakes Watershed Project of 1988-89, an intervention strategy for local officials and residents. As a watershed management project it was coordinated by The Northwest Michigan Council of Governments (NWMCOG). This organization received a grant of $54,000, from the Environmental Protection Agency and the Michigan Department of Natural Resources.

The rationale behind the grant and project was that local officials were lacking in technical information relating to watershed and environmental protection, and local planning and zoning skills. As a technology transfer idea this meant not only definitions and concepts relating to environmental protection such as for wetlands, but also planning and zoning options for improved land use management and planning.

Objectives of the Project

The objective was to sustain the high quality resource base by improving the management, planning and zoning, and land management capabilities of local officials. The process built on existing local government infrastructure and experience if present in current methods of resource management, planning and zoning. This project had as its goal "to preserve and improve the relatively high water quality in the Elk River Watershed through means related to land use planning... working with every township and unit of government in the watershed". (NWMCOG 1989) Stated objectives included: public education on natural resource/water resource issues and management, provision of township level planning and zoning examples and strategies and growth management options.

Main Outputs and Target Groups

The three main outputs were the Master Plan, a comprehensive outline with recommendations for actions in the watershed, the Land and Water Management Reference Book which provided key information on problem areas, references on wetlands, septics, etc., in the watershed, and the Local Township Management Planning and Zoning Book with examples of up-to-date zoning ordinances, a generic township master plan, and a point-by-point review with suggested changes for environmental protection, sample ordinances, etc., and GIS-developed map overlays for planning. (NWMCOG, 1989)

Other project efforts included a monthly newsletter, local media coverage, a large watershed conference. A Citizens Advisory Committee was formed and acted as a community reference base. All of the efforts were directed towards providing the information and direction necessary to the key officials and opinion leaders in the watershed. This would inform them about the activities and elucidate options to preserve and protect the high quality water and land resources through better land use planning.

A related aspect of the project involved soils and land use/land cover maps of Antrim County which had been distributed in 1979 and available in the county on mylar velum on a township by township basis. The intention was to apply GIS (Geographic Information System) technology through the transfer of MIRIS computer data. It was hoped to put it into micro computer format and have it accessible to local planners. Complications with DNR MIRIS data transfer, lack of appropriate equipment in the county, an inappropriate technology transfer plan, and data errors thwarted this portion of the project. Access to the data base was achieved for a few townships in 1991. (Lake Country Gazette, 1991)

The political institutions included township and county boards and the levels of state and federal representation of such groups as the Soil Conservation Service and the DNR. The township officials were the selected target group for

the questionnaire and the materials, as they were the only functioning level of planning and administration in 1989.

Research Method

Original data for identifying the perceived resource related problem areas is based on analysis of the opinions of the key decision makers responsible for land use management. This target group was questioned on a broad range of resource management issues and concerns. Specific data gathered focused on perceived land use planning concerns related to water and natural resource protection.

The main issues revolved around questions of protection of the natural resource base of the study area, maintenance of the quality of life for full-time and part-time residents, the implementation of better land use and water management practices such as planning and zoning, the creation of a concerned and active local citizenry who would operate out of locally-defined agendas for environmental management and protection, and community development.

The institutions in place in the Elk River Chain of Lakes Watershed that related to natural resource management and planning divided into two categories: governmental and non-governmental, including local, state, federal governments, and private groups like lake associations and nature-oriented organizations. The extent of involvement of these two groups is discussed in the following chapters.

The basic approach was to identify the existing institutional and grass roots groups in the watershed involved in planning or interested in some aspect of land use and the environment. The focus would be to characterize the competence for township or county level planning, watershed management and resource protection. A second major goal was to strengthen existing knowledge and networks among existing organizations so they could operate in a wider watershed context.

The 1988-89 ERCOL Watershed Project was designed to last only a year. Subsequent interest through 1991 was directed toward the creation of a Master Plan and resulted in the County contracting for a county wide citizens opinion survey in 1991. The results of which are discussed at the end of the chapter.

Project Method and Approach to Community Involvement

Three types of planned community involvement are technical assistance, self help and conflict approaches, (Christenson and Robinson, 1980). Although the goals of the ERCOL Watershed project were technical assistance oriented, the approach taken was very much motivated by the desire to foster involvement and eventual self help on the part of township officials (NWMCOG, 1989). The self-help approach is generally defined as a process that assumes people can come together, examine their situations, design strategies to deal with various segments of their surroundings, and

implement plans for improvement (Littrell, 1980). In order to gain the acceptance and commitment of the individuals in the communities of the watershed several strategies were developed. Personal contact was seen as the key to explaining project goals and gaining support, so every township official and zoning commission member was visited and had the project explained to them. All relevant community groups were identified and contacted. Service clubs and professional groups were also visited as community organizations which might be interested in an aspect of the project.

A citizens advisory committee was created, composed of key opinion leaders in the watershed. Representatives from lake associations, civic groups, agency personnel, and other interested individuals became involved. The solicitation of personal involvement reflected a perceived need for building a constituency and gaining local support. This cadre was crucial due to the absence of county and township planners and planning, watershed councils, land trusts, township associations in Antrim County or for the watershed in 1988-1990.

The project sought as much participation as possible by township officials, the target group. Operationalizing the project in this manner provided local residents with significant ownership and commitment to the project and goals. It sought to build relationships and networks that

would last after the project ended by reinforcing local involvement. As there was no implementation phase planned for the recommendations of the project, this was done to encourage continuity and a local impetus.

Data Development

To direct the effort and obtain data, the author created a series of questionnaires. Information was gathered from the two groups determined to be in the best position to know the watershed and to be in a position to direct and or apply the information or make the necessary policies. They were the Citizens Advisory Committee and the Township Officials. The idea was to solicit their perceptions and to uncover and understand the land and water related concerns in the watershed. Any information provided by the intervening agency would be derived from these sources and responding directly to apply to the declared concerns. As the target group for the project was specifically the local township and municipal officials, all were contacted and included.

The first data collected was designed to furnish a basic profile of the local officials. This was presented in Chapter Two. A secondary aspect was to uncover the communication networks among the townships for solving resource questions. In addition, township officials were asked what they thought was valuable about their local area to unearth common images and key emotive associations for

the region. The responses identified qualities that related primarily to the natural resources of watershed and their intrinsic value. Both are discussed below.

Township Officials Perceptions and Values

Township officials responded that they saw the region's lakes, streams and forests as valuable due to:

1. The pure quality or cleanliness of the water. (39 responses)
2. The beauty, scenery, tranquility, and environmental resource quality of the region. (30 responses)
3. The recreational value, including fishing for local residents and tourists. (21 responses)
4. The lakes and streams and watershed as a significant factor in the economy due to second-home residents and tourism. (13 responses)

These responses indicated a great awareness on the part of township officials of the value of the water and land resources. All of the responses showed a recognition of the contribution that clean waters and a protected natural environment had on the quality of life of the region. Responses indicated an awareness that the lands and waters and other natural resources form the identity and economic base for Antrim County.

Township Communication Patterns and Sources of Information

Township officials were also asked where they went for advice when seeking information or guidance on a resource management or land use issue. Information networks and patterns of interaction among the townships were thus identified.

When deciding a land use issue, township officials referred to a wide spectrum of sources for answers. Those townships lacking both township and county zoning commissions, as was the case of the majority, tended to rely on past experience or "common sense" (3 responses), they turned to other township or village guidelines (4 responses), and the Department of Natural Resources (3 responses). The Health Department (2 responses) and soil conservation service (2 responses) also provided valuable information. Some townships also contacted the Michigan Township Association, their attorneys, and other county officials.

Townships like some in Antrim County, with a township planning and zoning commission, but no county zoning, got information on their land use issues primarily from their township zoning board (18 responses). Public hearings (5 responses), past experiences and common sense (5 responses) also played a vital role. Other agencies such as the Michigan Township Association, lake associations, realtors, the Army Corps of Engineers, and the Health Department also

provided assistance. Attorneys, township boards, and reference materials also helped the township officials to finalize land use issues.

Townships in the Elk River/Chain of Lakes watershed with county planning/zoning commissions (those in Charlevoix, Kalkaska, and Grand Traverse Counties) primarily turned to these county officials when seeking to solve land use issues (8 responses). They referred to other township plans and the township planning and zoning board (if they had one) (3 responses each). Other organizations and agencies like the health department, soil conservation service, DNR, MTA, and MSPO provided useful advice. Attorneys, village councils and other specialized individuals also assisted these township officials in important decision making.

In conclusion, it appears that townships outside Antrim County with the option of referring to a county planner did so, but also utilized a wide variety of sources for technical information. In townships with township level planning and zoning commissions, the boards relied almost exclusively on their own board's opinions. In townships with neither planning and zoning, or county planning and zoning; common practice, the DNR, and other townships were the information sources.

Citizens Advisory Committee Involvement

The Citizen's Advisory Committee was composed of over forty local citizens and agency representatives from throughout the watershed, and represented diverse interests. They met several times during the project and existed to provide expert input and guidance. Through open discussion and a round table style process, they derived a list of known or perceived land or water problems in the watershed. Through later meetings they suggested ways of ameliorating the problems. Their information and position statements were made available for discussion and use by the local officials to create, update, or otherwise modify their planning and zoning documents or ordinances, or to contribute to the master planning process.

The primary input came via a mail-in questionnaire, Responses formed five categories: A) Erosion related problems, B) Point and non-point pollution of surface and groundwater, C) Lake and stream use problems, D) Management/planning/zoning problems, and E) Other. Over fifty general or specific problem areas were mentioned,

Table 3.1 Watershed Problems as Identified by the Citizens Advisory Committee 1988

		Frequency
A.	General Erosion	
1.	Erosion/sedimentation along lakeshores and streams:	9
2.	Erosion of shoreline from fluctuating lake levels:	3
3.	Watercraft-caused shoreline erosion:	8
4.	Animal waste and livestock in streams:	6
5.	Erosion/sedimentation from construction or development of roads:	4
	Total	30
B.	Point & Non-Point Pollution	
1.	Leaking/improper septic tanks/systems contaminating groundwater and lake water:	14
2.	Fertilizing of lawns/bad for water quality:	9
3.	Bad, inadequate, or missing municipal sewage treatment system:	6
4.	Leaking underground storage tanks:	6
5.	Solid waste/landfill contamination:	4
6.	Chemical/brine spills:	2
7.	Act 307 sites/toxic waste site:	4
8.	General non-point pollution/contamination of land and water:	4
	From junk yards:	1
	From orchard spraying:	5
	From oil/gas production:	1
	From golf courses:	2
	Total	58
C.	Lake and Stream Use Problems	
1.	Greenbelts along water ignored or missing:	2
2.	Loss/filling in of wetlands:	7
3.	Loss of fish breeding/wildlife habitat:	5
4.	Poor fishing:	5
5.	Lake access conflicts:	2
6.	Eutrophication/weed growth in Upper Chain of Lakes	3
7.	General lower water quality for lakes:	1
8.	Increasing recreational use of lakes and streams/too many boats/no controls:	6
9.	Boat pollution/littering/no toilets:	4
10.	Noise pollution of boats:	1
11.	Surface water conflicts:	3
12.	Water safety:	1
13.	Mixing of bottom sediments by boats:	1
	Total	37
D.	Management/Planning/Zoning Concerns	
1.	Lack of land use controls/plans:	5
2.	No zoning or inadequate zoning:	3

which demonstrated the interest and scope of land and water quality concerns in the watershed.

The 1988-89 ERCOL Township Officials Questionnaire on Critical Concerns in the Watershed

In order to understand the concerns of the township officials in the watershed, another questionnaire was administered in December 1989, that would provide insight and help to prioritize their perceived threats to water, and land resource quality in the watershed. All ninety-five township officials, in all twenty-two townships of the ERCOL watershed were contacted for a telephone based survey. Eighty-two people participated for a response rate of 86 percent. The high rate of participation in the telephone questionnaire and other project activities reflected the genuine interest and eagerness among all concerned.

The 1989 Township Officials Questionnaire not only resulted in concrete data and opinions, the design of the questionnaire included an educational component, as during the process of asking the questions, key terms were discussed and defined. This educational element and process not only operationalized the official project goals, but provided interaction and feedback on all the critical concepts with the very people who would eventually be called upon to implement any of the planning and zoning measures.

The data derived from the questionnaire was not used solely to identify concerns in the watershed, it also provided the direction for perceived land and water problem

areas and management concerns in the region. The direction for the project efforts, including the selection and provision of key information, sample or model ordinances, and practicable solutions was derived directly from these responses. Planners at the NWMCOG selected specific information, designed workshops, and tailored the information in the documents they produced in response to these indicated local needs.

The following section summarizes the key issues related to land and water resources protection in the Elk River/Chain of Lakes Watershed as identified by local township officials.

Township Officials' Resource Quality Concerns

The bulk of the December 1988 to January 1989, telephone survey, asked area township officials to express their concern about land and water quality issues in the watershed. Although the focus was on water related issues, the emphasis was on preserving and protecting the watershed through improved land and water management techniques and policy. Many issues were identified, though the emphasis varied from township to township. Consensus emerged however regarding the perceived problem areas.

Table 3.2 Perceived Threats to Chain of Lakes Area

1. Inadequate control and poorly sited septic tanks, with sewage pollution entering waterways and groundwater. (54 responses)

2. Runoff from lawns, golf courses, and agriculture including fertilizer, pesticides and herbicides. (30 responses)

3. Inadequate land use plans with issues related to shoreline buildup/density and development. (23 responses)

4. Lake and stream user conflicts, boat-related pollution, litter, noise, safety issues, etc. (23 responses)

5. Industrial pollution. (18 responses)

6. Erosion and sediment from new construction, road and bridge construction, and agriculture. (14 responses)

7. Other threats or problems mentioned included:
Water level in Upper Chain of Lakes was too low, or fluctuating (11 responses);
Oil, gas, brine wells, and leaking underground storage tanks were polluting lakes or groundwater (11 responses);
lack of zoning and planning, lack of access to the water, loss of wetland and wildlife habitat, public apathy, and lack of enforcement of existing controls or law to protect the water quality, etc.

Table 3.3 Complete List of Derived Concerns

1. **Inadequate/poorly Sited Septic System and Sewage Pollution**

   Leaking or Improper Septic Tanks/Systems Contaminating Groundwater and Lake Water Bad, Inadequate, or Missing Municipal Sewage Treatment/Stormwater Systems.

