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TRI-COMMUNITY

COMPREHENSIVE PLAN

Prepared By The Tri-Community Area
Joint Planning Committee

JOINT COMPREHENSIVE PLAN

CITY OF SAUGATUCK, SAUGATUCK TOWNSHIP, AND VILLAGE OF DOUGLAS

HT167.5.M5J65 1989

Prepared by the

Tri-Community Area Joint Planning Committee

in cooperation with:

Coastal Zone Management Program
Land and Water Management Division
Department of Natural Resources

and with the assistance of:

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INTRODUCTION

OVERVIEW

The purpose of this Plan is to provide a policy and decision making guide regarding all future land and infrastructure development within the tri-community area. Within the Plan, key planning issues are identified; a clear set of goals and policies are outlined; future land uses are described and mapped; and specific implementation measures are recommended.

All future land uses and policies presented in this Plan were developed based on a blending of the natural capability of the land to sustain certain types of development; the important natural functions played by unique land and water resources in the area; the relative future need for residential, commercial, and industrial uses; the existing land use distribution; and the desires of local residents and public officials as expressed through direct interviews a public opinion survey, town meetings, and public hearings.

This Plan was prepared by the Planning & Zoning Center, Inc., under the direction of a Joint Planning Committee with three representatives each from the City of Saugatuck, the Village of Douglas and Saugatuck Township. Financial support was provided by the Michigan Dept. of Natural Resources, Coastal Zone Management Program. This Plan represents a compilation of the most significant aspects of the individual comprehensive plans for the participating communities, with the addition of special emphasis on interjurisdictional issues (especially see Chapters 8 and 11).

There are three critical components to using this plan as a decision making guide. First, are the goals, objectives and policies in Chapter 1. Second, is the future land use map and associated descriptive information presented in Chapter 10. Third, is the supporting documentation found in Chapters 2-9.

Although this Plan states specific land use development policy and proposes specific land use arrangements, it has no regulatory power. It is prepared as a foundation for and depends primarily on the individual zoning ordinances (and other local tools) of the tri-communities for its implementation. This Plan is intended as support for the achievement of the following public objectives, among others:

- to conserve and protect property values by preventing incompatible uses from locating adjacent to each other;
- to protect and preserve the natural resources, unique character, and environmental quality of the area;
- to maintain and enhance the employment and tax base of the area;
- to promote an orderly development process by which public officials and citizens are given an opportunity to monitor change and review proposed development; and
- to provide information from which to gain a better understanding of the area, its interdependencies and interrelationships and upon which to base future land use and public investment decisions.

This Plan is unique in that it was conceived of and prepared with the full and equal participation of representatives of Saugatuck, Douglas and Saugatuck Township. More importantly, each of the individual community comprehensive plans were prepared in light of the issues, problems and opportunities that the three communities face together, rather than being done in isolation as is more frequently the norm. While a Joint Planning Committee oversaw the production of this plan, the individual planning commissions and legislative bodies of the three communities were directly involved in the preparation of those plans. Chapter 11 proposes that the Joint Planning Committee be continued and that this Plan be updated at a minimum of every five to ten years.

The contents of this Plan and the three individual plans draw directly from planning documents previously adopted by the individual jurisdictions. There has been no effort made to explicitly footnote when material has been used. Instead it is intended that the contents of those documents continue to carry forward where they were found to be helpful in addressing the current and projected issues facing the tri-community area. In particular, the Village of Douglas Land Use Plan of 1986 and the Phase I 1979 planning report of the (then) Village of

Saugatuck were frequently relied upon in drafting portions of all three plans. A number of engineering and technical documents prepared by outside consultants over the past decade have also been relied upon. They are referenced in Appendix A.

SPATIAL LOCATION

The maps on the following page show the location of Saugatuck, Douglas and Saugatuck Township on the shores of Lake Michigan. This location along I-196 makes them easily accessible to travelers from across North America. The shoreline along the Kalamazoo River, Lake Kalamazoo, and Lake Michigan and the beautiful sand dunes and wide beaches make this a tourist mecca and an attractive place for retirement.

The trade area for commercial businesses in the three communities is quite small. Local residents tend to only do daily and weekly shopping locally as Holland, Grand Rapids, and Kalamazoo are nearby for wider selections of consumer goods. Three school districts serve the area but the largest number of students within the planning area attend the Saugatuck School District.