2. **Fertilizer, Pesticide, and Herbicide Runoff From Homeowners, Golf Courses, and Agriculture**

   Fertilizing of Lawns/Bad for Water Quality; Greenbelts Ignored or Missing

3. **Shoreline Build-up/Density and Development**

   General Non-Point Pollution/Contamination of Surface and Groundwater
   Loss/Filling-In of Wetlands
   Loss of Fish Breeding/Wildlife Habitat
   Loss of Wetlands and Natural Areas
   Lack of Land Use Control/Plans
   No Zoning or Inadequate Zoning
   Over-Development, Over-Use of Land in General
   PUD's/Condos/Too Many People/Too High Density
   Planning Is Not Comprehensive
   Lack of Regional Vision or Action for the Future

4. **Lake and Stream Use Conflicts, Recreation and Pollution**

   Increasing Recreational Use of Lakes and Streams/Too Many Boats/No Controls
   Poor Fishing
   Lake Access Conflicts
   Boat Pollution/Littering/No Toilets
   Noise Pollution from Boats
   Surface Water Conflicts
   Mixing of Bottom Sediments by Boats
   Wildfowl Feeding
   Swimmers' Itch

5. **Industrial Pollution and Oil, Gas, Brine Wells, and Leaking Underground Storage Tanks**

   Leaking Underground Storage Tanks
   Chemical Brine Spills
   Act 307 Sites/Toxic Waste Sites

Table 3.3 Complete List of Derived Concerns (continued)

6. Erosion and Sediment From New Construction and Agriculture

Erosion/Sedimentation Along Lake Shores and Streams
Watercraft-Caused Shoreline Erosion
Animal Waste and Livestock in Streams
Erosion/Sedimentation from Construction or Development
Erosion/Sedimentation from Road and Stream Crossings
Soil Erosion, Stormwater and Sedimentation Control Action Plans

7. Miscellaneous Concerns

Eutrophication/Weed Growth in Upper Chain of Lakes
General Lower Water Quality for Lakes
Townships Don't Work Together
DNR Not Responsible or Confused in Jurisdiction
Lack of Specific Water Quality and Hydrogeologic Data
People Do Not Appreciate the High Quality Water Resources
Fighting Lack of Cooperation Between Lake Associations
Local Officials Are In a Position for Own Gains
Township and County Officials Are Not Trained
Township Officials Do Not Work Together
Lowering of Water Table/Aquifer Depletion

Description of Major Land and Water Concerns in the ERCOL Watershed, 1989

Septic Systems and Sewage Treatment. Septic systems are the primary waste disposal systems for home owners in the watershed. Many of the septic systems, especially those in place before 1967 are not adequate for household needs. This is due either to design (holding tanks) or size problems. One key problem is system overload and failure as structures change to year-round residences. Improper siting often allows sewage to enter directly into wetlands lakes or streams or to percolate through sandy soils, adding nutrients to the lake.

Septic tank problems exist throughout the watershed. One study of Torch Lake estimates that the vast majority of the systems in place are causing some problems. (Interviews with Antrim County Drain Commissioner 1989) The problems have two sources. The first is the hydrology of the soils of the region (sandy) with clay lenses, that results in a very rapid groundwater flow and artesian activity in most of the watershed. Secondly, the septic systems are often located in these areas and in wetlands. In many cases they are located at 50-foot intervals along the lakeshore generating a large volume of effluent.

Existing Community Sewage Facilities. The Village of Elk completed a new system in 1977. Its sewage system includes part of Elk Rapids Township and it is considered to have some expansion capacity. Areas along Elk Lake south of

the village are known to be problematic but are not welcoming sewer hook-ups. The Village of Bellaire received a grant in 1989 to expand and redesign their treatment facilities. This new plant will correct a long-standing pollution problem of Lake Bellaire, and has some excess capacity. The Village of Ellsworth does not have a municipal waste treatment system. The Village of Mancelona does not have a municipal waste treatment system. The Village of Kalkaska has a municipal wastewater treatment facility and it is considered to be adequate. The Village of Central Lake has a municipal waste system that services approximately 125 customers. It is an underground system, recently installed and has expansion room. Several large resort developments, such as Shanty Creek have in-ground systems. These large systems are subject to DNR approval.

Fertilizer, Pesticide, and Herbicide Runoff from Homeowners, Golf Courses, and Agriculture. Although agricultural lands and golf courses may appear to be open space areas, in reality the land use is intensive. Agriculture is an industry and the application of fertilizers, herbicides, and pesticides can have an enormous effect on ground and surface water quality. Golf courses are very similar operations, with similar land treatment patterns and use of fertilizers, irrigation, and herbicides.

Problems occur when the agricultural or golf course cultivation or landscape practices change the water quality

through sediments, chemicals, or fertilizers into the waters, or poisoning of plants and animals. Best management practices include measures to control erosion, aide application standards and timing for herbicides, pesticides, and fertilizers, plus prohibition of certain practices. Location factors are also important as proximity to water resources is an important consideration.

In the Elk River/Chain of Lakes Watershed, agriculture, especially orchards, are of potential concern for water quality. The location of orchards on largely sandy soils raises questions of groundwater contamination. The Soil Conservation Service has initiated a long-term conservation project called The Elk River Watershed Project which will install best management practices.

Golf courses are notable sources of fertilizer and sediment laden runoff. Large resort developments in northern Michigan often include golf courses. Often wetlands or stream source areas and uplands are preferred locations for this type of activity. Impoundments and large scale land topography changes are very common with loss of natural drainage patterns, wetlands, wildlife, etc. and a degradation of the water quality of the area involved and downstream.

Lakefront property owners are another source of fertilizers, pesticides, and herbicides. Many lot owners, especially those accustomed to landscaped urban or suburban

environments frequently cause problems. However, the natural vegetation of the area forms a good part of the beauty of the area. It is uniquely suited to the climate, soils and environment and offers a perennial, low maintenance ground cover. Lakefront lot owners usually maintain a portion of their property in natural vegetation as this enhances their property value and incidentally protects the water quality of their lake.

1988-89 ERCOL Prioritized List of Resource Concerns

Planning and Zoning: Shoreline Build-up, Density and Development. The general idea of problems caused by "overdevelopment" or increasing housing and commercial development in rural areas is really two types of concerns. First, is the loss of the natural characteristics of the area, such as the woods being cut down, wetlands filled, lake shores ringed with cabins and lawns, the loss of public open spaces, farms and hillsides subdivided. Community organizing, and planning and zoning will provide most of the solutions to these problems.

The second set of concerns deals with the criteria and standards for the location, number, and size, of buildings, roads, fences, etc. relating to the concentrations of people and their activities.

Development in the watershed is water oriented. The existing lakeshores along the large lakes are already subdivided for rural residential and second homes or cabin

development for seasonal use. The current situation is that of final infilling of the remaining lake lots. Most lake frontage is already subdivided into 100 foot lots. Large multi-family developments like funnel-style lake access condominiums are increasingly popular options, especially along the west side of Torch Lake.

Through the master plan process, growth management strategies, planning, zoning, and site plan review procedures, local government officials can and do play a critical role in preventing the pollution of lakes, streams, wetlands and groundwater. As part of the ERCOL process all of the local township ordinances were reviewed and recommendations were made for additions and changes in the ordinances.

Several Michigan laws provide the legal authority for local governments to incorporate standards for water quality protection into local ordinances. In addition, the Michigan Environmental Protection Act (MEPA) charges all government agencies with the duty to prevent and minimize degradation to the environment through ongoing decision-making. These are discussed in Chapter Four.

Lake and Stream Use Conflicts, Recreation and Pollution. The Chain of Lakes region is a well known tourism area. Second home development is extensive, and small resorts operate around the lakes in the summer. One large ski and convention resort is the biggest service

employer in Antrim County. With growing populations of residents, vacation home owners, and short-term tourists, the water resources (especially Elk and Torch Lakes) are experiencing increasing use for a variety of water based recreational activities. Lakeshore residents noted an increased level of activity on all of the lakes with a shallow area on the south end of Torch Lake as a site of concentrated activity. (Interviews, 1989)

Central to this issue is the legal status of water in Michigan. While the land that fronts on lakes and streams, and even land under the lake potentially could be owned by property owners, the water is in the public trust and non-riparians have to be given use and access. To better explain the situation, there are four major players whose interests need to be balanced. Riparian, lakefront property owners, the public who may wish to use the lake, the local government, and the state, all have legitimate rights and interests. (Wyckoff, July 1991)

Public access to water resources is a problem in Antrim County. Public access to the lakes in the Chain of Lakes is extremely limited, with the small percentage of public lands existing as small parcels and scattered access sites. Crowding and trespassing on private property are common complaints at access sites in the region. Two aspects of this question are of interest in Antrim County. One aspect is the amount of access and the relative lack of state

controlled park land or public access sites on the major lakes and streams. Antrim County however does have a profusion of access sites under local jurisdiction that need to be regulated. Many access sites have been taken over by neighboring property owners, and through adverse possession, may have been removed from the public domain.(Antrim County Parks and Recreation Inventory 1991, Allan Pecar officiating)

Whereas public access to the resources is a concern, from a local planning perspective it may be desirable to restrict lake access. Currently access means unlimited public use, and this can lead to lake surface use conflicts. Through regulation of access to lakes or of dockage local officials can affect activities on the lakes by restricting the number of people, boats and docks. Likewise, the nuisance impacts of many people, as well as many cars and boat trailers can also be controlled.

Industrial Pollution and Oil, Gas, Brine Wells, and Leaking Underground Storage Tanks. Although primarily a rural area, the Elk River/Chain of Lakes Watershed has several sites of industry. Manufacturing and food processing, and resource extraction industries of sand, gravel and oil and gas, are important components in the local economy. Associated ground and surface water problems are found scattered throughout the watershed. These primarily involved groundwater.

The majority of the pollution sites were related to oil and gas exploration, production, and storage. Leaking underground storage tanks (LUSTs) were the sources of other problems. Fruit processing facilities have caused surface water problems especially in Elk Lake. The CERCLA (Federal Comprehensive Environmental Response Compensation and Liability Act of 1980 or "Superfund") recommended remedial action for Tar Lake in Antrim County, near Mancelona. Three additional industry sites in Ellsworth, Bellaire and Central Lake were also significant.

Erosion and Sediment From New Construction and Agriculture. This area was discussed in the previous chapter in the section on erosion and sedimentation status in the watershed. Several problems relating to agriculture roads and construction were verified by local residents and this category has a number of SCS best management practice projects in the study area.

Miscellaneous Concerns. A number of other concerns or problems were identified by officials and residents of the watershed. Several mentioned a perceived decline in the water quality of the Upper Chain of Lakes and a lack of water quality monitoring in general. Other concerns were a lack of coordination and action among the townships and a lack of regional and county planning. Missing regional organizations such as a watershed council, a local land conservancy, a local chapter of the Michigan Townships

Association and fragmented DNR departmental jurisdictions were also indicated as problems. A general lack of public education and awareness of water quality issues was also noted.

Proposed Solutions to the Perceived Problem Areas

The Citizens Advisory Committee and local planners met in the Spring of 1989, after the problems were identified to propose solutions, and then rated the practicability of these options. Their refinements and suggestions were to be used to suggest directions for action by local officials. From this series of meetings, reference materials and land use plans were envisioned to be derived from these involved informed local recommendations.

An example of the recommendations for better natural and cultural resources protection and management came under the category of inadequate land use plans, shoreline buildup, and development. They proposed nine ways of dealing with the problem and then evaluated them on the criteria of being economically, socially and politically feasible. The actions thought to be most practicable to specifically alleviate water pollution related concerns were: greater regulation by local officials, the encouragement of better management practices in agriculture, for golf courses, and with lawn fertilizer etc., and greater efforts at public and property owner education. County-wide

recycling was also highly encouraged as a practical solution.

In order to counter the perceived problem area of the loss and filling in of wetlands, the solutions proposed were: to improve the site plan review process, to identify, map and prohibit development in wetlands. They also called for the involvement of conservancy groups to purchase wetlands and to emphasize the wildlife and habitat aspects of the areas.

For the concern of the loss of fish breeding and wildlife habitat, the primary solutions were thought to be: to create ordinances to control boat speeds and wakes, and enforce them, to zone portions of the lake and shoreline as natural areas, and to prohibit boat engines at certain times of the year keyed to breeding cycles of the fish.

In order to stop the conversion of wetlands to other land uses, the committee felt that the following solutions were most practicable: to develop and institute township planning and zoning, to demand better site plan review, to let property owners watch the lakes and report violations, and to encourage conservancy intervention to inventory and purchase the pieces of property that were most threatened. Environmental zoning or separate ordinances, setbacks, and a wetlands and natural areas inventory and protection plan were also recommended.

With the lack of land use control plans a major concern, the proposed solutions were to: upgrade the site plan review, create and enforce township ordinances, and to create county and township master plans.

The problem of missing or inadequate zoning would be alleviated by: getting zoning ordinances into all townships, coordinating planning and zoning among the townships, and by emphasizing environmental guidelines, which used districts for planning and zoning.

In order to cope with concerns about over development, condominiums, and over use of land in general, the proposed solutions included: zoning with density limits, an emphasis on Planned Unit Developments, (PUD) and greater lot sizes, as well as better site plan reviews and limits on back lot lake access developments and funnel considerations.

After identifying the concern that planning was not comprehensive, the committee proposed solutions that included: regular training of officials on a variety of subjects, especially zoning, coordinating with other townships, and forming a local township association.They also supported the idea of a county public opinion survey and the development of master plans at the county and township levels.

The committee also decided that there was a lack of county and regional vision and action for the future. They proposed the following solutions: that a County planner be

hired with a clear land use planning role, that existing institutions such as watershed councils or land conservancies expand their territories, and that networks be created among various institutions.

In addition several miscellaneous concerns such as the need for better coordination among the levels of government, and the lack of training and clear commitment to environmental protection and improved land use methods by local officials resulted in the following suggestions: that the DNR be informed of local concerns, priorities, needs and problems, that all agencies both public and private seek common goals and coordinate approaches to regional problems, and that local officials clarify publicly their responsibilities and positions on key issues and be held accountable for their lack of initiative. As a final comment the committee recommended continued public involvement in the planning process and praised the efforts of the Elk River Chain of Lakes Watershed Project in this respect.

A summary and ranking of the Townships in Antrim County by their ability to protect their resources is summarized in Tables 3.4 and 3.5.

Table 3.4 Township Planning and Land and Water Quality Protection Status, 1989

WATER QUALITY PROTECTION STATUS	MANAGEMENT, PLANNING AND ZONING STATUS	CONTROLS ON DEVELOPMENT	NAMES OF TOWNSHIPS
1. Land and water resources are adequately protected with some improvements indicated.	Planning and zoning is essentially solid, same new statues or additions are necessary	Township documents are defendable to assure the long term protection of water quality. Several ordinances are preventative and innovative.	Helena and Milton, Townships.
2. Land and water resources are not completely protected to assure their continued high quality.	The master plan and/or planning and zoning are in need of review and modification to include key water or land use protection statutes.	Township is in need of up-to-date approaches or ordinances in the face of increasing development pressures.	Banks, Elk Rapids, Forest Home and Kearney Townships.
3. Protection of land and water resources is not part of the planning process, and resources are not well protected.	The townships have an inadequate master plan and/or the planning and zoning is seriously outdated.	Controls are lacking and land and water resources have an inadequate basis for protection.	Jordan, and Torch Lake Townships.
4. Land and water resources are not protected at the local level.	Township is without a master plan and/or planning and zoning or protective districts.	Local control and direction is missing, with little or no ability to protect the land and water resources and control unwanted development.	Central Lake, Chestonia, Custer, Echo, Mancelona, Star, and Warner Townships.

Table 3.5 Township Planning and Land and Water Quality Protection Status, 1991

	WATER QUALITY PROTECTION STATUS	MANAGEMENT, PLANNING AND ZONING STATUS	CONTROLS ON DEVELOPMENT	NAMES OF TOWNSHIPS
1.	Land and water resources are adequately protected with some improvements indicated.	Planning and zoning is essentially solid, same new statues or additions are necessary	Township documents are defendable to assure the long term protection of water quality. Several ordinances are preventative and innovative.	Helena, and Milton townships.
2.	Land and Water resources are not completely protected to assure their continued high quality.	The master plan and/or planning and zoning are in need of review and modification to include key water or land use protection statutes.	Township is in need of up-to-date approaches or ordinances in the face of increasing development pressures.	Banks, Elk Rapids, Forest Home, Kearney and Torch Lake townships.
3.	Protection of land and water resources is not part of the planning process, and resources are not well protected.	The townships have an inadequate master plan and/or the planning and zoning is seriously outdated.	Controls are lacking and land and water resources have an inadequate basis for protection.	Jordan township.
4.	Land and water resources are not protected at the local level.	Township is without a master plan and/or planning and zoning or protective districts.	Local control and direction is missing little or no ability to protect the land and water resources and control unwanted development.	Central Lake, Chestonia, Custer, Echo, Mancelona, Star, Warner townships.

Description of the Project Antrim Citizens Opinion Survey, 1991

A second major effort at developing the local management and a necessary step towards the creation of a master plan in the region took place in 1991. The county contracted a community opinion survey to be used to solicit local opinions on the broad scale of issues relevant to local government (Lichty and Watson, 1992). Among the key areas that emerged from a Citizens Advisory Committee which was guided in developing the questionnaire were planning and zoning questions, natural resource protection and economic development issues. The following is a brief summary of the results.

Survey Highlights. Questionnaires were distributed in July and August 1991 to 1351 randomly selected residences, including both part-time and full-time residents. The total number of persons surveyed was 774, with 612 identifying themselves as full-time residents, and 162 as part-time. There was an almost even split between male and female respondents. Most people lived in owned single homes, with over 40 percent of the full-time residents, and almost half of the part-timers retired. The vast majority of people have been associated with the county for more than 6 years, and more than a quarter of them longer than 30 years. Questionnaires were distributed in July and August 1991 to 1351 randomly selected residences. Of the 1092 deliverable questionnaires, 819 were returned, for a 75 percent response

rate. The response total of 819, had 655 identifying themselves as full-time residents, and 164 as part-time. While they are different groups in terms of income and employment characteristics, statistical analysis showed little difference in their opinions regarding the community and land use issues in most instances. This may be the most interesting factor to emerge from this survey--that these two groups of resident respondents held similar views on most items.

Community Services. Ratings for the quality of county services as a whole were positive, with most areas ranked good to fair; fire protection got the highest ratings, (lack of) planning and zoning got the lowest rating. Areas that were thought to be deficient by the full-time respondents included:

- mental health services
- day care services
- adult education and training and
- planning and zoning at both the township and county levels

Property tax assessment, and youth employment and training were the two items that got the lowest ratings and also the highest indications of most need for improvement.

Other issues indicated were: wages, employment opportunities, road maintenance, and planning and zoning. Part-time respondents were more focused on property taxes, with planning and zoning also an area of concern. Full-time

respondents agreed very strongly that poverty was a serious problem in the county

Economic Issues. Respondents felt that economic growth should be encouraged in most cases with balance of other concerns. Of all the sectors for the economy, natural areas were given the highest priority, with recreation following; agriculture, forestry, professional services, and the other sectors except heavy manufacturing, also were medium to high priorities. The respondents felt that year round employment options were very important, and that economic activity support local ownership, have a low impact on the environment, and provide a large number of job opportunities.

Respondents were split on the types of housing in the county with full-time people and part-time respondents expressing different priorities; they were in general agreement on less mobile homes, and condominiums, and that they were comfortable with the existing cottage and vacation home levels. Full-time respondents generally favored more retirement housing, year round single family homes and low cost housing while part-time respondents did not.

Spending patterns showed a split between buying in the county and going elsewhere in the region. Areas with overwhelming in-county buying patterns were;

- banking
- prescriptions
- hardware,electrical, and plumbing,
- groceries

Areas with an overwhelming out-of-county buying pattern were:

- clothing
- gifts
- appliances
- car and truck purchasing and repair
- entertainment
- fine dining

In addition most people recommended to visitors that they buy souvenirs and regional goods outside of the county. Part-time people slightly favored in-county purchasing more than full-time respondents. Clothing, fine dining, routine medical services, groceries and quick meals out, were indicated as the areas that were most desired to be more available.

Respondents were generally neutral on tourism promotion, with full-time residents tending to not support more summer promotion. Everyone felt they agreed with more fall, winter, and spring tourism promotion. People were strongly divided over the issues of expanding US 131 into an expressway and developing a state park on one of the big lakes (Lichty and Watson, 1992).

Environment and Land Use. Environment and land use issues were high priority items for all the respondents. Areas which were viewed as most important to solve were lake and stream pollution, unregulated use of ATVs, and old cars and trash on properties. Concern over shoreline erosion, trees and forest resources, and for full-time residents, the loss of land available for hunting were also strong.

Respondents were split on the issue of loss of public access to the lakes and streams, with greater concern among the full-time residents. Noise and speeding on the lakes and the quality of fishing were considered to be worse than in the past.

Support for planning and zoning measures is strong from both full-time and part-time residents, with little or no opposition to any measure from the part-time residents. The areas most strongly favored were:

- regulations to protect groundwater
- limits on signs and buildings to protect views
- limits on funnel type development for lakeshores
- designating and protecting historical and cultural sites
- setbacks from lakes and streams
- requiring homeowners to replace faulty septic systems

Beaches, swimming, fishing, and environmental education were the highest priority items for recreation. Areas that were seen to be lacking or most in need of improvement in the county were beaches, swimming, fishing, environmental education, hiking trails and cross country skiing areas. The full-time residents also expressed a high priority for hunting, picnic/rest areas, campgrounds and programs for youth in the summer. Public access sites, local township and village parks, Barnes Park and Grass River were the most heavily used areas, and park usage especially among the Part-timers was moderate. Most common activities were swimming and sunbathing, boating and fishing, sightseeing, and nature or wildlife observation, with full-time residents

also indicating hunting. The respondents strongly supported parks and suggested many sites to be added or protected, especially along the large lakes and in wetland areas.

Future Vision and Conclusion. Issues of crime and safety, environmental quality and local taxes were very important for everyone, with employment opportunities, quality school system, rural/small town atmosphere and friendly neighbors also key reasons for continuing to live in the area, especially by full-time residents.

Zoning was favored by both full- and part-time residents with the township level being preferred. Full-time respondents tended to view zoning as control over property rights and not as property right protection. The most strongly favored actions were:

- requiring developers to pay for public improvements
- local control on subdivision development
- limiting highway strip development
- replacing septic systems if they were damaging the environment
- limiting pesticide and fertilizer application
- property regulations for wetlands and steep slopes

Respondents strongly supported, and indicated a willingness to pay for 911 service, and county-wide recycling. Also additional senior housing and services, and a youth center or centers were supported by a majority of full-time residents.

Respondents indicated a moderate degree of community involvement, with part-time respondents more likely to be

involved in a lake association or nature preservation group, and full-time residents a civic or service organization.

The 1991 process was important because it completed the preparatory steps for the initiation of community based planning. With clear directives toward protecting the environment in a social context of economic distress the community leaders could work from the expressed will of the people.

An interesting statistic is that over 1500 individuals in the county became involved directly in the process of natural and cultural resource planning and management through their participation in the two major efforts; the ERCOL, and Citizens Opinion Survey. This represents approximately ten percent of the population. According to Milbrath (1984), about ten percent of the broad public in the U.S. report belonging to an environmental organization but a much smaller percentage (perhaps around one percent) are active . . . This active group tends to be well educated and middle class. Citizens who feel that something should be done to solve environmental problems often have difficulty knowing how to act constructively to resolve those problems. It is even more difficult to know what might meaningfully be done if a person believes that resolution of the problems requires major social change. In Antrim County the percentage of individuals involved in

environmental activities is therefore much greater than what Milbrath presents as the norm.

In a follow up effort in 1991, it was determined that of the twenty-two watershed townships all except two, Echo and Chestonia, had used the ERCOL information. Several were actively modifying their ordinances, while others had attempted to develop a Township level plan and failed. As a general summary, (See Tables 3.3 and 3.4) those that had been advanced in their efforts in 1989 had advanced further in the two years following the project. Those Townships that were unable to develop any planning and zoning in the past still had not done so, and those Townships with no interest in 1989 still had no interest in 1991. An exception to this is Torch Lake Township which hired a professional planner in 1991 to work on their Master Plan. The City of Elk Rapids and Elk Rapids Township, by far the most pressured, appeared to be in worse shape than in 1989.

The county level officials had not utilized the ERCOL materials, recommendations, or ordinances to any significant degree as of the end of 1991. They appeared hesitant about utilizing the Project Antrim information as well. This would seem to indicate a need for more effective and proactive tactics on the county level, especially for those Townships that are not initiating local planning and zoning or other land management efforts on their own. If the county does not respond in a timely manner the impetus for action on the

resource issues may well pass to the private sector. Later chapters discuss the manner in which the public and private sectors have responded to these developments.

CHAPTER FOUR

THE INSTITUTIONAL SETTING: THE PUBLIC DIMENSION

Introduction

The previous chapters described the study area and the areas of concern determined from the local perspective for environmental protection and land and water management. This chapter provides the larger context, and contains a discussion of basic concepts and rationale for land conservation and protection, a discussion of public roles and policy, relevant laws, and specific contentious issues in the area.

Public policy is derived from many sources. Often definitions and courses of actions may seem to be contradictory or of limited scope or focus. This may be due to a misunderstanding of the purpose, scope, or intention of the management scheme. No one policy or agency can adequately cover the interrelated physical, cultural, or institutional needs of managing natural resources for their utility and assuring their sustained and undegraded existence. The statements about bewildering variations in the law and parochial bases for decision making convey, along with the contradictory characterizations of land use planning, an impression of tremendous heterogeneity (Rudel,

1989). The following discussions present various approaches to the topic, and a set of definitions and terms to avoid confusion.

Preservation Rationales

Rationales for preservation can be divided into three broad categories: anthropocentric, ecocentric, and Theocentric. The anthropocentric reasons for the preservation and conservation of the natural and cultural environment include aesthetic concerns, such as beauty, and utilizing nature as a setting for pleasant activities, or for recreation of the mind and spirit. A closely related aspect includes social considerations, like health, welfare, production and consumption for the survival or enhancement of mankind, i.e. economic reasons, as expressed in the sectors of agriculture, or recreation and tourism. When taken together, these elements can be considered as quality of life. Beyond the general welfare issues when focusing on comprehensive planning, quality of life usually is intended to include actions taken to make the communities pleasant and satisfying as well as efficient (Hotaling and Moffat, 1986).

Other common reasons for undertaking efforts to protect or preserve the natural (and cultural) resources of a given community are for political reasons, including public policy, and to reflect the will of a natural resource dependant or environmentally aware or oriented constituency.

Protection is also undertaken for religious or academic reasons, in which the natural environment is valued as the source of spiritual or scholarly fulfillment, enlightenment and purpose (Watson, 1980).

When referring specifically to land use planning, the political-economic approach acknowledges the connections between urban development and the larger economy. In contrast the ecological approach is understood to be one of land use regulation following market trends in decision making, triggered by technological changes such as the construction of new highways or major physical development in a region (Rudel, 1989).

Ecocentric arguments are derived from the ideal that every living thing has an inherent value and a right to its own survival. We as human beings, the dominant species, need to act as a responsible part of the living environment, aware of the impact of our actions--deliberate, inadvertent, necessary, or unnecessary--which could cause destruction and degradation. A Theocentric basis is also implied in this framework where responsibility for human action is related to a God-derived responsibility or a cosmic role, but this is not discussed here.

Preservation is the protection of an area or a particular feature or aspect of an area. This definition contains a sense of maintenance to stop the destruction of and assure the existence of a particular resource.

Conservation is in effect the science of this preservation, the application of rational thought and action in accordance with natural law and accepted practice. It may include action to alter the deterioration of an ecosystem, or a portion of the natural and cultural resources of a given area, through the creation of policies and the use of management practices.

The primary objectives of conservation of natural resources as a science whether the land is public or private are as follows:

1. to conserve examples of the diverse ecosystems and associated species in their natural state;
2. to preserve ecological diversity and maintain its natural equilibrium;
3. to preserve genetic diversity;
4. to maintain the health, safety, and welfare of the local population, and to serve as a source of education about the environment and natural resources;
5. to protect rare or endangered species;
6. to maintain the hydrological regime;
7. to control erosion, sedimentation and to protect water-related economic developments;
8. to produce animal protein and promote sport fishing in a sustainable fashion;

9. to provide continued tourism and recreation opportunities;
10. to produce wood and forage on a sustained yield basis;
11. to protect the economic base of a community or area such as when conserving soils or lands for agriculture or lakes and streams for recreation;
12. to protect sites and objects of the cultural, historic or scenic heritage; and
13. to protect scenic areas and green space (Thelen and Miller, 1979).

Heritage Preservation

The term heritage includes the material (physical features, flora, fauna, etc.) as well as derived or innate spiritual (beauty, aesthetics, etc.) manifestations of a particular area (IUCN, 1975). The concept of preserving the natural and cultural heritage of an area is based on the idea that the local area provides a significant and unique context for ones activities. As an expression of value, the local creations of man are considered to be of such significance and value that they need to be protected and receive recognition and support for their maintenance to provide a sense of place, inspiration, continuity and identity for future generations. The term "heritage" takes the natural and cultural environment as a total, a home, with each element serving its own unique purpose and

producing its own unique response, perceived or not by mankind.

Cultural Heritage Preservation

The definition of cultural heritage resources includes architectural works, structures or sites of an archaeological nature, and examples of art, literature, and folklore, or a combination of these features of outstanding local or broader significance, in terms of history, art, science, or popular culture. Groups of buildings, which, because of their architecture, or their place in the landscape, can be of outstanding local or wider value and can also be viewed as scenic resources thus integrating as part of the natural heritage. Cultural sites are works of humans, or the combined works of nature and human beings, including archeological sites that exhibit outstanding significance from the historical, aesthetic, ethnological or anthropological point of view.

Cultural and Historic Preservation Efforts in the Antrim Region

The bulk of this chapter focuses on efforts to preserve the natural resource portion of the heritage of Antrim County and the ERCOL Watershed. In the interest of balance, corollary cultural or historic preservation efforts are briefly discussed. Historic preservation efforts in Antrim County are not well developed, although localized efforts do exist. Each small community has buildings and sites of local interest or value, with a few of them under

protection. These preservation efforts generally follow the same pattern as efforts to preserve and protect the natural environment, with public and private initiative both playing a role.

Nomination of buildings and sites can occur at any governmental level with locally important buildings, trails, landscapes and other sites designated as valuable and worthy of protection. Designation or nomination of areas with the potential for greater significance can proceed through either the State or National Registers of Historic Places. Investigation reveals that Antrim County has five such sites designated as of 1991 (Antrim County Planner/Coordinator, 1991). No organized efforts at an inventory of historic sites or areas has been undertaken in the county or watershed.

Private initiative for the protection of historic sites has centered around their attractiveness for tourism, and their adaptability for current economic uses. One example of this is with Brownwood, a bakery, restaurant, general store which relocated the original general store from the village of Eastport to a location along western Torch Lake. Another manifestation of this adaptive rehabilitation approach is with the recent surge in Bed and Breakfast establishments primarily in historic Victorian era homes throughout the region.

The largest community effort at historic preservation in the county is in the town of Alden, where a local historical group received state funds to purchase the Alden Depot with adjacent lakefront property and turned it into a museum and township park. This group headed up by three or four individuals applied to the Land and Water Conservation Fund through the county in 1989. As the village of Alden is now transforming itself into a small, upscale tourist community, the restoration of the historic depot provides a crucial cultural and tourism resource.

Efforts to raise money to restore the building have been largely successful. Local businesses and individuals have responded overwhelmingly, donating their time, effort, to restore the building, providing materials and funding for the museum and the historical society.