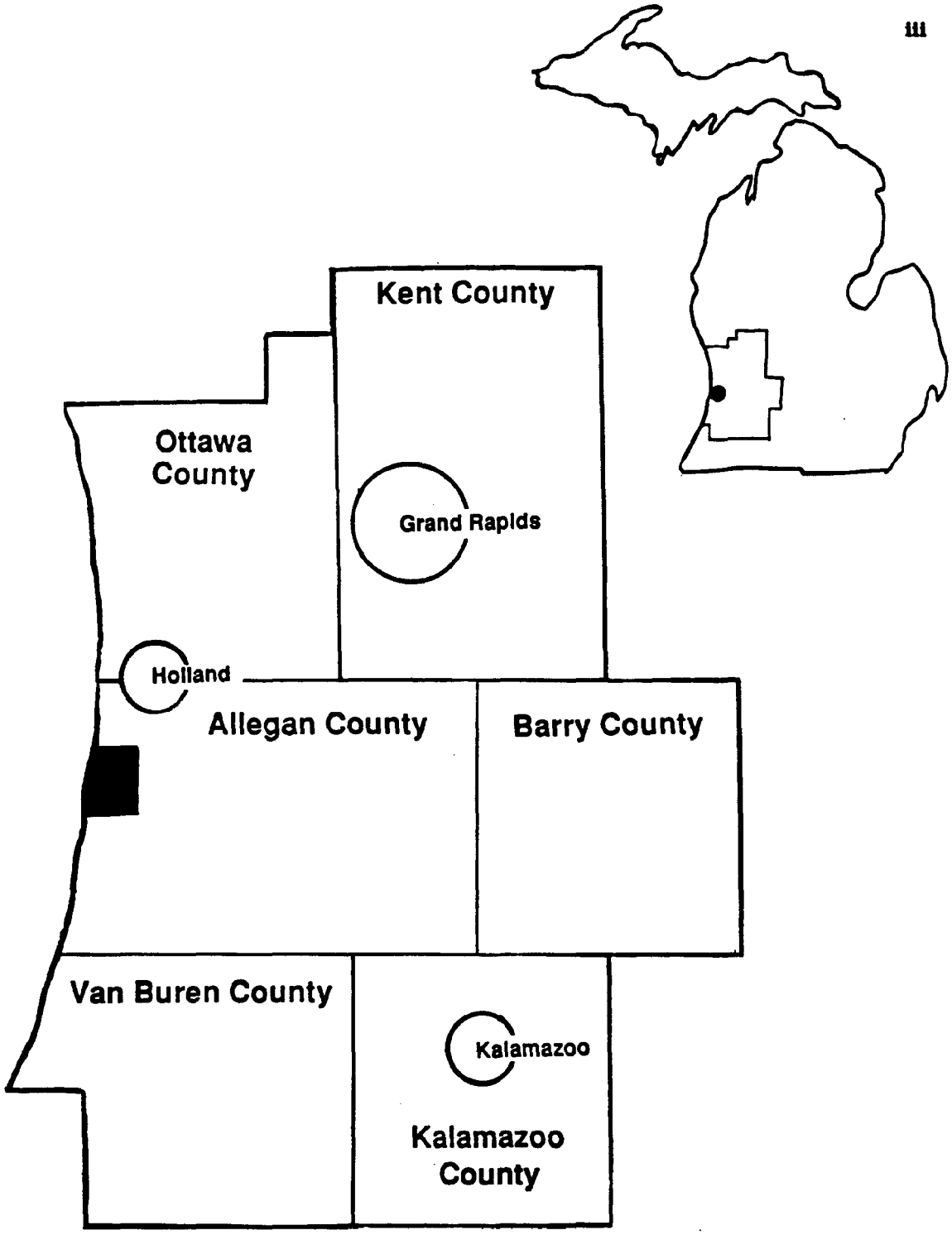
KEY FACTORS GUIDING THIS PLAN

Three considerations played prominent roles in fashioning the contents of this plan. These are based on widely held public opinions, past and present investment by public and private entities and a growing recognition among citizens of the interdependence of the three communities.

First, the three communities function as a single economic, and social unit. Many people live in one of the three communities and work in another of the three. Most people live in one and shop with some frequency in another. School children, by in large, attend the same schools. Local cultural, conservancy and retiree activities are jointly supported by residents of all three communities. Several public services are jointly provided including the Interurban bus service, sewer and water (at least between Douglas and Saugatuck) and fire protection. The Kalamazoo River and Lake Kalamazoo connect all three communities, as do the local road network. Sometimes it seems, only the three units of government are separate. Yet despite these interrelationships, each community maintains a strong separate identity among many citizens of the three entities. Even many neighborhoods have strong separate identities (e.g. the hill, the lakeshore, Silver Lake, etc.). This provides an important richness and depth to the area, but it can also be politically divisive.

Second, tourism is the primary engine driving the local economy. Despite several industrial employers that provide important diversity to the area's economy, it is the dollars brought in by tourists and seasonal residents that fuel most of the local wages and local purchasing. The environmental splendor and wide range of activities open to tourists are the primary attraction. But no less significant is the small town character of the area. This character, often described as "cute" or "quaint" by tourists, is highly favored by tourists and deeply cherished by local citizens. As a result, any intensive or poorly planned alterations to the natural environment, or homogenization of the character of the individual communities is likely to have a potentially negative effect on both tourists and residents. This Plan proposes keeping the scale and intensity of such future changes low and proposes a variety of mitigation techniques to prevent adverse impacts on the environment or on the character of the area from these kinds of changes.

Third, a balance of future land uses is necessary to enhance the stability of the community during poor economic times and to broaden the population base. Presently there is a significant lack of housing in the area that is affordable for families with children. That, in concert with a decline in children generally (and an increase in the elderly) has severely impacted the Saugatuck School District. If all future land use decisions were made based exclusively on minimal alteration of the natural environment or maintenance of the existing community character, then over time, the community would become more vulnerable to economic downturn, which usually hits tourist communities very hard. Thus, a balance must be sought between what otherwise become competing goals (economic development and environmental protection/community character). This will present a serious challenge in the future. The pressure will be great to "sell the farm" for developments which promise new jobs/tax base. And while these are important, the long term impact of such proposals (in a particular location) could be very negative and not worth the tradeoff. All such decisions need to be made primarily based on long term considerations, rather than short term ones.



TRI-COMMUNITY

MAPS

Except as otherwise noted, all the full page maps presented in this Plan were produced using C-Map software. This is a PC based computer program initiated by William Enslin, Manager of the Center for Remote Sensing at Michigan State University. All the data on the maps was digitized either by Tim McCauley of the Planning & Zoning Center, Inc. or was downloaded from the Michigan Resource Inventory Program (MRIP) database maintained on the State's mainframe computer system by the Department of Natural Resources.

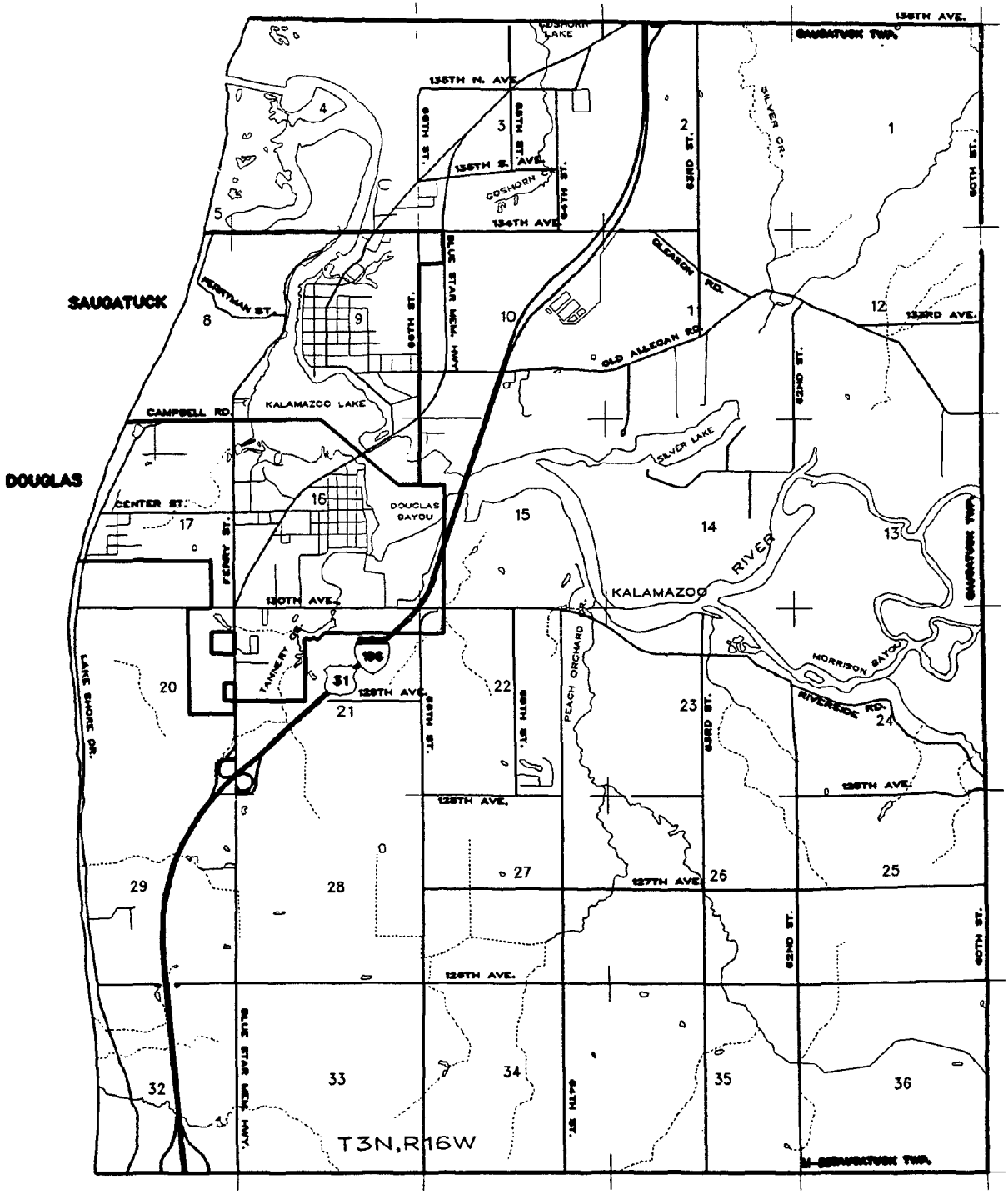
Several advantages are realized by computerizing this data. Typically, geographic information is only available on paper maps at widely varying scales, which makes it difficult to compare data sets for planning purposes. With C-Map, all of the maps can be viewed and printed at any scale via a variety of different media (color plotter, laser or ink jet printer, or dot matrix printer). Information can also be combined (or overlaid) so that composite maps can be created and compared in a fraction of the time and expense normally required to obtain the same results. Another major advantage of computer mapping is the ability to update maps continuously, so that an up-to-date map is always available.