Additional efforts in the study area for historic preservation include restoration and adaptive reuse of the 1904 County Courthouse in Bellaire. In Elk Rapids, cultural resource protection endeavors include: a partial study as part of downtown revitalization efforts, a village museum of very high quality, and use of an historic edifice as the local library. The creative reuse of an old log cabin as the Chamber of Commerce office in Central Lake, is another example. One site, Camp Hayo-went-ha on Torch Lake is a potentially nationally significant example of vernacular log architecture, and is the only remaining original unaltered

natural landscape along the shores of the Chain of Lakes. At the time of writing, no effort is underway to formally designate or officially protect the property or buildings despite enormous development pressures. Several other summer camp properties in the study area were subdivided and the land developed in the period of 1988 to 1990.

Natural Heritage

Efforts are needed for a natural heritage preservation inventory. Numerous gradations and specific criteria are established at the state level through the Natural Features Inventory Program, a joint State of Michigan, Nature Conservancy effort that sets the parameters for the endangered and threatened species and habitats in the state.

The DNR Natural Features Inventory could indicate significant natural areas of state or regional significance in Antrim County as they did for Grand Traverse County in 1989 (Reese et al., 1990). The county government or the regional land conservancy are expected to undertake this effort beginning in 1992. The establishment of private environmental consulting companies in Bellaire is bringing the technical expertise to the local community and it is only a matter of time before the basic inventories are done.

The global standard for the idea of natural heritage is adapted from the UNESCO World Heritage Convention, defined as follows: natural areas (monuments) are composed of outstanding physical and ecological formations (including

representative samples of diverse ecological communities) of interest from the aesthetic or scientific point of view. Natural sites are geologic or physiographic formations which constitute the precisely defined habitat of threatened species of plants or animals, of local or international value from the point of view of science, conservation, or natural beauty. In practice, the terms nature, or natural environment and the more precise biological terms of habitat, biome, aquatic or terrestrial environments are considered to be part of this definition. Generic terms like environment and often ecology and natural resource management precepts like watersheds are also applicable.

Watershed Preservation

Several concepts relating to watershed management need some explanation. While lakes, ponds, rivers and streams are basic concepts, some terms like surface water, watershed, groundwater, wetland, etc. have more specific definitions. The application of the terms in the study area are important when considering legal requirements and restrictions, site plan evaluation or design, or for developing potential management strategies.

When applying management goals, and planning and zoning methods for example, limitations of terms need to be very clear specified. In addition, certain words are legal terms conveying very specific definitions. The definitions of key terms related to watershed management, land and water

conservation and water quality follow (Hotaling and Moffat, 1980).

A watershed approach has many advantages when dealing with a biological or natural system. Only rarely does it correspond with a political region that would facilitate the utility of the data or understand the relevance of the watershed approach. Antrim County is one such region. The Elk River/Chain of Lakes Watershed (and also the Jordan River) is recognized as a system by local residents and planners, and most of it is located exclusively in Antrim County under the control of local officials.

Watershed Definition. A watershed, either in environmental or for management terms, is the surrounding land area that drains into a lake, river or water system. This concept is useful to conceive of a large area as a unit. All the water of the study region comes together and flows in the same direction ending up in the lake basins and eventually passing into Lake Michigan. For example, the Elk River/Chain of Lakes Watershed, in this case, extends over 500 square miles with an interesting mix of large lakes and interconnecting rivers and streams, feeding into one another. Also included in this concept are the springs, seeps, flowing wells, and groundwater resources of the area. The land and water in the basin are treated as an interactive unit in a physically derived dynamic.

Groundwater Definition. Groundwater, also called subsurface water, fills in the pores and openings between soil particles and in the rock strata. According to the Institute of Water Research at Michigan State University, groundwater can move up to 50 feet a day in some soils like sand and coarse gravel, but much slower through clay soils (IWR, 1987). Maintaining the quality of this resource directly affects the quality of lakes. Groundwater replenishes streams and lakes and is a source of potable well water for human consumption and for irrigation.

Wetlands Definition. This concept has several components and is often defined differently. This definition is based on the Michigan Department of Natural Resources Guidelines, but is not intended to be a legal definition. A lot of controversy exists regarding the definition of wetlands at both the federal and state levels at the time of writing. The pressure is to preempt the local government from setting stricter standards than the state (Tip of the Mitt, 1989).

A wetland, by definition, includes: 1) the sustained presence of water in the soil or on the land surface (at least seasonally), 2) specialized hydric soils that differ from nearby uplands, and 3) the ecosystems adapted to these wet conditions. Wetlands are different from the permanent surface water bodies such as lakes or steams, although the boundary of one may merge with that of the other. Wetlands

occur at the interface of the terrestrial and aquatic ecosystem. Also, temporarily wet areas that have an insufficient effect on the soil moisture regime or vegetation are usually not classified as wetlands. Wetlands serve an important role in maintaining water quality by absorbing nutrients and suspended sediments. Wetlands may be infiltration areas for recharging groundwater and the sources of rivers, streams, and freshwater. Wetlands in Northern Michigan are also important wildlife habitats. They offer many recreational opportunities such as hunting and fishing, hiking, and bird watching.

Groundwater and wetlands are integrally related in the hydrologic system. While most wetlands are found as contingent to surface water or in depression areas in the Elk River/Chain of Lakes Watershed, soil composition and groundwater flow also factor into the determination of a wetland. Wetlands can occur due to both inflows and outflows of groundwater, as through a swamp. Presence of water under a layer of organic material can create a raised bog, or a groundwater depression wetland (swamp). A perched wetland is found above the groundwater level where soils enable it to maintain moisture over the long term.

Lake Management Principles

Numerous organizations exist to provide local people with accepted lake management principles. These groups

range from academic and governmental organizations to private groups. The North American Lake Management Society (NALMS) is a national group. The Michigan-wide Michigan Lakes and Streams Association, watershed councils, and local lake associations or lake boards are also sources of management information.

The following general principles are derived from all these sources and represent a standard for local township officials and residents:

1. Treat the lake and/or watershed as a whole. Recognize that a change which occurs on the other side of the lake, upstream, or in an adjoining township will affect the water quality of adjacent areas.
2. The direct relationship between land use and water quality must be understood. Changes in land use affect the environment whether it is readily identifiable as in a large condo-marina project or the result of small piecemeal decisions over time and space.
3. Lack of individual township action and initiative is an open door to outside control, and an abdication of township officials duty and responsibility.
4. Coordination with neighboring officials results in a concentrated effort and saves time and money.

Every township need not invent the planning and zoning wheel nor feel alone with no place to turn. Cooperation does not necessarily need to be formalized, but it must be ongoing.

5. Changes in upland areas and along streams and connecting rivers are as important as changes on the lake frontage.
6. Groundwater pollution, especially that caused by septic systems and leaking underground storage tanks and oil and gas production, directly effects the streams and lakes as well.
7. Recreation is tied to water quality and intensive recreation must be controlled to maintain water quality.

River and Stream Management Principles

Although similar to lake management principles, the situation with water use and river and stream protection is more dynamic. In other parts of the state, watershed councils or natural river plans exist with special focus on intergovernmental cooperation and public education. These principles apply to small streams flowing into lakes and connecting waterways: (Michigan Society of Planning Officials 1987, Brough 1985, and Say and Dines 1974).

1. Try to consider each river or stream as a whole from its source to its outlet. What enters upstream ends up running through the whole system.

What is placed on the land in a watershed affects the water.

2. Groundwater and wetlands, plus springs and seeps are part of the river or stream system and must also be protected.
3. Land use along rivers and streams directly affects the water quality of the streams.
4. Maintaining riverside vegetation and on slopes is the key to water quality.
5. Townships and municipalities along a river should coordinate their efforts and standardize their approach to the river.

Local Planning and Zoning Ordinances

Zoning ordinances refer to the types of property uses within a given zone. They provide certain restrictions on what may be done on a property. An example of specific restrictions are for buildings which may include setbacks from lot lines, the square footage required for a residence, the maximum height and number of structures permitted on the parcel etc. A building permit may be obtained from the county building department.

In Michigan three types of permits are necessary to build and be in compliance with the law. A Health Department permit is almost always necessary from the district health department before a new building is constructed or an existing building modified.

A DNR permit is required if there are plans to fill, build, excavate or drain in a regulated wetland or flood plain. The entire DNR permitting process is under review in 1991, and the process involved is also undergoing modification..

In Act 347 of the Public Acts of 1972, Soil Erosion and Sedimentation Control permit is needed from the District Soil Erosion and Sedimentation Control Officer if the plans involve moving of soil within 500 feet of a lake or if an acre or more of land will be disturbed by the earth change.

Counties, townships and cities may enact their own ordinances including wetland zoning ordinances. Act 203 authorizes municipalities to provide more stringent definition and regulation of wetlands than provided under the Act (Section 8 (4)). This authority is supplemental to the existing authority of a municipality to enact zoning ordinances under the County, Township and City-Village Zoning Enabling Acts. This is a point of controversy in 1991, with over local control is centered.

Indirectly, county and local sanitary codes which regulate the placement of septic systems may be used to limit development when involving surface water or wetlands. If a sanitary code prohibits septic systems in areas with high water tables, then those areas are not likely to be used as building sites. Enforcement of sanitary code provisions may prohibit development within a specific soil

type or in a wetland. (Tip of the Mitt Watershed Council, 1989, Walloon Lake Association, 1988)

Key State Level Laws and Regulations

Numerous laws at the federal, state and local level are specific to land and water resource protection. Local planning and zoning efforts, health department codes and standards, and specific laws such as those relating to wetlands are all interrelated. Many items like drilling a new well, installing a septic system, filling in of lakes and streams are tightly regulated.

The Soil Erosion and Sedimentation Act (ACT 347 P.A. of 1972) is designed to protect water and aquatic ecosystems from receiving sediment due to soil erosion. Permits are issued by counties or other agencies approved by the DNR for changes to a waterway, or for earth changes within 500 feet of a lake or stream the stream excluding plowing, tilling, mining and logging land uses. A plan must be submitted to control the soil erosion and sedimentation.

The Flood Plain Regulatory Authority (Act 245, PA 1929, as amended by Act 167, P.A. of 1968) assesses the location and extent of floodplains, streambeds, stream discharge and stage characteristics for the waterways to prevent dangerous flooding.

The Shorelands Protection and Management Act (Act 245, P.A. of 1970) partially regulates environmental areas important to fish and wildlife along the Great Lakes.

The Subdivision Control Act (Act 288, P.A. 1968) requires a review by the DNR for any subdivision abutting a lake and stream or for dredging a channel out of or connected to a lake or stream also covered are subdivisions containing lots in the floodplain.

The Michigan Environmental Protection Act (MEPA) (Act 127, P.A. of 1970) requires all citizens and private or public organizations to prevent or minimize environmental degradation, caused or likely to be caused by their activities. MEPA prohibits any conduct which is likely to pollute, impair or destroy a lake, stream, wetland or other natural resource of the state unless the entity proposing or authorizing the activity can show: (1) there are no less harmful feasible and prudent alternatives, and (2) the "conduct is consistent with the promotion of the public health, safety and welfare in the light of the state's paramount concern for the protection of its natural resources from pollution, impairment or destruction".

Michigan's Wetland Regulatory Program

The Gomaere-Anderson Wetlands Protection Act (Act 203, P.A. of 1979) has several components. It forms the key policy against the loss of wetlands and describes the public benefits of wetlands. It focuses on the alteration of wetlands prohibiting actions that would pollute the water, increase flood risks, lower lake or well water levels, destroy fish and wildlife habitat or cause other nuisances

or harms. It uses a permit program to regulate activities in wetlands that are located above the ordinary high water marks of lakes and streams.

Closely related laws are the Inland Lakes and Streams Act (P.A. 346 of 1972) regulates dredge, fill or construction activities in inland lakes and streams and associated wetlands below the ordinary high water mark. The Great Lakes Submerged Lands Act (P.A. 247 of 1955) regulates similar activities on the Great Lakes and Lake St. Clair.

Act 203 authorizes more stringent and broader regulation of wetlands by local governments and abets the sharing of information and practice between the local governments and the DNR.

Coverage: A permit under Act 203 is required only for dredging, filling, draining or developments that: (1) are in a wetland as defined in the act; (2) are not subject to permit under Act 346 or Act 247; and (3) are not exempted in section 6 (2) of the Wetlands Act.

General Permits: The DNR may issue general permits on the state or county level for similar activities which have only a minimal cumulative adverse effect on the environment. The general permit allows an activity, provided that the conditions in the general permit are met. It can be issued without the hearing and notice process and waiting period. These general permits are used in areas without local

planning and zoning restrictions and may circumvent the usual permit process.

No permit can be issued unless it is "otherwise lawful," "necessary," meets a demonstrable need in the community, is in the "public interest", provides that an "unacceptable disruption will not result to the aquatic resources, and determines that a "less harmful feasible and prudent alternative does not exist" or the "proposed activity is primarily dependent on being located in the wetland." section 9 (2)

The criteria that must be considered in the public interest test and the unacceptable disruption tests include effects on existing natural characteristics of the wetland and on the public and private uses of the wetland, the public and private economic value, alternative areas for the proposed activity, the need for the activity, the cumulative effects on the wetland of existing and anticipated activities in the watershed, the proximity to a waterway, the size of the wetland and amount of wetlands in the area,

Administration: The DNR Land and Water Management Division administers the permit program. However, in those local governments with wetland ordinances that have made an agreement with the DNR pursuant to sections to section 8 (4) of the Act, an application for permit is first filed with the local government, which then sends a copy to the DNR. Current proposals in the legislature would restrict or

remove the jurisdiction of the local governments on this point. (East Michigan Environmental Action Council, 1981).

The Natural River Act of 1970 (Act 231, 1970) authorizes the establishment of a system of designated wild, scenic and recreational rivers; and prescribes the power and duties of the natural resources commission for study and comprehensive planning. It also provides for planning, zoning and cooperation with local units of government; to authorize the protection of designated river frontage by acquisition, lease, easement or other means; and to establish zoning districts in which certain uses of river related lands may be encouraged, regulated or prohibited. Limitations on uses of lands may be encouraged, regulated or prohibited.

The responsibility for guiding the protection of designated rivers in a statewide natural rivers system was given to the Department of Natural Resources by the Natural Rivers Act (Act 231, P.A. 1970). Under the program, actions are being taken by the state and local units of government to preserve and enhance a broad range of values inherent in the rivers and their tributaries, and to counter existing and potential problems.

A distinctive and important feature of the Natural Rivers Program is the opportunity for local participation in developing the plans for natural rivers. The program was inaugurated to establish a system of natural rivers meeting

certain criteria and to protect the natural quality of these rivers from unwise use and development. Any river plan will normally be developed in close cooperation with local government and citizens.

It is a designated strip of land on each side and parallel to the designated portion of the river. The land is described in the natural river plan. The district will be a definable area, just as any other zoning district, within which new development can be guided. Establishment of this district in no way implies the taking of private lands by the state or opening them up to public use nor does it prohibit any persons vested right to make reasonable use of his private property.

Common Law: It is possible that an alteration of a watercourse or wetland may so alter streamflow, water quality or runoff patterns that certain common law doctrines may be relevant. Riparian, surface water, nuisance and trespass law may all apply. For instance, if a landowner drains a wetland or alters surface water flows so as to discharge an increased amount of water onto the property of another, the latter may sue for damage and an injunction preventing further discharge in excess of natural conditions.

The Natural Resources Trust Fund

In 1990 the State of Michigan had one main avenue for providing support for natural resource conservation

programs. This was through the Michigan Natural Resources Trust Fund. This fund, established in 1985, replaced the Recreation Trust Fund Act of 1986. The source of money for the Michigan National Resources Trust Fund is the oil, gas, and other mineral lease and royalty payment. Administered by the Natural Resources Commission, with input from citizens nominated by the governor, it is overseen by the Recreation Division of the Department of Natural Resources.