There are three different base maps that have been used in mapping this information: 1) a base map prepared by the DNR which was digitized from the United States Geological Survey (USGS) topographic map series for the area; 2) a lot line map created by digitizing the lots of record used for assessing purposes in the three communities; and 3) a soils base map derived from the SCS Allegan County Soil Survey. None of these base maps are exactly identical as they originate from different sources. All of the land cover and use based information and topography is keyed to the DNR/USGS base map. All of the soils related data is keyed to the soils base (which was interpreted and mapped by the SCS from nonrectified aerial photos, so there is some distortion at the edges of each photo frame). The existing land use, sewer and water line maps are keyed to the lot line base map.

A transparent copy of the DNR/USGS base map and the lot line base map follow. These can be overlaid on any of the maps in this Plan, but the "fit" will be best when overlaying information that it was used as the base for. Please note that the extent of the Kalamazoo River on each base is noticeably different and is related to the water levels at the time the inventory or survey was conducted. We have "corrected" the DNR/USGS base map to include Silver Lake, which is merely shown as a wetland (not an open water body) on USGS maps. A transparency can easily be made by photocopying any of these maps in order to overlay several levels of information. Using C-Map on a color monitor, up to ten levels of information can be overlaid on the screen at once, including "zooming" in on any area first (e.g. as would be desirable when examining a specific parcel).

While the accuracy of all of this data is very satisfactory for land use planning purposes (especially when contrasted with traditional techniques), none of it is sufficiently detailed to be absolutely reliable at the parcel level. As a result, detailed site analyses of soils, topography, drainage, etc. are still necessary anytime specific site designs are being prepared.

All computerized data is on file locally and accessible via C-Map for local use and updating. Contact the zoning administrator or clerk for further information.


SAUGATUCK
DOUGLAS
KALAMAZOO LAKE
GOSHORN LAKE
SILVER LAKE
DOUGLAS BAYOU
KALAMAZOO RIVER
MORRISON BAYOU
SILVER CR.
GOSHORN CR.
TANNERY CR.
PEACH ORCHARD CR.
136TH AVE.
135TH N. AVE.
135TH S. AVE.
134TH AVE.
133RD AVE.
130TH AVE.
129TH AVE.
128TH AVE.
127TH AVE.
126TH AVE.
CAMPBELL RD.
CENTER ST.
RIVERSIDE RD.
OLD ALLEGAN RD.
GLEASON RD.
LAKE SHORE DR.
FERRY ST.
HERTMAN ST.
63RD ST.
64TH ST.
65TH ST.
66TH ST.
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62ND ST.
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BLUE STAR MEM. HWY.
SAUGATUCK TWP.
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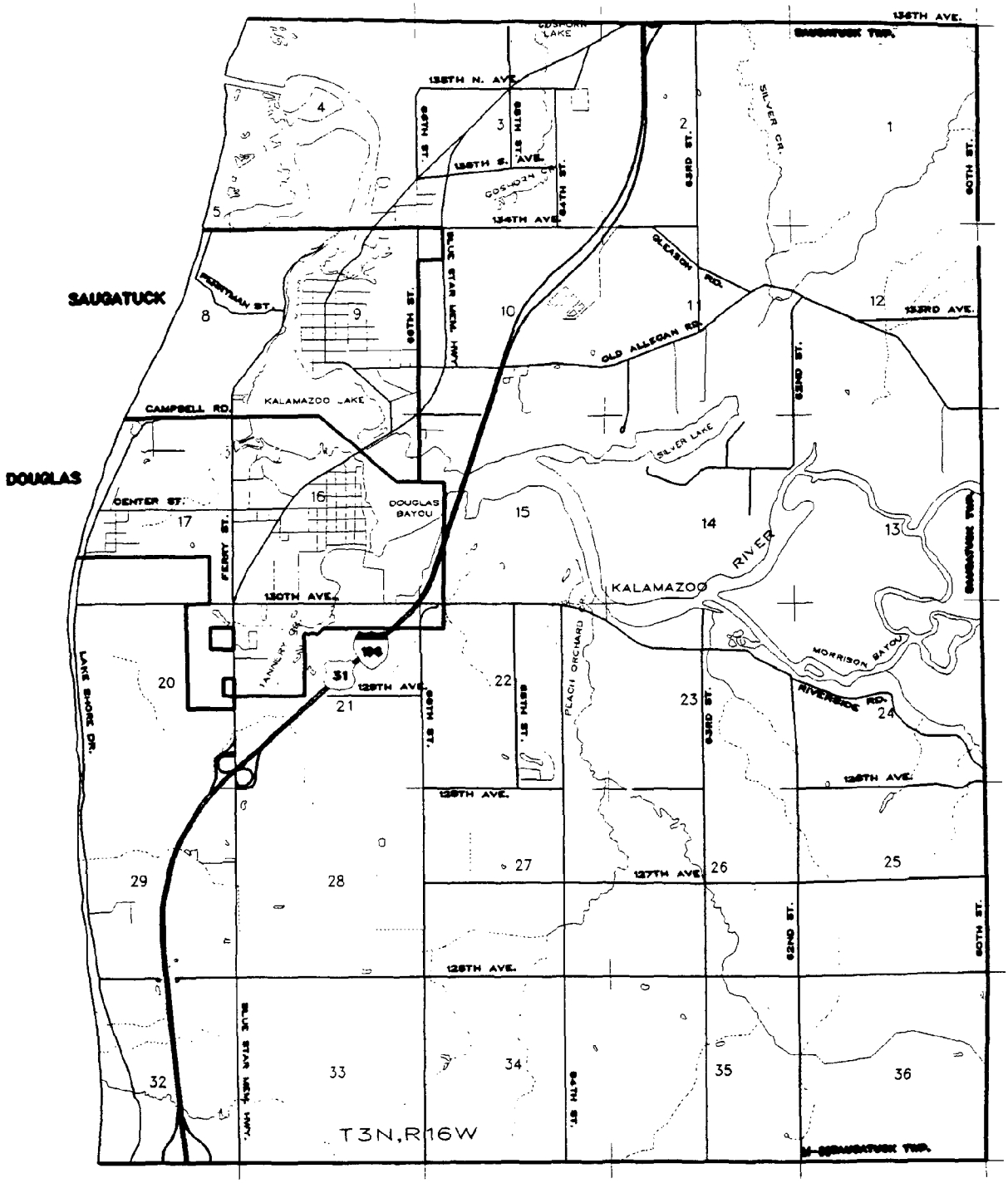
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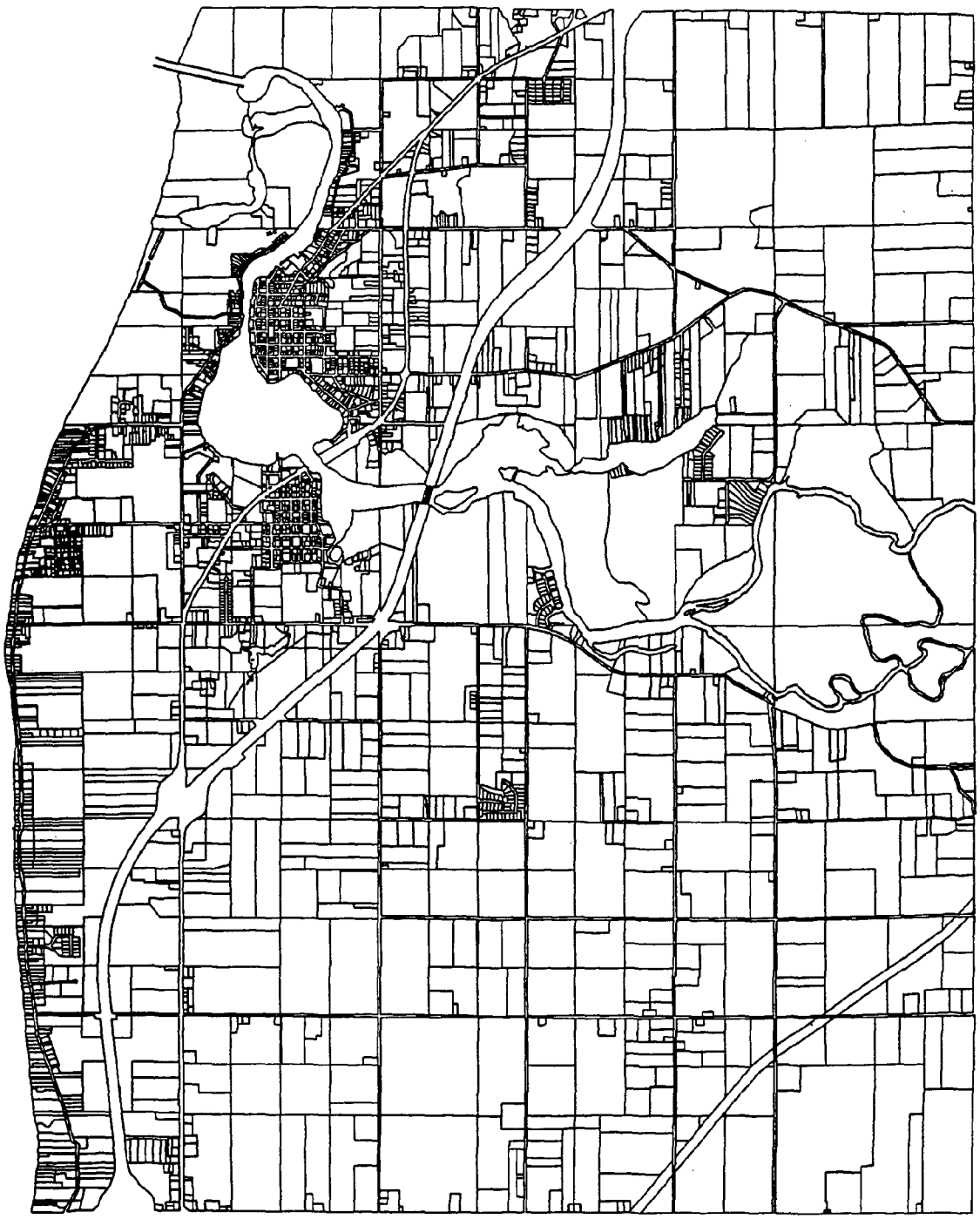


Chapter 1

GOALS, OBJECTIVES, & POLICIES: THE AREAWIDE POLICY PLAN

Goals, objectives, and policies are the foundation of a comprehensive plan. They address the key problems and opportunities of a community and help establish a direction and strategies for future community development and growth. Goals establish general direction, objectives represent tasks to be pursued, and policies are decision guides. The goals, objectives, and policies embodied in this plan were prepared through an extensive process of leadership surveys, public opinion surveys, meetings with local officials, and areawide town meetings.

The first step in this process was a survey of area leaders—including members of each planning commission, elected officials, prominent members of the private sector, and other citizens identified in the individual surveys. Leaders were asked their views on the major problems and opportunities facing their jurisdiction and the tri-community area, and the results were tabulated and presented to each local government. These results served as the basis for initiating a public opinion survey.

Citizen views on areawide planning issues were obtained through public opinion surveys mailed to every property owner in the tri-community area and distributed in each rental complex. Survey questions were prepared for each jurisdiction through consultations with the joint planning committee and each individual planning commission. Dr. Brent Steel, Oakland University, conducted and tabulated the survey.

The response rate of 51% in Saugatuck, 47% in Douglas, and 38% in Saugatuck Township was very high considering the length (about 1 hour completion time) and type of survey and thus responses represent the majority view in each community. Most respondents were homeowners in their mid-fifties, registered to vote, who are long-term residents and plan to live in the area for ten or more years. Survey results are shown in Appendix A.

Results of the citizen opinion survey and leadership survey were used to identify issues for discussion at the first town meeting. This meeting was a "futuring" session where participants were asked to imagine how they would like their community to be in the year 2000. Participants were separated into groups and asked to prepare of list of "prouds" and "sorries" in their community, and things from the past which they would like to preserve. The lists were compared and then all engaged in an imaging exercise where groups were established according to topic area and were asked to imagine that element of their community in the year 2000. This futuring process identified key issues and community elements which were pulled together to form a vision and direction for the tri-community area in the year 2000.

A draft policy plan, with defined goals and objectives, was then prepared based on this futuring process and the survey results. The draft was refined through a series of meetings with area officials and then presented to area citizens in a second town meeting. Citizen comments were reviewed by officials from each community and incorporated into the policy plan.

Following completion of the draft policy plan, data and trends in the tri-community area were analyzed. This analysis supported the direction of the policy plan and was first evaluated by the joint planning committee and individual planning commissions, and then by area citizens at the third town meeting. Next, key elements of the plan and proposed strategies to carry it out were first reviewed by the joint planning committee, and then by area citizens at the fourth and final town meeting.

Thus, the broad based input of area officials, leaders, and citizens, plus detailed analysis of local trends and land use characteristics have formed the goals, objectives, and policies that comprise the policy portion of this comprehensive plan. These joint goals and policies will serve as a guide for land use and infrastructure decisions in Saugatuck Township, the City of Saugatuck, and the Village of Douglas. With time, some elements may need to be changed, others added, and still others removed from the list. Before amendatory action is taken, however, the impact of the proposed changes should

be considered comprehensively in relation to the entire plan.