Local communities with recreation needs ranging from sports facilities to trying to preserve local natural areas can apply to the fund. Urban areas and urban recreation needs are also included as possibilities. A further use of the trust fund money is to fund economic development through encouraging tourism, business and industries, primarily through seeking to improve the recreation infrastructure of a given town or city and to provide for tourist service facilities or to up-grade existing facilities. Local communities in Antrim County have utilized this trust fund in the past for such purposes as recreation land purchases and facility improvement (Antrim County Planning Department, 1989).

Applications can be submitted by any type of governmental unit. Villages and townships or counties, school districts or recreational districts may present a project to the trust fund for funding. There is no minimum amount of funding for land acquisition, nor is there any

maximum funding. If communities are applying for facility development projects, however, there is a minimum and a maximum. The fund acts on a matching grant basis, with all applicants providing a minimum of 25 percent.

Local communities must meet several criteria in order to be eligible. One criteria is a community recreation plan, and demonstration of how the project fits into the plan. Following a yearly time table, each community would submit a completed application with project description to the Michigan DNR in the Spring of the year. Each project is rated according to state-wide criteria that include a number of priorities. If the application is complete, and if it has followed the required procedures, it will be scored and ranked according to how the project responds to identified recreation needs, the capability of the local unit of government to obtain and maintain the project, the quality of the project site design. In addition, the DNR has special initiatives which must be considered. For example, recreation areas in recreation deficit areas of the state, within short distances of urban areas, designed for specially indicated populations, or linked in high priority recreation areas identified by the Michigan DNR may be given additional ranking.

As communities must provide a matching grant, the financial ability of the community to provide the grant, but also the economic ability or disability of the community

need also to be taken into account, thus poor areas of the state are not excluded from consideration due to economic factors. Finally, all applications for a current year are screened and brought before the board which must allocate the money out of the existing fund for that calendar year. Not every worthy project can be funded, and some projects are reworked and partially funded.

In addition, matching grants, local land use plans, existing infrastructure and political and economic considerations help to determine if a project is to become public patrimony at the state or local level of government.

In 1990, almost 300 land acquisitions and development applications were received by the DNR, with the total amount requested of almost sixty million dollars. From that field, 35 land acquisition projects and 38 facilities proposals were approved for a total allocation of approximately 25.5 million dollars (Apostol, MDNR, 1989).

The trust fund is not the only funding source available through the MDNR. Other parts of the DNR, such as the State Parks and Wildlife Division provide funding for state parks and other state administered programs. The importance of the trust fund is that it transfers money to the local government, and that the local government itself maintains administration and control over the facilities and land. Much of the park and forest lands in Antrim County have been purchased using these funds. The role of the County Park

system in Antrim County has expanded due to transfer of state lands to county ownership and utilization of trust fund monies for development of facilities, although most county parks are undeveloped and additional public land may need to be purchased on or around the larger lakes. State funding and Land and Water Conservation Fund money commitment to the area seems strong. The ability of the region to consistently come up with matching grants will be a positive factor in future projects.

This factor is of growing concern to the DNR as the Heritage Trust Fund and other initiatives begin to purchase more properties. The rate of tax payments to local units of government as required increases with each transfer of property to the state. According to trust fund administrators, it is possible that by the year 2010 the entirety of the fund could be tied up just in these kind of tax payments.

As the trust fund can be used for purchase of land by municipal, township, county and regional agencies, it appears highly likely that the tax transfer problem will influence future acquisition policy. The trend will be toward local projects if the state has to shoulder the tax burden.

This chapter provided a broad presentation of the public institutional contexts for land use planning and resource conservation. Broad concepts derived from

philosophical precepts for protecting the environment are reflected in practical terms through legal definitions and federal, state, and local regulations. The discussion in this chapter focused on key planning and zoning statutes, acts, and ordinances which provide certain restrictions on what may be done on private property. Beyond the regulatory roles on the state and federal levels, programs such as the Natural Resources Trust Fund have been set up to facilitate the acquisition of local natural areas and economic development based on the natural resources of a community.

CHAPTER FIVE

THE INSTITUTIONAL SETTING: THE PRIVATE DIMENSION

This chapter begins with a description of the non-governmental organizations (NGOs) involved in land conservation in the study area. These include national level NGO involvement. The Land Trust Movement and its importance in the region and Antrim County are discussed followed by a presentation of state and local level groups such as, lake associations, nature organizations, and watershed councils. Related and ad-hoc groups and individual efforts are also included.

The region contains a plethora of groups concerned with the conservation and preservation of their natural and cultural heritage. Each group represents a particular area of emphasis and expertise with their programs designed to fulfill their proscribed missions. Antrim and the Grand Traverse Region demonstrate an interesting opportunity to document the role and utility of this litany. Many of the groups are national in scope, with activities in the region and have targeted the area as high priority for programming. Other groups are state level or regional in scope, while still others are local grass-roots types. This is a manifestation of the increasing presence and sophistication

of non-profits involved with the various facets of protection or preservation.

National Level Groups

The existing national level organizations occupy the full range of possibilities in land and resource conservation, protection and preservation, as well as political and policy roles. The following national level groups, their roles and involvement are discussed.

- The Nature Conservancy (TNC)
- The Archaeological Conservancy (AC)
- The Trust for Public Lands (TPL)
- The American Farmland Trust (AFT)
- The Land Trust Alliance (LTA)
- The National Trust for Historic Preservation (NTHP)

The Nature Conservancy. The Nature Conservancy is by virtue of primacy, the foundational organization in the land Conservation movement. TNC is very good at what it does and has a clearly laid out tie to ecocentered protection when selecting projects or sites to be considered for protection. Their priorities and their dedication are to the principles of preserving viable examples of the most endangered ecosystems in the nation and the world. Their scope of operation, and prioritization process does not operate from a local agenda except as far as that coincides with globally or nationally threatened and endangered species.

The Nature Conservancy has been heavily involved in several key projects in the region. In Antrim County they maintain one Nature Preserve along Lake Michigan. The

Palmer/Wilcox/Gates Preserve was created in 1976, its fifteen acres encompasses a beach and dune ecosystem with several rare and endangered species. A local management committee oversees the operation and management of the preserve. The land was a donation, and additional acreage is being considered for possible expansion.

Two other important areas The Skegemog Lake Wildlife Area on the southern end of the Chain of Lakes and the Grass River Natural Area were also projects that the Nature Conservancy was involved in. The Grass River Area is discussed later in this chapter. The Skegemog tract is the largest preserve in the region initiated in 1977 it covers over 2700 acres of wetlands and forest including a long stretch of the decommissioned rail way right of way that connects through the whole of the county to Traverse City. Management is under the jurisdiction of the DNR, but a local stewardship committee has important input into the process.

The Archaeological Conservancy. This group has worked on two efforts in the region. Their most significant involvement has been with the Samels Brothers parcel on Elk Lake where several Native American village sites are being protected. This work is being conducted in conjunction with a local stewardship committee and Northwest Michigan College in Traverse City. They are a very small group with a limited budget and are advocating a comprehensive archaeological inventory of sites in the area.

The Trust for Public Land. As a national conservation organization committed to preserving open land for public use, TPL operates primarily in urban areas to secure open spaces and protect public property for recreational purposes. The group has had little involvement in the region other than acting as a reference source.

They were however pivotal during the time of this study in securing an enormously important piece of property in Michigan's Upper Peninsula. As such, the role they played in holding and creating the Grand Island National Recreation Area is similar to the role of the Nature Conservancy or the American Farmland Trust. As they are an advocacy group that includes social welfare aspects and economic development components, they could have a future role in the area especially if public access to the Chain of Lakes continues to shrink.

The American Farmland Trust. The American Farmland Trust was founded in 1980 as a national level non-profit organization with the expressed purpose of protecting the best agricultural land in the country. They often act as a bridge between agriculture and conservation interests. Due to the rapid conversion of the area orchards to recreational property and other uses, the region was declared to be one of AFT's national priority areas of concern in 1990. This focused national attention on this aspect of land use change

and generated funds from throughout the country to begin and sustain active intervention.

The main involvement in the region occurred on the Old Mission Peninsula immediately across Grand Traverse Bay from Antrim County. Literally within sight of the County, the AFT succeeded in intervening upon notification of the opportunity by the author, on behalf of the Old Mission Conservancy to purchase and protect a 500 acre farm with almost a mile of lake frontage. This parcel was the largest privately owned piece on the Lake Michigan Shore that had not yet been subdivided. In a dramatic maneuver the property was eventually transferred to the DNR as a State Park, but perpetual farming activity rights were reserved on the most productive portions of the property while recreational development was restricted on the remainder.

Activities through 1991 included dozens of other projects and workshops in the region working with individuals, local government officials, and land trusts. Conservation easements and the desire to pass family property intact to future generations for continued farming have been proposed for a few parcels in Antrim County.

The Land Trust Alliance. This organization was formed as the Land Trust Exchange in the 1980s. It operates as a clearinghouse and union of the hundreds of local land trusts and conservancies nationwide. Along with providing a vital networking capacity the organization actively supports the

establishment of local land trusts through out the country. Their publication "Establishing a Local Land Trust" and other specific legal and organizational guidelines are the standard for practice among these organizations. A yearly rally or convention attracts hundreds of constituents for training and management sessions.

The involvement of the LTA was instrumental in the establishment of the Leelanau Conservancy in 1988. Their information and visits to the region by their officers in 1989, informed and encouraged local groups to organize elsewhere in the Traverse City area. Their presence eventually aided in accelerating the process. Along with the Little Traverse Conservancy efforts and the ad hoc group The Northern Michigan Trust and Land Conservancy, the Land Trust Exchange helped in the eventual structuring of community interests and the creation of the Regional Land Conservancy.

The National Trust for Historic Preservation. This group and a related organization called the Michigan Historic Preservation Network, have the responsibility of protecting cultural resources. They seek to establish local landmark commissions to inventory, review and protect threatened architectural, historical, archaeological, and landscape resources. They serve as an educational political and financial network for preservation. During 1989 this group held one of their regional forums in Traverse City to

help strengthen local organizations, to identify a statewide agenda for preservation, and to secure and develop leadership to implement the agenda. They specifically sought to identify regional concerns, and build a network to support the Michigan Historic Preservation Network which emerged

State, Regional and Local Organizations

This section focuses on the role played by existing Non-Governmental Organizations,(NGOs) in the protection of local resources and in planning and management. As key players in the past and present, they are the structural support for land and water protection, conservation and preservation. This section also documents the emergence of local land trusts in the study area and the creation of a regional trust for the Grand Traverse area in 1990-91. The following Regional or local organizations or groups are discussed:

- Grass River Nature Center, Inc.
- Grand Traverse Regional Land Conservancy
- Tip of the Mitt Watershed Council
- Little Traverse Conservancy, Old Mission Conservancy and Leelanau Conservancy
- Rails to Trails Conservancy and TART
- Michigan Nature Association
- Lake Associations
- Friends of the Jordan
- Northwest Michigan Resource Conservation and Development Council
- Au Sable Institute
- The Northern Michigan Environmental Action Council
- Miscellaneous, ad hoc, or defunct groups like the Elk River Watershed Council and the Traverse Area Foundation

Grass River Natural Area. The most important example of natural features and natural resources conservation in Antrim County is the Grass River Natural Area. Initial interest in preserving the connecting water between Bellaire and Clam Lake in the 1970s resulted in a grass roots effort to protect one of the largest wetlands in the county. The Grass River Natural Area is administered and owned by Antrim County, and currently comprises over a thousand acres of wetlands. In a classic example of state government, local government, and private initiative, the Grass River Natural Area was created in the 1970s as a regional natural area.

Utilizing about 225 acres of the property for recreation and education purposes, the Grass River Natural Area contains numerous trout streams, and examples of rare and endangered species of plants and animals, including over 300 species of plans, 40 species of mammals, and 55 species of birds. Use of the land is as an outdoor laboratory and for passive outdoor recreation in a year-round manner.

The area is overseen by a volunteer public board of directors which operates similar to a non-profit corporation, although technically administered by the county government and working with the recreation committee. The group has approximately 1600 members. This organization has evolved from an informal totally volunteer organization into the late 1980s where they have begun to restructure. The land is county owned, the group is largely locally

controlled, and may be thought of as the nucleus of the county park system.

As environmental education is one of the main goals of the group, Grass River Natural Area maintains a nature center facility during the summer and hires a naturalist. This provides the community with broad based seminars and lectures covering the spectrum of nature-related and environmental topics. Philosophically, as an organization, with close ties to the local government, Grass River Natural Area seeks to present public interest topics and to provide recreation opportunities and nature study opportunities to the general public as well as their members.

The possibility existed in 1990 for the Grass River Natural Area to expand and operate as a land trust for the county or watershed, but this did not happen. Instead several members of the group contributed to the formation of what became the regional land trust. GRNA has since entered into an essential partnership relationship with the Grand Traverse Regional Land Conservancy.

Before the emergence of the land trust, Grass River was constantly being solicited to accept, evaluate, or expand their purview into other areas beyond their boundaries. This community need and the role Grass River would or could play was the source of much debate and tension on the board through 1990. Several members supported the vision and saw Grass River as taking the lead to form a local land trust

for Antrim County. Others did not. The leadership did not respond and no local land trust was formed.

Although the idea behind Grass River was originally to preserve and protect a specific tract of environmentally significant property; now that the preserve has been assembled they have had to focus on management and programming. The board of Grass River Natural Areas has chosen to focus their efforts on institutionalizing the education programs.

Recent controversy in the group has included issues such as allowing or disallowing hunting on the property, a shift in the directorate as older members take on a less active role, and disagreements on the board and in the general public over pantheistic religious and new-age movement activities, philosophies and teachings offered under the auspices of the group.

The Grand Traverse Regional Land Conservancy. Rotary Charities of Traverse City took the initiative for the creation of a local land trust in 1990. Under their direction it became the top priority of their newly hired executive director, Mr. Rob Collier. Their interests were to facilitate the creation of a regional land trust, based in Traverse City, to midwife and accelerate the critical formative stages of the entity to assure a viable and professional organization from the beginning, and thirdly, to financially enable the newly formed land trust to hire an

executive director and staff and buy time for funding development. The process of creating a land trust is an interesting form of organization development and deserves extensive study in its own right.

In this case Grand Traverse Regional Land Conservancy had a model to copy. The model was the Little Traverse Conservancy whose directors and board recognized in 1990 that they had a role outside their region and actively aided in the formation of land trusts. The salient points of interest in the creation of the Grand Traverse Regional Land Trust is that it is regional in focus and quasi-decentralized in structure. Antrim County is one of the four counties in the service area.

A steering committee composed of local individuals met over several months to form a board. The criteria for selection of the board members focused on geographical representation interest, male and female balance and most importantly, the somewhat intangible "community standing." Leadership was to come from the proven leaders, but also those with connections and communication and financial networks. The emphasis was on respectability and creating an institution firmly of and by the establishment. Steering committee members who are technically capable and hold community leadership positions continue to be associated in the form of a reference cadre.

As expressed in their by-laws and brochures, this land trust has primarily a natural areas preservation focus. Besides seeking out lands to be set aside for their natural and ecological values, the Grand Traverse Regional Land Conservancy sees as its purpose the following areas: providing input to propose development projects, and advice on matters of local planning and zoning.

Tip of the Mitt Watershed Council. This group acts as a constituency based environmental advocacy group in Emmett, Charlevoix, Cheboygan and Antrim Counties. As a private non-profit agency, their focus is on water resources and related land use or policy. Their support base is individuals, organizations, such as lake associations, recreation interest groups, and others who support preserving the environmental, for health and recreation, aesthetic and economic reasons. The council covers all aspects of the broad spectrum of water resources. Included in this are aspects of wetlands and groundwater as well as lakes and stream systems.