These joint goals and policies are premised on a pledge by Saugatuck Township, the City of Saugatuck and the Village of Douglas to mutually cooperate in guiding future development to advance a common vision. It is intended that they be consulted when considering future land use decisions that affect the interests of more than one jurisdiction.

COMMUNITY CHARACTER

Goal: Preserve the established character of neighborhoods within each jurisdiction.

Policy: Encourage architectural and site design that complements, rather than detracts from existing development on neighboring parcels.

Policy: Encourage the preservation and restoration of historically significant structures.

Policy: Preserve the character of the area by encouraging land uses and densities/intensities of development which are consistent with and complement the character, economic base, and image of the area.

Policy: Manage the trees lining streets in the City and Village to provide a continuous green canopy and plant trees along Blue Star Highway and maintain them along other roads in the Township.

GROWTH MANAGEMENT

Goal: Guide development in a manner which is orderly, consistent with the planned expansion of public services and facilities, and strives to preserve the scenic beauty, foster the wise use of natural resources, protect environmentally sensitive areas, and enhance the special character of each community.

Policy: Encourage development in locations which are consistent with the capacity of existing and planned public services and facilities, and are cost effective in relation to service extensions.

Policy: Review all plans by other public entities for expansion and improvement of existing road and street networks for impacts on growth patterns and for consistency with the goals, objectives, and policies of this plan.

Policy: Consider the impact of land use planning and zoning changes on the other jurisdiction(s), and discuss proposed changes with the affected jurisdiction(s) prior to making such changes. A common procedure for such communication shall be established and followed.

LAND USE & COMMUNITY FACILITIES

Goal: Promote the balanced, efficient, and economical use of land in a manner which minimizes land use conflicts within and across municipal borders, and provides for a wide range of land uses in appropriate locations to meet the diverse needs of area residents.

Policy: Insure compatible land use planning and zoning across municipal borders and minimize land use conflicts by separating incompatible uses and requiring buffers where necessary.

Policy: Discourage sprawl and scattered development through planned expansion of roads and public utilities and through zoning regulations which limit intensive development to areas where adequate public services are available.

Policy: Provide for necessary community facilities (e.g. schools, garages, fire halls, etc.) consistent with adopted land use plans and capital improvement programs.

Policy: Encourage approaches to site design which take natural features of the property, such as soils, topography, hydrology, and natural vegetation, into account and which use the land most effectively and efficiently by maximizing open space, preserving scenic vistas, conserving energy, and pursuing any other public policies identified in this plan.

Policy: Advise developers during site plan review to contact the State Archaeologist, Bureau of History (517-373-6358) to determine if the project may affect a known archaeological site.

AGRICULTURE

Goal: Maintain a variety of agricultural operations and promote the preservation of existing farms and farmland through coordinated

planning and development regulations public incentives, and educational strategies.

Policy: Discourage the conversion of prime agricultural land to other uses.

Policy: Discourage spot development of non-agricultural activities in agricultural areas to preserve the economic viability of farming and maintain the rural character of the area. In particular, residential development lining county roads in agricultural areas, that is unrelated to agricultural activities, shall not be permitted.

Objective: Encourage farmers on lands well suited to agriculture to enroll their property in the Michigan Farmland Preservation Act, Act 116 PA of 1974, as amended.

Objective: Encourage the expansion of specialty farms and related activities which enhance the tourism and recreation potential of the area (e.g "you pick", farmers markets, farm tours, etc.).

Objective: Promote agriculture through a variety of activities (such as farm tours, lectures, farm week, etc.) which educate residents about the importance of agriculture to the area.

Policy: Discourage the establishment of high density livestock and poultry operations as inconsistent with the agricultural and resort character of the tri-community area.

ECONOMIC DEVELOPMENT

Goal: Strengthen and expand upon the area's economic base through strategies which attract new businesses, strengthen existing businesses, and enhance the tourism potential of the area.

Policy: Identify potential sites for industrial development and alternative means of financing necessary public improvements and marketing of the sites (i.e. tax increment financing, special assessments, state grants and loans, etc.)

Policy: Support efforts to foster tourism by preserving the scenic beauty of the environment, expanding recreation opportunities, improving tourist attractions, and preparing promotional materials which highlight the attractions of each community.

Policy: Promote better communication and cooperation between the public and private sector.

COMMERCIAL

Goal: Encourage the development of commercial land uses in appropriate locations which serve the current and future needs of residents and tourists, are of a character consistent with community design guidelines, and which promote public safety through prevention of traffic hazards and other threats to public health, safety, and general welfare.

Policy: Encourage new commercial development to locate adjacent to existing commercial areas.

Policy: Encourage the design and location of neighborhood commercial centers in a manner which complements and does not conflict with adjoining residential areas.

Policy: Discourage unsafe and unsightly strip commercial development through design and landscaping requirements such as berms, planting, and shared access when possible.

Policy: Avoid separate parking lots for each business where feasible and encourage centrally placed lots which serve several businesses.

Policy: Encourage continued concentration of tourist oriented businesses in Saugatuck, general commercial businesses in Douglas, and highway service activities at the highway interchanges. Relocation of existing general business activities along Blue Star Highway should be discouraged.

INDUSTRIAL

Goal: Increase the amount of non-polluting light industry in the area without damaging the environment, spoiling the scenic beauty of the area, or overburdening local roads, utilities, or other public services.

Policy: Encourage new industries to locate contiguous to existing industrial areas and in locations with existing or planned sewer, water, electric, and solid waste disposal services to minimize service costs and negative impacts on other land uses.

Policy: Identify appropriate locations for small industrial parks which conform to the design guidelines contained in this plan, individual community plans, and local zoning regulations.

Policy: Implement site plan requirements for light industries which are designed to incorporate generous amounts of open space, attractive landscaping, and buffering from adjacent non-industrial uses.

Policy: Require the separation of industrial sites from residential areas through buffers made up of any combination of parking, commercial or office uses, parks, parkways, open space, or farmland.

HOUSING/RESIDENTIAL

Goal: Encourage a variety of residential types in a wide range of prices which are consistent with the needs of a changing population and compatible with the character of existing residences in the vicinity.

Policy: Explore alternative measures to reduce housing costs and make home ownership more affordable, such as zoning regulations and other programs which are designed to reduce the cost of constructing new housing.

Policy: Allow only quiet, low traffic, low intensity home occupations in residential areas to preserve the stability of existing neighborhoods.

Policy: Provide street lights and sidewalks in residential areas where there is a demonstrated need and according to the ability of residents to finance such improvements.

SPECIAL ENVIRONMENTS & OPEN SPACE

Goal: Protect special environments and open spaces, including but not limited to sand dunes, wetlands, and critical wildlife habitat, from the harmful effects of incompatible development activity by limiting the type and intensity of land development in those areas.

Policy: Identify development limitations on special environments through a tiered classification system which classifies these environments based on their value to the ecosystem, unique attributes, the presence of endangered plant and wildlife species, and other characteristics deemed significant.

Policy: Devise regulations for land development in special environments which permit development in a manner consistent with identified protection objectives and which complement state and federal regulations for special environments.

Policy: Require development projects deemed appropriate in and adjacent to special environments to mitigate any negative impacts on such environments.

Policy: Encourage acquisition of special environments of significant public value by public agencies or nonprofit conservancy organizations for the purposes of preservation.

WATERFRONT

Goal: Protect and enhance the natural aesthetic values and recreation potential of all waterfront areas for the enjoyment of area citizens.

Policy: Promote the preservation of open space and natural areas, as well as limited, carefully planned development along the Kalamazoo River, Kalamazoo Lake, Silver Lake, Goshorn Lake, and Lake Michigan and connecting streams, creeks, and drainageways to protect and enhance the scenic beauty of these waterfront areas.

Policy: Some waterfront lands may be developed to meet residential and commercial needs, enhance local tax base, and contribute to paying for local public service costs associated with their use and development, consistent with environmental protection policies in this plan, where such development would contribute to local quality of life.

Policy: Maximize public access, both physically and visually, by acquiring prime waterfront open space whenever feasible.

Policy: Acquire scenic easements wherever public values dictate the maintenance of visual access to the waterfront and the property is not available for purchase.

Policy: Limit the height and intensity of new development along waterfront areas to preserve

visual access and the natural beauty of the waterfront for the broader public.

Policy: Explore the conversion of street ends which abut waterbodies for use as safe public access to the water for fishing, viewing, and launching of small water crafts.

Policy: Maintain a natural greenbelt along the Kalamazoo River and its tributaries.

RECREATION

Goal: Enhance the well-being of area residents by providing a variety of opportunities for relaxation, rest, activity, and education through a well balanced system of private and public park and recreational facilities and activities located to serve identified needs of the area.

Objective: Identify and explore opportunities to cooperate with other jurisdictions and agencies, including Allegan County and the Department of Natural Resources Recreation Division, on recreation projects which would benefit area residents and strengthen the tourism industry.

Objective: Examine the feasibility of, and establish if feasible, a jointly owned and operated community center to serve residents of all ages in all three communities.

Objective: Examine the feasibility of expanding low cost opportunities for public beach and campground facilities for area citizens with boat launching sites, bike paths, cross-country ski trails, and docks for shore fishing.

Objective: Develop a system of cross-country ski trails together with the Village of Douglas, the City of Saugatuck, and other jurisdictions/agencies if possible, through the use of local funds, grants and loans, and capital improvement programming.

Objective: Investigate developing a joint public marina and launch facility where federal and state funding is available to assist with financing such a venture.

Policy: Encourage local government participation in activities designed to enhance the area's seasonal festivals.

Policy: Retain, maintain, and improve all existing publicly owned parks so that they continue to meet the diverse recreation needs of area citizens and tourists.

TRANSPORTATION

Goal: Maintain a safe, effective, and efficient road and street network and improve roads and streets to promote growth in a way that is consistent with land use goals, objectives and policies.

Policy: Implement traffic controls and design features that will increase the efficiency and safety of major arterials, including but not limited to: traffic signals, deceleration lanes, limiting driveways, minimum standards for driveway spacing, uniform sign regulations, shared or alternate access, left and right turn lanes, and speed limit adjustments.

Goal: Encourage a wide variety of transportation means, such as walking, biking, and public transportation, to meet the diverse needs of area residents.

Policy: Promote pedestrian and bike travel through a coordinated network of bikepaths, trails, and sidewalks.

Objective: Develop an areawide bikepath through local funds, grants and loans, and capital improvement programming.

Policy: Promote regularly scheduled, affordable, and dependable public transportation to increase the mobility and quality of life of those who depend on public transportation.

Objective: Encourage expansion of the interurban system consistent with municipal means to finance the increased service and an identified public need.

WATER AND SEWER

Goal: Insure a safe and adequate water supply for the area which is efficiently provided and cost effective.

Policy: Provide a reliable supply of safe, clean, and good-tasting drinking water.

Policy: Minimize the potential for groundwater contamination through planning and zon-

ing which is consistent with the capacity and limitations of the land and available services.

Objective: Prepare and implement a plan for the carefully timed provision of sewer and water service in the area consistent with the development goals and objectives of this plan.

Policy: Devise alternative mechanisms for financing sewer and water expansions which are financially sound and equitable.

Objective: Investigate refashioning the Kalamazoo Lake Sewer and Water Authority into an independent authority, in order to insure that the needs of area citizen's for quality utility services are met.

Policy: Promote a joint agreement between the City of Saugatuck, Village of Douglas, and Saugatuck Township to include full participation by each in the Kalamazoo Lake Sewer & Water Authority.

Policy: Insure that the expansion of sewer and water service into an area is consistent with the planned intensity of land use for that area, scheduled when affordable, and implemented when necessary to meet an identified need in the area rather than on a speculative basis.

POLICE, FIRE, & EMERGENCY SERVICES

Goal: Provide police, fire, and emergency services consistent with a public need and the ability to finance improvements for each of the three jurisdictions.

Policy: Consolidate police, fire, and emergency services across the three communities where possible to eliminate overlap in service and expenditures and improve service delivery.

Objective: Evaluate the feasibility of 24 hour medical service which serves all three jurisdictions to be provided by a public or private entity.

SOCIAL SERVICES

Goal: Those social services which are efficient to provide at the local level should be provided to meet the needs of area residents.

Objective: Explore the possibility of establishing support programs for older adults through the use of volunteers for assistance with household chores, personal care, and home repair to help them remain independent, shorten hospital stays, and lower health care costs.

Policy: Support efforts to establish community day care center(s) to provide quality and affordable day care to working parents.

WASTE MANAGEMENT

Goal: Insure the safe, effective, and efficient disposal of solid waste and other toxic substances.

Policy: Encourage the reduction of solid waste through recycling, composting, and waste-to-energy projects.

Policy: Manage disposal of solid waste and location of solid waste facilities in accordance with the Allegan County Solid Waste Management Plan prepared under PA 641 of 1978.

Objective: Adopt regulations for on-site storage and transportation of hazardous waste which require:

- Secondary containment for on-site storage of hazardous waste;
- No transfer of hazardous waste over open ground or water;
- Arrangements for inspection of, and monitoring underground storage tanks;
- Existing underground storage tanks must provide spill protection around the fill pipe by 1988 in accordance with 1988 EPA standards;
- All existing underground storage tanks must install leak detection systems within 5 years in accordance with 1988 EPA standards.

Objective: Encourage the development and use of biodegradable containers.

ENERGY

Goal: Promote site design and building which is energy efficient and encourage energy conservation through good land use planning and wise public building management.

Objective: Prepare energy guidelines or standards which address landscaping, solar access, solar energy systems, sidewalks, subdivi-

sion layout, proximity to goods and services, etc., and encourage or implement these through zoning and subdivision regulations.

Policy: Require developers to provide sidewalks in appropriate locations through subdivision regulations.

Policy: Encourage higher density residential development near areas with shopping and services to limit the number and length of trips generated from that development.

Objective: Establish an educational program (i.e. "Energy Awareness Week") in cooperation with the local school system.

Objective: Encourage the use of plumbing facilities and appliances which conserve water.