Tip of the Mitt acts as an educational organization by providing members with a newsletter and updates on specific issues. They also publish pamphlets and books on such water related topics as swimmers itch, controlling water pollution, monitoring septic tanks, etc. In 1979, they published a citizens guide to wetland protection and were contracted to provide the DNR Wetland Protection Guidebook

(Brown, 1989). Thus, although they are regional in scope, their institutional impact in Michigan is far reaching. Staff and members of the group also actively participate in seminars, give public education presentations, and coordinate campaigns such as lake cleanups or to focus public awareness on issues of concern.

The watershed council is active politically to review both public policy, planning and zoning and private development proposals. By monitoring local land use, providing public commentary and seeking to influence local decision makers, they are seeking to be representatives of public opinion and are in effect local resource advocates and lobbyists.

One notable point on this is that the watershed councils were set up in Michigan under two provisions. The pre-existing Elk River/Chain of Lakes Basin Watershed Council was formally deactivated in 1989 thus technically allowing Tip of the Mitt to expand into the institutional and geographical vacuum.

This group expanded into Antrim County to service the ERCOL Watershed in August 1990. Their commitment includes reserving three positions on their Board of Directors, and institution of the full range of their services. They intend to follow-up on existing grants, and expand newsletter coverage, plus their volunteer lake monitoring

program, and beginning in 1992, to start a five-year extensive program on lake monitoring.

Their public education component will provide all of the same program emphasis through the newspapers and public education. They plan to review all land development proposals, and to strengthen public planning and zoning policy through ordinance review and seeking practice standards that protect the resources. To this end they will expand interventions beyond wetlands into policy relating to groundwater and other land use questions.

The Tip of the Mitt expansion provides growing agency strength in the region. Their long term association with the Little Traverse Conservancy and the reciprocity in practice as a policy agency, will serve as a basis for coordinated resource management. They will act accordingly with the Grand Traverse Regional Conservancy. The complimentarily of this group and their new commitment represent a milestone for the study area. The Tip of the Mitt and Rotary Charities in Traverse City also coordinated in the inception of the new regional conservancy. The overlap of service areas in Antrim county has an added dividend in that the Tip of The Mitt now qualifies as an agency operating within the geographical parameters governing grants from Rotary Charities which could conceivably fund any of the watershed council programs.

Whereas the ERCOL watershed existed outside the functional regions of any environmental organization prior to 1990, it now finds itself in the enviable position of double coverage. Future regional institutions in Traverse City or Watershed Councils that could potentially grow or emerge centered on the Boardman River or on Grand Traverse Bay, can now clearly work with an existing watershed council in a delineated service area.

Little Traverse Conservancy, Old Mission Conservancy, and Leelanau Conservancy. As the primary conservation phenomenon of the study period, the function and purpose of local conservancies is extensively discussed at the end of this chapter. These three groups represent the institutionalization of the conservation movement at the local level. Old Mission Conservancy is located in nearby Grand Traverse County, and came into existence in 1989. The Leelanau Conservancy was created in 1988. Refer to the discussion of the Land Trust Alliance and the American Farmland trust for elaboration on their efforts.

The Little Traverse Conservancy is the primary land trust in Michigan. This group was intimately involved in the creation of the Grand Traverse Regional Land Trust in 1991. Their offices are located in the City of Harbor Springs immediately north of the study area. The function of these groups is detailed in a broader discussion at the end of this chapter.

Rails to Trails Conservancy. The goals of this group is the preservation of appropriate rail corridors and other related open space as trails. They utilize abandoned railways, public land and public access easements to protect open space and assure access and recreational use of properties throughout the state. They seek to develop a statewide interconnected system of trails that will be utilized by hiking, bicycling, and equestrian users. In 1991 there were over thirty trails designated covering 560 miles. The Rails to Trails Conservancy is the state chapter of the national Rails to Trails Conservancy. They function to educate the public and the local and state officials about rail-trails, and to provide technical assistance to local groups that may develop projects

During 1988 a local group called the Traverse Area Recreational Trail (TART), was created that galvanized action to protect a segment of abandoned rail in Traverse City. Their actions successfully secured the open space and with a grant from Rotary Charities developed a paved eight mile trail. This independent local organization was instrumental in helping form the state level group. They are interested in activities in Antrim County.

Michigan Nature Association. This group is one of the original nature protection groups in the state. It originated in Southeastern Michigan in the 1950s. As its goals are to preserve examples of Michigan's native plants

and animals it has assembled more preserves than any other group in the state, though most of them are very small. Two areas are located in Antrim County. The Cedar River Nature Sanctuary was established in 1971 and covers more than 80 acres along one of the main rivers in the county. The 40 acre Green River Preserve acquired in 1979 also protects a portion of a small river with associated habitats to be preserved. Both preserves are visited infrequently and are to be left undeveloped.

Lake Associations, Michigan Lakes and Streams Association (MLSA) and North American Lake Management Association (NALMS). Numerous Lake Associations exist in the region for the purpose of protecting the water of the region. Each group is usually an association of property owners around a particular lake. A statewide organization called the Michigan Lakes and Streams Association acts as a clearing house for the groups statewide, publishes materials, and lobbies for legislation related to water issues and property rights.

Another group, the North American Lake Management Association, offers technical assistance to individuals and groups on water quality issues. The Michigan chapter was formed in 1989 with considerable support from the Lake Associations in the watershed, and they held their first conference in June of 1989 at Shanty Creek in Bellaire.

This is a further indication of the breadth of involvement of various groups that fomented the process.

In the county, several local lake associations are actively educating the public about water related issues. In 1990 the Bass Lake and Birch Lake Associations, the Elk-Skegemog Association and the Three Lakes Association were located in the southern portion of the watershed. The major issues of concern to them included property subdivisions, water quality testing, environmentally sound decision making, and other general water related issues as perceived from a riparian viewpoint.

Additional associations such as the Six Mile Lake Association, The Upper Chain of Lakes Association, and The Northern Waterways Association were concerned about the waters of the lakes and rivers of the Upper Chain of Lakes. Their issues were lake level fluctuations, fisheries, pollution, septic systems and parks.

The associations were in a period of reorganization and consolidation in 1991 with the trend toward a total watershed approach and the creation of a sophisticated new and powerful group for the protection of the water and other resources.

Friends of the Jordan. The most recent natural resource based group to emerge in Antrim County formed in late 1991. Focusing on the Jordan River Watershed, the purpose of the Friends of the Jordan, is to maintain the

environmental and recreational quality of the watershed. They are particularly interested in maintaining the area for such recreational activities as hiking, hunting and fishing. This will be done through preserving, protecting, and managing the wildlife, natural characteristics, scenic resources, and water quality. This group represents a local nucleus for this critical watershed and will effectively act as a stewardship committee for the river, which was the first federally designated Wild and Scenic River in the state.

The forces behind the creation of this group are individuals from throughout the county with conservation or sportsman interests. Stream management concerns such as fisheries, erosion control, water quality and recreational use are primary concerns and areas in which the group will attempt to develop programs and educational activities. Forest and wildlife management, and environmental protection centered on such concerns as off-road vehicle use, and camping in the state forest and on private land will be other areas of interest. It is assumed that the group will work in close contact with the DNR that has the legal mandate for managing the state forest lands and the public resources.

Northwest Michigan Resource Conservation and Development Council. This is one of the key groups involved with economic development and resource conservation in the

region. As a non-profit group the goals of the organization are to sustain the quality of the natural resources of the region and to enhance or build on the economic base. They work with local units of government and the private sector. Some of their activities have included forest land inventories, river restoration programs, erosion control action plans, parks and campground projects.

Au Sable Institute. Au Sable Institute is an environmental stewardship institute located just south of the Antrim/Kalkaska County line. Formerly a summer science camp, the institute expanded in 1980 into a biological research center and base for a series of science and environmental courses offered through a consortium of colleges and universities. The institute offers certificates in environmental analysis land and water resource analysis and as a naturalist under license by the State of Michigan. The institute is scientific and environmental in focus and operates from an evangelical Christian perspective. According to its Director, Dr. Calvin DeWitt, its mission is to bring healing and wholeness to the biosphere and creation, as well as to offer study and research opportunities for students, professional certification and internship opportunities.

Au Sable Institute has been responsible for elementary school environmental education programs for most of the school districts in Antrim County. As a resource and

training center for students and teachers, they have a very important role in the local area. Programs and lectures have been conducted in conjunction with Grass River Natural Area. Information and analytical services have been provided for many individuals, government agencies and school systems in the area, especially for environmental analysis and project work.

Au Sable Institute's involvement within Antrim County has been primarily at the elementary school level. The institute does not have any programming that focuses on the residents of the region. They do not involve themselves in political and public advocacy programmatic agendas. Environmental monitoring of area lakes and streams and involvement when requested in technical or education matters does occur and individual professors, classes, or staff may work on projects such as water quality monitoring, or botanical inventories. The Institute occasionally offers public programs on topics such as groundwater protection and regularly conducts an international forum on environmental stewardship.

The Northern Michigan Environmental Action Council. This group is located in Traverse City, but its activities extend throughout the region. As an advocacy group dedicated to the protection, conservation and preservation of the environmental quality of northern Michigan, it promotes sustainable solutions and alternatives to regional

problems. During the period of 1988 to 1990 this group under went a substantial internal power struggle as they were perceived to be outside the political mainstream of the community. What occurred was in effect an engineered internal take-over of the board of directors by agents of powerful organizations like the NWMCOG and groups that represented the more moderate and economically oriented segments of the community. Their role in the watershed was limited but they continue to be a player in the overall stratagem.

Miscellaneous Groups

A number of other groups exist in the watershed that have dedicated themselves to the protection of the natural resources of the area. Many of these groups such as The Sierra Club, The Walter Hastings Audubon Society, Ducks Unlimited, the Ruffed Grouse Society and Trout Unlimited are local chapters of larger organizations. Their members are actively involved in many aspects of environmentally related issues. They are capable of focusing their constituencies on any issue in the watershed and have been involved in such diverse activities as education, outings and recreation, cleanups, and protests or political lobbying.

The Federated Garden Clubs of Michigan have two associated clubs in Antrim County, the Juniper Garden Club, and the Elk Rapids Garden Club plus over a dozen others in the region. Besides seeking to beautify their communities,

they often work with environmental legislation and may raise money for wildflower planting, scholarships for environmentally related studies, or to help purchase environmentally sensitive property.

The Traverse Area Foundation (Traverse Area Development Fund). This foundation functioned during the 1970s as a broad based development fund. As a private non-profit community group it was instrumental in the purchase and protection of several key parcels of property, primarily in Grand Traverse, but also in Antrim and Leelanau Counties. The foundation secured large areas of bay front property in Traverse City and Suttons Bay. The purchase of Power Island in West Bay and islands in Long Lake were facilitated by this group as well. A primary tactic was to raise local matching funds for state and federal grants eventually amounting to more than 2 millions dollars. Their avowed purpose was to seek out funds for public recreation lands, open space and environmental protection.

After 1974, due to increasing concern for development pressure, the focus of the foundation was increasingly environmental. "Recognizing the fact that the backbone of the area economy is the natural beauty with which we have been blessed, attempts will continue to be made to help shape and protect the environment in ways that will improve the health, recreation and education of our citizens."

The foundation did not stick to its goal during the late 1970s. Instead they increased commitment to a diffuse series of projects such as civic center and pool improvements and other recreation facilities. Alleged mismanagement, creation and expansion of city and county professional staff in professional grant writing roles, struggles between local projects, and commitment to projects where funding was not forthcoming brought about the demise of this group.

Projects in the region continued to be funded later through the state level Heritage Trust Fund endowed through oil and gas revenues. Rotary Camps and Services (and later The Rotary Charities) plus the private Oleson Foundation completed individual land purchases and other projects. Thus, several agencies took over the roles and purpose of this group in a general sense.

The emergence in 1990 of the proposed local land trust marks the resurrection of these environmental protection goals and local institutional support for locally determined projects.

Rotary Charities. It is fortunate that the diffuse community-wide educational and recreational purposes of the defunct Traverse Area Foundation are being addressed by the Rotary Charities. Projects in the service area can be directed toward park lands, open space, nature protection and other natural and cultural protection goals. As a

complement, Rotary Charities seeks to make grants for capital intensive projects, providing for facilities, and development funding. Funding comes from royalties from oil revenues on property owned by Rotary.

Everyone in the region has been impacted by the projects funded by Rotary Charities. More than eight million dollars has been given to non-profit groups or government agencies. They were the main funding source for the TART projects, the regional conservancy, and numerous recreation and planning efforts. Their impact on the area is tremendous.

Regional Ad Hoc Citizens Groups. The 1988-1990 time period marked a turning point for environmental protection in Northwest Michigan. Issues and controversies related to development, growth and change in the region reached a critical point with numerous and almost daily concern relating to public thought that no adequate system, plan or institution existed to deal with growth management.

Numerous high profile issues relating to individual pieces of property spurred public reaction. In the immediate Traverse City Area, one of the key controversies centered on the decommissioning and prospective uses for the 520 acre Regional Psychiatric Hospital, a National Historical Site with large areas of wetland, forest and developable property. Another issue was salvaging and reusing abandoned railway right-of-ways. Two other crises

were the construction of a new museum in a grove of trees on the local college campus and a fire in one of the main historic houses in the city. Local groups arose in response to the crises or out of conservation/protection sentiments or as a response to development proposals.

As there existed no unifying agency, either public or private, that acted as a clearing house, each constituency developed around their particular issue.

Project Acme. This ad hoc group formed as a reaction to rapid land use changes and intensive resort and commercial development in Acme Township. Similar groups had opposed mall development in downtown Traverse City in the early 1980s, and others formed when numerous malls were proposed and built in Garfield Township in 1990. Project Acme is representative of the local efforts. A grassroots group with avowed anti-development rhetoric it was composed primarily of middle class township residents representing the following objections and perceptions.

1. Recognizing the lack of an adequate planning and zoning base in the county, that allowed for rapid and unstructured development of resorts, residences, golf courses, and businesses in environmentally sensitive areas largely without regard to environmental constraints or considerations relating to water or creekshed protection, ground water or lakeshore dunes.

2. Physical changes along the main scenic portions of East Bay with little regard for maintaining the quality of life and natural resource base or assuring public access to the bay.
3. Unresponsive planning officials and a public uninformed on planning, zoning, protection issues.

The group disbanded after efforts to elect a controlled growth slate and defeat a proposal related to controlling growth failed in 1988. Several members shifted their emphasis to fight proposed mall development elsewhere in the region, and successfully achieved and verified the role and process of public input and environmental protection in the land development proposals. One of the main supporters, Wayne Kladder, became a chief force behind the creation of the regional land trust for the area.

The conservation viewpoint was perceived to be marginal to the interests of the general public. However the initial stage of innovation and radical positions on the development issues passed into general acceptance. This would appear to follow the classical diffusion of Innovation Model (Rogers, 1983), and the time period in which the innovation of public involvement in environmental and natural resource protection issues reached the critical stage of majority adaption in the study region.

In the period of the 1960s to 1988, environmentalist sentiments had been expressed by a particular minority of

the population composed of such opinion leaders as environmental activists and technocrats. It was disdained as extremist due to perceived and actual anti-development anti-business stands by the ad hoc crisis groups that formed, or due to the perceived unpopular associated political platforms (liberal democrat, green party). Philosophical or religious relationships or overtones espoused or practiced by individuals or groups (old Hippie movement, New-Age Movement, Goddess worship, Earth First, natural and organic philosophies, etc.) also contributed to the situation. Individual personalities and media attention emphasizing a conflict approach also contributed to a polarization of attitudes within the region.