Chapter 2

DEMOGRAPHICS

POPULATION SIZE

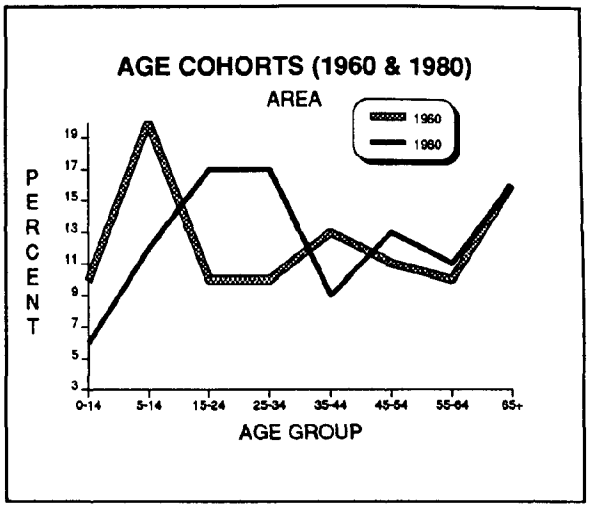
The population of the tri-community area has nearly doubled since 1950, reaching an estimated 3,900 people in 1986 according to U.S. Census population estimates. This represents an 83% increase over the 1950 population, and a 26% increase since 1970 (see Table 2.1).

SEASONAL POPULATION

The population of the each community in the tri-community area swells during the summer when seasonal residents and tourists return. In 1980, census estimates show that 21% (442) of the tri-community area's total housing units were vacant, seasonal, and migratory. Eighty-one percent of these seasonal/vacant units were detached single family homes or cottages. The vacant, seasonal, and migratory units made up 14% of the Township's housing stock; 26% of the City's housing stock; and 23% of the Village's housing stock.

An engineering study prepared by Fishbeck, Thompson, Carr & Huber for the Kalamazoo Lake Sewer & Water Authority (KLSWA) estimates that the total tri-community area population is comprised of one-third seasonal residents and two-thirds permanent residents and that the weekend daytime population during the summer is about 2,500 persons. Although sewer and water demand typically grows with population, the study found that demand for sewer and water in the tri-community area increased about 30% between 1980-1986, whereas population increased by an average of 20%. This reflects the impact of the seasonal and tourist population on local services.

FIGURE 2.1



HOUSEHOLDS AND AVERAGE HOUSEHOLD SIZE

Until recently, the average household size in the United States has continued to shrink, due to an aging population, higher divorce rates, postponed marriages, and lower birth rates. In keeping with state and national trends, the average household size in the tri-community area declined, going from 2.98 in 1960 to 2.39 in 1980. Smaller household size means a greater number of households. If the average household size in 1960 held true today, there would be about 300 fewer individual households in the area.

TABLE 2.1
POPULATION (1950-1980)

COMMUNITY	1950	1960	1970	1980	CHANGE
Saugatuck	770	927	1,022	1,079	40%
Saugatuck Township	845	1,133	1,254	1,753	107%
Douglas	447	602	813	948	112%
AREAWIDE	2,062	2,662	3,089	3,780	83%

Source: U.S. Census Bureau

FIGURE 2.2

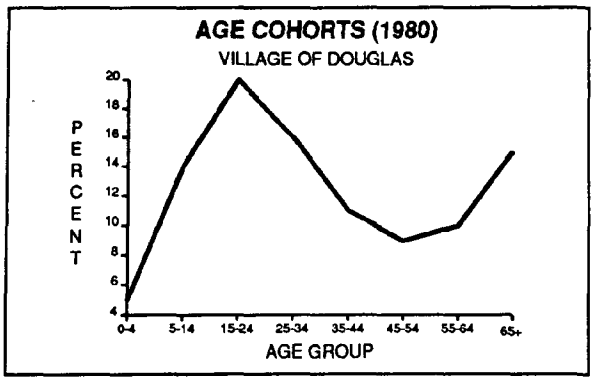


FIGURE 2.3

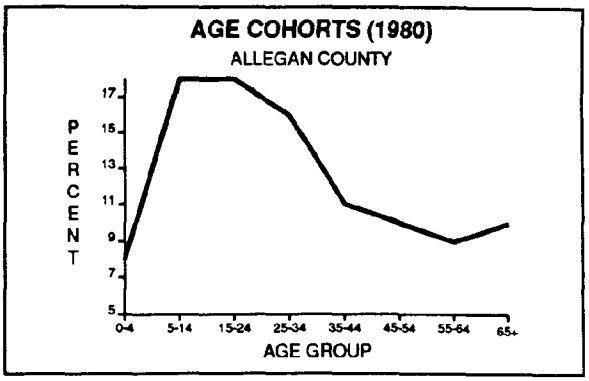


FIGURE 2.4

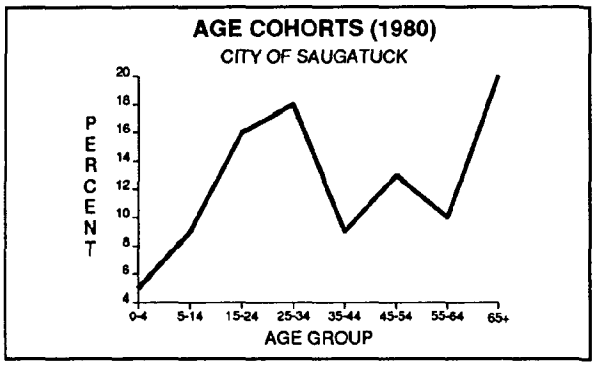
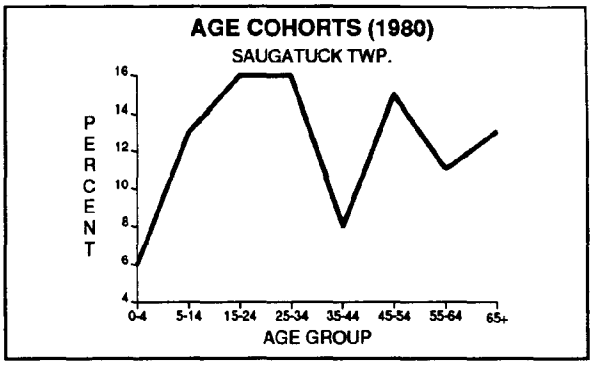


FIGURE 2.5



The number of households is an excellent gauge of the demand for land and services. As household size decreases, the additional households create further demand for land, housing, transportation, and public utilities. Although household size has declined substantially over the past few decades, national trends suggest that it will soon cease its decline. Nationwide the average household size has reached a plateau and state demographers predict that Michigan will follow suit. Variations in average household size by jurisdiction for 1980 are as follows: Saugatuck Township, 2.69; Village of Douglas, 2.44; and City of Saugatuck, 2.0. The City of Saugatuck's smaller household size is indicative of a higher proportion of "empty nesters" and retirees.