Role of the Individual

The role of the individual in effecting changes and affecting policy in the management of the local resources is vitally important in the depiction of the process. While incidental examples of dedication and notable philanthropic efforts are understood to be involved, and are actually assumed if the non-profit and volunteer efforts are to succeed, little attention has been paid to the considerable commitment of dedicated local or part time residents and concerned individuals. While it is beyond the scope of this study to investigate this aspect in any detail, it would be remiss not to mention the existence of this phenomenon. Significant efforts by the retired sector of the population

alone accounts for numerous accomplishments and everyday involvement in the protection of the natural and cultural resources of the area. Without the existence of these local natural or cultural resource "saints" who are the small minority that actively show up to do the work, the fine intentions, noble projects, and best laid plans would remain just that.

Local Press

Three newspapers provide the major source of local information in the area: The Traverse City Record Eagle, the Antrim County News, and the Lake Country Gazette. Coverage of Antrim County affairs is peripheral to the Record Eagle although they do have a local focus section. The Antrim County News operates as a standard small town newspaper with emphasis on local happenings, community social activities, and individual accomplishments.

The Lake Country Gazette operates in a weekly news feature format. They specifically present issues of environmental and cultural concern. Feature articles and updates on issues of planning and zoning, recreational, ecological, political, historical etc. interest appear regularly. The Gazette also acts as a specific communication conduit for the Lake Associations Watershed Council, land trusts, and other organizations by announcing events and meetings and publishing summaries of meetings. As such, since beginning publication in 1989, they have

provided a key component in the local information system and are another example of the institutionalization process for natural and cultural resource protection in the area.

Other Programs

The following descriptions are profiles of existing initiatives that provide options for local officials, associations and individuals specifically for the protection of their land and water resources. These programs operate at various levels. The DNR Inland Lakes Self-Help Program is a state program and the Groundwater Education in Michigan (GEM) program is statewide in scope. Stream Team and the Adopt-a-Stream program are private lake association initiatives. Water Watch suggests a cooperative effort for enforcement that includes township and state officials, and private citizens reporting problems. Finally, the See North Education Program, operated through the University of Michigan, is already in place in several school systems of the watershed.

Inland Lakes, Self-Help Program. Lake and stream water quality can be impacted by human activities especially shoreline development and recreational or agricultural uses. Increased algal and weed growth, lower water clarity, can occur gradually over a period of years, requiring long-term monitoring to adequately document and detect the deteriorating conditions.

The Inland Lake Self-Help Program was established to provide monitoring through the cooperative efforts of private citizens and the Michigan DNR. The program enables local residents to measure water clarity weekly throughout the summer. This information is sent to the DNR, so that changes in water quality can be detected and problems addressed by the DNR. An annual report is received by participants to enable property owners and lake associations to help develop lake management strategies.

Groundwater Education in Michigan (GEM) Program. This program is designed to promote awareness and action through involvement of individuals in protection of groundwater resources in Michigan. It was established in 1988 through the auspices of the W.K. Kellogg Foundation, in conjunction with the Institute of Water Research at Michigan State University. Topics of interest to GEM include all aspects of public education and numerous individual projects.

In the study area GEM has funded projects for the Northwest Michigan Resource Conservation and Development Council to use computers for land use decision making. They have also funded NWMCOG and Tip of the Mitt Watershed Council for education programs and to disseminate technical and policy information for the region. Both Au Sable Institute and the See North Program received support to develop an environmental education curriculum for elementary and high school students.

Stream Team. Another program that protects water resources by monitoring water quality in the watershed is "Stream Team". This is an environmental education curriculum supported by Trout Unlimited to involve school children in monitoring their local waters. With the purchase of some basic equipment, school children and their teachers can take accurate readings. This program can also be used by lake associations as well as other local organizations to monitor their water.

Water Watch. This program encourages property owners to be caretakers of their watersheds. Working with lake associations, individual citizens, along each portion of lakefront, or section of a river or stream, takes responsibility for watching that portion of the watershed. In addition, upland areas or any wetlands or streams which flow into the lake are monitored for problems, such as inappropriate development, etc. This is a similar approach to a "crime watch" program except that instead of reporting crimes to the local police, violations of local ordinances, and environmental degradation incidents would be reported to a central committee (lake association) or appropriate official for further response.

Adopt-a-Stream Program. This project was initiate by the Tip of the Mitt Watershed Council to preserve northern Michigan streams on a regional basis through a voluntary network. The participant will be asked to observe and give

notice of land use or water based activities at or near their streams which may have potential environmental impacts. Individuals or groups, could possibly work with the Department of Natural Resources and other groups on stream restoration and various enhancement projects.

Science and Environmental Education--North (See-North). This program is sponsored by the University of Michigan Biological Research Station in Pellston to help students learn about water resource protection and water quality testing in their science classes. See-North provides curriculum, testing equipment and training to participating schools.

After practicing water quality tests in the classroom, students then go into the field. They test for such items as fecal coliform content (an indication of sewage present), the amount of oxygen and oxygen demand, acidity, and turbidity.

Data from the participating schools is submitted to See-North for computerization, and the information is sent back to the schools. Four sets of monitoring equipment are shared among several schools in northern Michigan. This program expanded to include the Elk River/Chain of Lakes Basin in 1989. Alba, Elk Rapids, and Mancelona students are testing the water quality at various locations in the Chain of Lakes.

It is the hope of the Inland Lakes Self-Help Program, Stream Team, Water Watch, Adopt-a-Stream Program, and See-North to become active components for improvement and maintenance of the Elk River/Chain of Lakes Watershed. In addition, these efforts will also achieve habitat protection, the preservation of the waters' aesthetic qualities, and increase recreational enjoyment. Township officials and lake associations need to be involved or incorporate these programs into their current activities.

Land Trusts Description

The following section details the phenomenon of local land trusts, also called conservancies, they are non-profit C-305-J entities whose purpose is to buy land or secure easements for conservation and preservation purposes in a locally determined region.

It is no accident that local land trusts have formed and are now in the region. One formed on the Old Mission Peninsula in 1989, in Leelanau County in 1988, and another formed for the Grand Traverse Region in 1991. Land trusts in the Northern Michigan region have undertaken several major projects. The Little Traverse Conservancy, for example, has endeavored to protect the open spaces along the main roadway entrances to Harbor Springs in a green gateway concept. They are also active to save numerous ecologically significant parcels and obtaining open space areas abutting major developments. The Old Mission Conservancy has been

instrumental in trying to preserve farmlands and gain public park lands in their area.

The Leelanau Conservancy initially purchased essential open space land in downtown Leland and is seeking to preserve threatened wetlands and working on conservation easements for farmlands.

In 1989, efforts by the ad hoc group, The Northern Michigan Heritage Network, created a forum for existing groups in the region to explore options for Grand Traverse, Benzie, Kalkaska, and Antrim Counties. Individuals from such groups as The Nature Conservancy, the American Farmland Trust, the Archaeological Trust, and the Little Traverse Conservancy among others visited the region each month to explain their programs. They also offered to help organizations seeking to explore new options for land preservation and those groups considering expanding their goals or territories and services.

Land Trust Role

Perhaps the most important private conservation movement occurring in the United States at the moment centers around the creation of non-profit groups whose purpose is to preserve and protect the heritage of the local community or region. These groups are totally independent of one another and derive their agendas from perceived local needs or desires. Called local land trusts, or conservancies, these entities identify sites of interest

and then seek to protect the resource, be it ecological, scenic, or deemed valuable for another aspect.

They seek to preserve the land or site by convincing a public agency like a park system to incorporate it into their programs. Or they will also buy the property outright and manage it as a preserve. They can also work with the private landowner to secure easements over the property, limiting or prohibiting development. Like nature or ecological preserves, land trusts are heritage oriented, seeking to preserve or conserve resources that are rare or threatened, or are considered locally valuable.

Land trusts are the grass roots movement of the 1980s and 1990s. With over 750 of them nationwide, they represent an important option as local people seek options to protect open space, recreation and hunting lands, farmlands, historical sites, public land and stream access, and scenic sites, as well as areas of ecological significance.

Increased development pressure, including the conversion of former open spaces to intense use especially on the urban fringe, or in areas of concentrated recreational development, are some of the changes that galvanize local people into action. These trace the basic reasons why land trusts have been formed over the last decade, in such areas as Cape Cod, Nantucket Island, Big Sur, Lancaster County Pennsylvania and in Michigan.

The concept of a local land trust must be broad based. Typical members reflect the concerns of the local region and each trust has an identity all its own. They are invariably non-partisan, non-confrontational, and not limited to "environmentalists". Farmers seeking options for their land to continue farming, local historians seeking to preserve a homestead or an historic or cultural site, garden club members, Chambers of Commerce and Rotary Clubs, local tourism-based business owners and second-home residents, find common ground in a land trust seeking to preserve the aesthetics of an area or to protect the natural resource and economic base.

Land trusts in the Northern Michigan region have undertaken several major projects. They have three main areas where they exert leadership in the heritage protection movement. They are active to save numerous significant parcels and obtaining open space areas often working within major developments. These groups, especially if they are well endowed financially, can act more quickly than a government bureaucracy. When an environmentally significant site comes available they can advance the purchase price and buy the property, often on an interim basis; with the commitment of a state or local agency to purchase it later. The land is then most often transferred to the public domain, with a restrictive covenant.

The second area of leadership is in the role played by these groups in the selection and prioritization process of land purchases by the various governmental agencies. Local initiative by people working in ad-hoc groups or local conservancies, through local planning or governmental officials are the key to identifying and promoting potential sites for public purchase. In addition, by providing media attention and helping set the public agenda, or in practical manners such as fund raising or seeking matching grants, the groups can wield tremendous local influence. They often contribute their input to local land use plans, and exert necessary political and economic influence to help to determine if a project is to become public patrimony, and at what level of government.

A third area of involvement is in preserve creation. As private non-profit groups, these organizations can and do purchase and hold properties. These corollary natural heritage preservation efforts are private initiative efforts. In the absence of effective state efforts or attention to local priorities, the land trust organizations provide the conservation and preservation presence in the community. They may succeed in protecting or preserving areas of local interest or significance when priorities at the state level are focused elsewhere.

The institutionalization process in the creation of this land trust is usually community based, although it may

not be representative of all sectors or classes in the community and thus not essentially grassroots. Depending on the purpose of the land trust, the composition of the board, and the projects indicated the land trusts can be quite exclusive in their composition. They tend to be politically and economically homogeneous i.e. representing middle, upper middle or upper class interests. As such they are establishment and can operate classically in a top down approach. As a variant of the activist legacy in environmentalism, Local Land Trusts are respectable, and locally focused.

In effect there exists an elitist structure inherent in many land trusts. They provide a key power base for influence or creating public policy. In the case of Antrim County the Lake Associations are almost entirely composed of part-time residents who do not vote locally and are therefore deficient in avenues of policy making. By creating environmentally and locally focused constituency groups they can have their local voice and power base and influence.

The land trusts could potentially take over significant portions of the role of the local government by becoming the principal actors in planning, zoning and land management. This could be perceived as usurping representability of opinions and action. Disenfranchisement of minority view points and de-emphasis of broader social issues such as

poverty are possible outcomes in some areas. Instead of a community approach within a social content, local conservancies focus on narrower issues. They are overwhelmingly a phenomenon of elite or upscale communities in Michigan and elsewhere. (The Land Trust Alliance 1990)

A clear distinction must be made that the generative reasons for the creation of the land trust can be derived from a variety of private agendas. For example the Old Mission Conservancy as the second one created in the region formed out of the effort of local cherry farmers who wished to keep their farms, to limit growth and maintain their rural heritage in the face of rapid urbanization. Their assistance came from the American Farmland Trust and has a different priority from nature preservation or recreational open space groups.

Land Trust Limitations

Currently, enabling legislation is lacking in Michigan that would allow the state to utilize non-profit conservancies as beneficiaries of land purchased for the public. Though this type of direct transfer of ownership rights does not exist, it doesn't preclude conservancy involvement in other forms. Actual and potential involvement is possible in stewardship, management, and land use planning capacities. Land Trusts are not restricted in use covenants when they operate as intermediaries in a hold

and transfer of land to a government entity, or in compromise development scenarios.

Lands in Public Trust

The ideas of public commons is present in the concept of a land trust, but subtly modified. If the land is passed or sold or already in public ownership and managed by the local conservancy like the situation at Grass River, then land use decisions are publicly accountable. The local conservancy is private, and although restricted by the articles of their incorporation to a non-profit purpose for public benefit, most land trusts are private not public. In effect, legislation to regulate or limit their powers is not specific to land trust and they operate as a public charity.

Trends in the legal arena are indicated by cases in Nantucket Island where attempts are underway at enabling legislation to give land trusts expanded legal status, to levy taxes and raise other revenue. Questions on public use of the lands, tax exemption of property, and liability are other determinant legal areas of interest.

Land Trust Problems

Unlike many local conservancies in New England, land conservancies in Michigan are not legally tied to any one geographical area. The 1990 growth period was clearly a staking out of territory. Expansion or creation of regional land trust is an option, but does not eliminate the possibility of alternate or parallel trusts overlapping in

the same areas. Competition, and contention among constituencies in a service area is related to locally determined agendas, thus representability and conflict between organizations is possible.

According to Jeanne Hocker, CEO of the Land Trust Alliance, turf-wars and competition are unfortunate and common elements in many local areas. Her organization is often sought out to mediate in individual cases. This is especially critical when one group is individually driven, when financial insolvency threatens, or when local interest groups polarize such as resort owners versus farmers when land uses, perceptions, economic level and lifestyles are different.

Classification System for Local Land Trusts

Land trusts came into being as local communities take on the responsibility for buying and preserving land. Several types of these local entities of preservation exist and a classification system is necessary to understand their purpose, scope and raison d'etre. As each land trust or conservancy reflects local concerns and conditions, they are highly individualistic. This case by case generative effect belies similarities in form and function however. The generative explosion of lands trusts nationwide and world wide has resulted in an increasing sophistication. Several national organizations have taken on the role of supporting and directing local land trusts .

Conclusion

Non governmental involvement in natural and cultural resources management is now main stream. This is seen in the response and involvement of the community groups. In the period of 1988-90 the region experienced a radical shift. In this key period, concern for the natural resource base or the environment became broad spectrum.

Observations on the process of the formation and interaction of the NGOs in the study area point to several trends. They are:

1. An increasing number and broadening scope of organizations, as more and more groups are created or come into play in the field as a whole and in the region

2. An increasingly pervasive activist role in local land and water conservation matters plus expanded and vocal participation

3. An increasing sophistication in the leadership, organization and management of the groups; for example the lake associations and "nature groups" have become formal organizations with executive directors, offices and professional staff

4. A process of consolidation and regionalization among the groups as contiguous organizations expanded their area of operation into the area, and smaller lake associations united into larger units

5. Local people and agendas now have conduits for expression and participation in virtually all aspects of resource protection and management throughout the study area.

This larger field of action in Antrim County will not necessarily result in increasing cooperation among the various groups; instead it may result in competition and potentially in conflict. Specific interest groups which would seek to be representative of the wishes of the residents of the area may actually be able to command or dominate the local agendas not because they hold the majority view, but because they are as the discussion above suggests, increasingly sophisticated.

CHAPTER SIX

PROSPECTS FOR THE FUTURE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This final chapter identifies the key aspects of the research and draws important conclusions from the analysis. In addition it reiterates the main points and makes recommendations for policy at various levels and comments on research applications.

Summary

The general problem explored through this research was the process which occurs at the local level to preserve and protect the natural and cultural resources of a region in northern Michigan. Locally based public and private efforts sought to identify local concerns, for resource protection, conservation, planning, and management and to develop the necessary public policy. The role of non-governmental, natural and cultural resource organizations proved to be a key phenomena.

The study design used a community field research approach for gathering the baseline data necessary for identifying local perceptions derived from questionnaire responses. Additional sources included a community wide survey on issues and policy options, plus observations on

the institutionalization of the emergent organizations over a three year period.

The region recognized that action was necessary to protect or manage their resources in a comprehensive local, approach and official efforts demonstrated proactive, committed involvement to understand local concerns and lead up to policies designed to correct the problems. By using locally derived initiatives, the officials developed a solid approach to develop meaningful plans and solutions for management and protection of the resources.

The public and private efforts for resource protection evolved separately but simultaneously. Officials have benefitted from updated information, and new private institutions have emerged, but coordinated actions are necessary. Whereas in 1988 the region had no local watershed councils or land trusts, by 1991 a total institutionalization of non-governmental organizations had emerged for managing, and protecting the local land and water resources.

The popularity of Antrim County as a place to recreate and increasingly as a place to live plus the desirable combination of location and natural resources have contributed to the pressures on the natural resource base of the county. This development pressure has resulted in increased concerns and clarification of issues for land and water management, to maintain the perceived high quality of

life in the region. As the natural resources, particularly the water resources are synonymous with the County, the local governments and general populace appear to have recognized that plans must be developed and implemented if the resources are to be protected and the desired economic growth directed in a coherent manner.

Traditional approaches to the management of the natural resources of the county under the direct control of the County Board of Commissioners and the Planning Commission were recognized to have been inadequate, and concerted efforts were initiated in 1988 to correct the situation. This included supporting the necessary processes to train local officials and upgrade their capacity to govern, as took place with the 1988-89 Elk River/Chain of Lakes Watershed project, and to derive information and direction from the residents for a master plan through the 1991 Project Antrim. In addition, the professional capacity of the county was expanded in 1990 to include professional planning as a part time effort in the Coordinator/Planner position. These efforts were costly in terms of time and money for the county.

Simultaneous with the increased capacity of the local governments within the township and county political jurisdictions came the emergence of new non-governmental institutions such as the Grand Traverse Area Regional Land Trust and Jordan River group which operate out of a natural

resource based watershed approach. This demonstrates the expansion of the capacity for land and water resource protection and management. With the involvement of such groups as the Lake Associations and The Tip of the Mitt Watershed Council the scope of management and planning is even more comprehensive.

The key question in 1989 was who would oversee and direct land or water protection or preservation endeavors and the project administration over the long term? In 1988, no watershed or county level organizations existed. And no group focused on the watershed as a whole. In order for action to take place, local leadership and institutions needed to be developed.

A convenient way of illustrating the lack of institutional support at the watershed level is to compare the Elk River/Chain of Lakes Watershed with basins to the north. In these watersheds the Tip of the Mitt Watershed Council provided educational and support services from the middle 1970s. Additionally, the Little Traverse Conservancy provided land conservation and preservation, direction and support. Antrim County lagged behind in this respect with equivalent institutions forming twenty years later, as the needs were perceived.

This is not to say that local institutions were entirely lacking. Antrim County did exhibit an increasing sophistication in the function of its lake associations,

especially the convergence of goals and actions of the Three Lakes and Elk-Skegemog Associations in the late 1980s. The creation of the Grass River preserve, and emergence of efforts to create a local land trust were also opportune signals of the derivation of the necessary institutional infrastructure. This is evident even though county or watershed based activity was preceded by environmental protection efforts such as those of the Nature Conservancy supported from outside the county. The establishment of purely local organizations was superseded by groups such as The Grand Traverse Regional Land Trust on a wider regional basis with Antrim County holding a major role.

The newly expanded approach brings the combined efforts of the public and private dimensions of the community into play. The strengthened public efforts are now accompanied by private efforts acting in a quasi-professional capacity.

Conclusions

In the case of Antrim County it appears that the investment in the planning process is bringing about the desired changes. In addition the local officials and the community itself became aware of the efforts necessary for effective land and water management by their participation in the extensive efforts at training and in the community survey process. This series of preliminary efforts are leading up to the development of the master plan and have greatly expanded the scope of planning in the area.

The development of the necessary implementation programs such as up to date and comprehensive planning and zoning instruments and proper resource protection measures such as local ordinances for lake and stream building set backs, groundwater protection, septic tank replacement policy, or scenic zoning is clearly indicated in the 1991 Project Antrim Community Opinion Survey and probably overdue. In addition public opinion which desires natural resource protection and economic development as indicated in the 1991 survey provides the public and private groups with an indisputable basis for action and has clearly articulated the desires of the local population indicating their priorities and needs.

The serious efforts over the period of 1988-1991, to involve the public in the process of articulating the issues and uncovering land management and planning solutions will have additional benefits. Along with a better informed and better integrated public, can come the expanded assistance and combination of human resources necessary to confront the issues in a more comprehensive manner viewing the issues from a county or a watershed perspective. In addition recognition that the government has honestly sought community input at all stages and that the input is being utilized, can change the dynamic of futility or of "fighting city hall" to a vision of everyone involved in the process.

This increased sense of scope and unity will be a force to implement the future plans as they are developed.

Concern over the quality and protection of the natural resource base has been expressed in Antrim County and the region for some time. Local citizens and officials have worked hard over the last five years to seek definition for the specific concerns and demarcate their priorities. Actions to advance the necessary institutional changes have been undertaken with a dramatic alteration in the ability of the local governments to effectively develop the desired management policies or ordinances as derived from their constituencies. The people of Antrim County appear to have recognized and worked to create the parallel paths that planning and natural resource conservation efforts must maintain along side development.

Local response to natural resource protection is strong. Several steps of a rational long term plan have been taken and everything is in place to provide the basis for the establishment of effective public planning and zoning at the local level. Organizations and institutions in the private sector are now established, broad based in interest, philosophy and focus, and taking an active role in nearly every aspect of natural and cultural resource protection and conservation.

Much needed improvement in preservation and conservation constructs and techniques has taken place. The

state government has been responsive through the funds directed through ERCOL, and the County has been generally proactive. This provided Antrim County and the associated watersheds with current information and guidance at a critical period. The County followed up on the state and regional efforts with Project Antrim. This has kept the agendas locally derived, applied and supported. Most importantly, local initiative and continued public input was manifest in the concerted involvement of the public in committees during all the various projects described in this study.

The challenges to the traditional leadership are that as additional leadership emerges in the community they may feel that their authority or control is threatened. In addition, with more public participation and increasingly sophisticated organizations and individuals focusing their attention on the issues of land use and natural resource management, the public sector will come under expanded scrutiny.

They will be increasingly pressured to act in an equally sophisticated manner in their planning and zoning and land management capacities. If this effort expressed in the form of such products as master plans and ordinances does not occur, or takes longer to develop than the private efforts, a performance gap may ensue. This may well result in an impetus to either change the public policies or the

officials in charge of them, or perhaps more likely, to expand the role of the local non-governmental groups into public policy formulation. This would be in effect, the privatization of the planning and zoning activities. The strongest push will potentially come in the areas of land acquisition for environmental protection, recreation and other land management functions of the public sector. Management of public lands especially the county parks and the public access sites will be key issues for the non-governmental as well as the governmental agencies.

One important observation is that change takes time. As the documentation presented in this dissertation sought to present, committees and individuals can respond to the need for change and perceived threats in a coherent and constructive manner. In Antrim County, rapid progress was demonstrated by both the public and private sectors. From a few isolated actors in 1989 to vital and vibrant institutions largely under local mandate and with clarified local agendas in 1991, Antrim County presents a clear example of how natural and cultural resource protection efforts develop and work at the local level.

The actions of the local and state officials, the non-governmental organizations and the individual residents of the area, are interrelated, and must be considered if land use plans or other actions are to be effective. The problem must be perceived, identified and verified in the minds of

the citizens, before the government can take action to develop policy or seek to make someone comply with a law or regulation. Often the public is the initiator of policy as when an individual or group like a land trust comes to the municipal government to request adequate land use controls or to enforce existing regulations.

Recommendations

In order for any action plans to be developed, the first decision must be to indicate the responsible parties. Depending on the nature of the problem, the general rule is that either the property owner or the local government have the responsibility for taking action. Two kinds of activities are needed. One is remedial--to solve existing problems and take corrective action. The other is preventative--to anticipate problems and set guidelines or restrictions so they do not occur. Both types of responses are necessary in the Elk River/Chain of Lakes Watershed and may be applied to the same problem. Septic systems for example may need in some cases to be enlarged or moved (property owner responsibility). At the same time better site review process or use of soil maps, can control septic tank location. This can be included in a local zoning ordinance avoiding future problems and its local government responsibility.

The county or other appropriate planning agencies at the township level must continue to uncover and describe the

perceptions of the problems and if possible the trends to be addressed. In addition, the completion of a master plan and elaboration of other strategic goals, will help to elucidate what policies must be enacted to achieve the desires results. In the case of Antrim County, the desire for economic growth simultaneous with the desire to protect the resources or the region present clear parameters for action.

It is at the township level, that most decisions affecting local land use and natural resources are made. Township and County officials, local residents, and state agencies need to work together and support the emerging local framework for superintending the land and water resources of the area. Townships and counties have the authority to develop a master plan and enact local ordinances and recommendations to direct and control the use of their lands and water. A local ordinance can specify land use and set standards and criteria for a given location, setting direction and limits about what can take place. This results in an expanded and strengthened role for the local government in managing and protecting their natural resources.

The following points are considered to be the fundamental changes necessary for protecting the land and water resources of the study area. They are tied to enabling legislation and derived from accepted planning and zoning practice. It is recommended that county-level

planning and zoning be enacted to cover those townships that have proven themselves incapable of responding to the process at the local or township level.

Townships may:

- Develop a master plan utilizing Project Antrim data that includes a vision for the future of the township with water quality protection and land use controls to conserve and protect the natural resources of their area.
- Cooperate and coordinate township master plans, zoning reviews and updates using common language to help standardize approaches and bring each township up to a minimum level of competence and resource protection.
- Create, review and update the master plans, ordinances and maps regularly.
- Continue to identify existing problem areas or areas of concern about specific natural resources in the township and propose ordinances and action plans to effectively deal with the problems.
- Institute and enforce specific ordinances which address such key issues as ground water protection, requiring developers to pay for infrastructure improvements, local controls on subdivisions, protecting scenic views, marinas,

keyhole developments, lake access, natural vegetation zones, etc.

- Carefully consider proposed developments for their impacts on the natural resources of the township and neighboring townships.
- Identify future problems and learn from the problems/concerns in other townships that may be currently coping with more intense development pressure. Then propose ordinances and action plans to effectively deal with the issues in a proactive way.
- Use such practices as site plan review, growth management, and performance zoning along with standard planning and zoning principles. Integrate the limits of the natural environment into the planning process.
- Include environmental considerations as a basis for decision making in all levels of Township business.
- Working with local conservancies, inventory areas in need of protection in the township. These could include wetlands, lakeshores, essential agricultural lands, wildlife areas, open spaces and scenic resources. Other areas include public park lands and access to lakes. Areas in which severe resource over use is occurring such as with

lake surface use conflicts are also in need of attention. These areas should be purchased, or conservation and protection assured through easements and other methods.

- Monitor water quality, land use changes and patterns in the township and stop violations.
- Compile information and utilize key texts and sources of information which will help townships in their daily decision making. This includes general resource information, planning and zoning and maps and GIS data if available.
- Continue to train local officials in up-to-date land and water management techniques.
- Create a network for a state and local partnership and for action on a watershed wide scale. This includes a timely system of sharing information such as through a local chapter of the Michigan Township Association and working with lake associations, local conservancies, etc.

<u>The County may:</u>

- Maintain a county level planner. Provide adequate funding and staffing to assure that the issues of county planning are completely and professionally addressed.
- Develop a master plan which includes an environmental and water protection component with

a view for the future management and protection of the resources of the county.

- Create and enact adequate zoning ordinances that extend over townships which do not adopt local ordinances.
- Enforce health, safety and environmental standards as issued by the state and local ordinance in cooperation with the local sheriffs office, health department etc.
- Update the county recreation plan and other plans as developed by the Soil Conservation Service etc., which seek to manage the resources of the county.
- Work to inventory county land uses and land capability and monitor changes and trends.
- Specify areas to be maintained and/or purchased to protect rare or endangered habitats, or to provide equitable public access to the land and water resources in all areas of the county.
- Work with neighboring counties within the same watershed to assure proper stewardship of these shared resources.
- Work with townships to provide advice and direction on local needs and problems.
- Assist in project review of proposed large developments in the townships.

- Maintain and update maps and county or regional plans.

The Non-governmental Organizations may:

- Work with local governments to inventory areas in need of protection in the area. These could include cultural aspects such as open spaces, park lands, archaeological sites, as well as environmental areas such as wetlands, lakeshores, essential agricultural lands, wildlife areas, and scenic resources. Access to lakes and lake surface use conflicts are also in need of attention. Areas should be purchased, or conservation and protection assured through easements and other methods.
- Monitor water quality, land use changes and patterns in the township and report violations.
- Participate in the formulation of adequate master plans and zoning ordinances that extend over the watershed and county.

Non-governmental organizations of all types can follow the established pattern of the lake associations as one group that has played a major role in both the remedial and preventative actions that are planned or need to take place. The lake associations, and other groups that are environmentally focused are especially suited for public

education and using the legal system to develop and enforce existing land use and water quality measures.

Study Limitations and Future Opportunities

The attempts to document and focus on natural resource management and the planning process in this dissertation relied heavily on observation and involvement through the collection of primary data, and thus the conclusions are derived primarily through inductive reasoning. In this case, the three year period of observation served as a time line in which to trace the evolution of the local responses, but is not long enough to document all the factors that led up to them, nor predict all future trends.

Whereas the conditions and process that occurred in Antrim County are site specific and should not be extrapolated as applying automatically to other areas of Michigan or elsewhere, nonetheless, the actions of state and local government and the private sector are not unique to Antrim County. The breadth of example and manifest activities, especially the public sector efforts as the Elk River/Chain of Lakes Watershed Project and Project Antrim, do provide for a comprehensive and comparative example.

It is hoped that by examining the key players, and taking into account the time lapse in which the processes occurred, a specific idea can be gained concerning the way in which the land, water, and other local resources are conserved, and the manner in which the institutions

necessary to this process are created and strengthened. Several studies could easily flow out of the role and interactions between the non-governmental and governmental sectors, and to analyze the factors which would inhibit the implementation of the desired changes and policies.

Certainly progress in protection and preservation of local resources has occurred in Antrim County, especially in the private non-government areas. Whether this effort will continue and whether or not effective planning and zoning and other measures will follow is a matter of future efforts and struggles. Responsibility for this process is clearly shared between the public and private sectors. As recently as 1989, this was not the case. Public officials did not act, and were not held accountable for their lack of policy or performance.

Clearly there is a need for continued efforts especially to coordinate local officials and create the master plans and ordinances, which would follow from the prodigious efforts off the period of 1989-1991. The people of Antrim County and the Chain of Lakes Watershed appear remarkable in their responses. It appears that the human resources, institutions, and spirit of the area are as vital and consequential as the natural resources of the region.

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