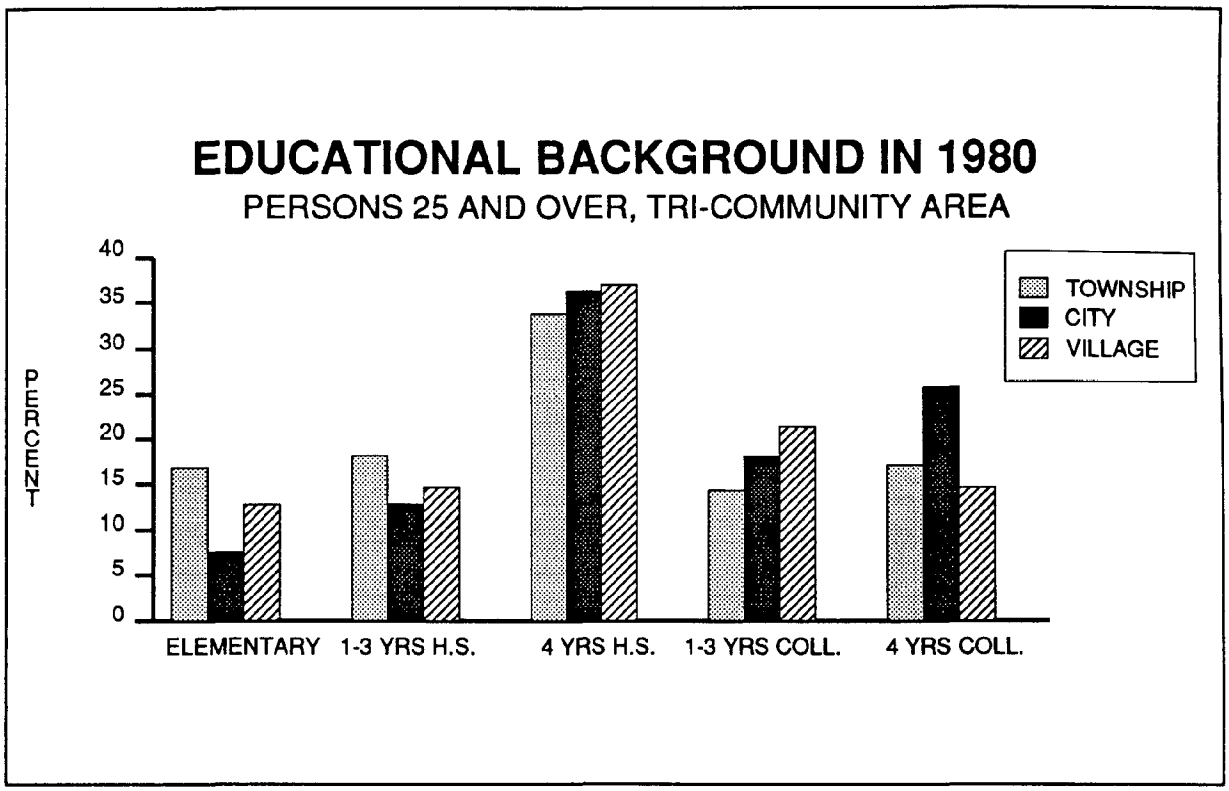
AGE DISTRIBUTION

A comparison of age cohorts in the tri-community area between 1960 and 1980 reveals a large drop in the proportion of young children, with a corresponding increase in the childbearing cohort (20 to 30 year olds) and 45-54 year olds. The proportion of retirees to the total population, however, has remained constant (see Figure 2.1). This is out of keeping with statewide trends and suggests that the area has experienced high in-migration of retirees through time. Retirees are attracted by the area's special resort quality, small town character, and scenic beauty.

Figures 2.2 through 2.5 provide a more detailed picture of the age cohort distribution of each community. A cohort graph for Allegan County is included for comparison. In accordance with countywide trends, each community has a small cohort of infants and toddlers. The cohort distribution of the Village of Douglas most closely resembles that of the County, although the Village has a much lower proportion of children aged 5-14. The most striking characteristic of the Township is its large cohort of 45-54 year olds.

The cohort of senior citizens is high in each community, but this is most striking in the City, where seniors comprise 20% of the population, while children 5-14 comprise only 9%. The City's second highest cohort is 25 to 34 year olds. In regional terms, Saugatuck Township comprises 39% of the area's senior population; the City of

FIGURE 2.6



Saugatuck comprises 37% (despite its small size); and the Village of Douglas, 24%.

EDUCATION

The tri-community area has a well educated citizenry. An analysis of those aged 25 and older in 1980 reveals that 36.2% have completed 1 or more years of college (see Figure 2.6). When comparing jurisdictions, the number of college educated residents is even higher in the City at 43.6%. The corresponding number in the Village is 35.9% and in the Township, 31.3%. Table 2.2 reveals the educational status of persons 25 years old and over by jurisdiction in 1980.

SCHOOL ENROLLMENTS

Three public school districts– Fennville Public School District, the Saugatuck Public School District, and the Hamilton Public School District– serve the tri-community area (see Map 2.1). The Hamilton School District includes only a small area of the northeast corner of the Township. The Fennville School District covers the southern half of the Township, and the Saugatuck Public School District covers the

TABLE 2.2
EDUCATIONAL STATUS
PERSONS 25 YEARS OLD AND OVER

	SAUGATUCK TOWNSHIP	SAUGATUCK CITY	DOUGLAS	AREA
Elementary	185	57	73	315
1-3 years HS	199	97	84	380
4 years HS	373	276	213	862
1-3 years College	157	137	123	417
4+ years College	188	196	84	468

central portion of the Township, plus Douglas and Saugatuck. Thus, the Saugatuck Public School District serves the majority of the area's households. School enrollment data for Saugatuck High School and Douglas Elementary, the two schools which comprise the Saugatuck Public School system, illustrate the impact of areawide demographic trends on the local school system. Between 1973 and 1989, enrollments in the Saugatuck Public School system, grades K-12, have declined by 34% (see Figure 2.7).

When divided into elementary and high school enrollments, however, the data reveal a 17% increase in elementary school enrollments since the 1983-84 school year, and a 28% decrease in high school enrollments over the same period (see Figure 2.8). School enrollment data appears in Table 2.3.

Future elementary and high school enrollments were projected by the Saugatuck Public School system. These projections, illustrated in Figure 2.8, show an upturn in high school enrollments in 1991 with a continued climb in elementary school enrollments. Total projected 1994 enrollments, however, are still 23% less than 1973-74 levels.

TABLE 2.3
SCHOOL ENROLLMENTS
SAUGATUCK PUBLIC SCHOOL DISTRICT

YEAR	K-6	7-12	TOTAL
79-80	326	329	655
80-81	307	322	629
81-82	306	299	605
82-83	252	290	542
83-84	232	303	535
84-85	259	296	555
85-86	250	277	527
86-87	275	265	540
87-88	299	246	545
88-89	296	215	511

FIGURE 2.7

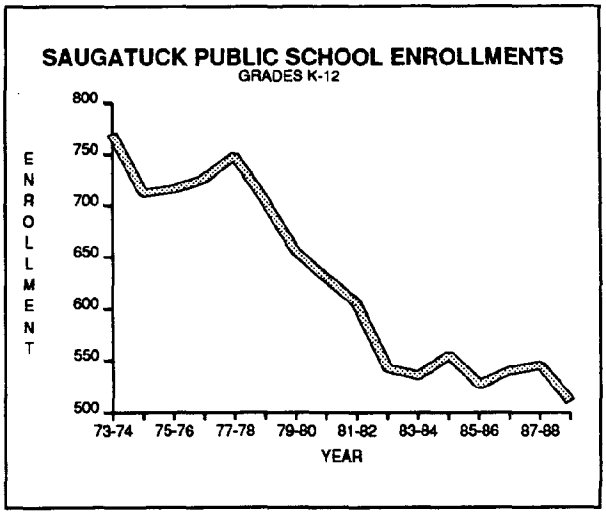
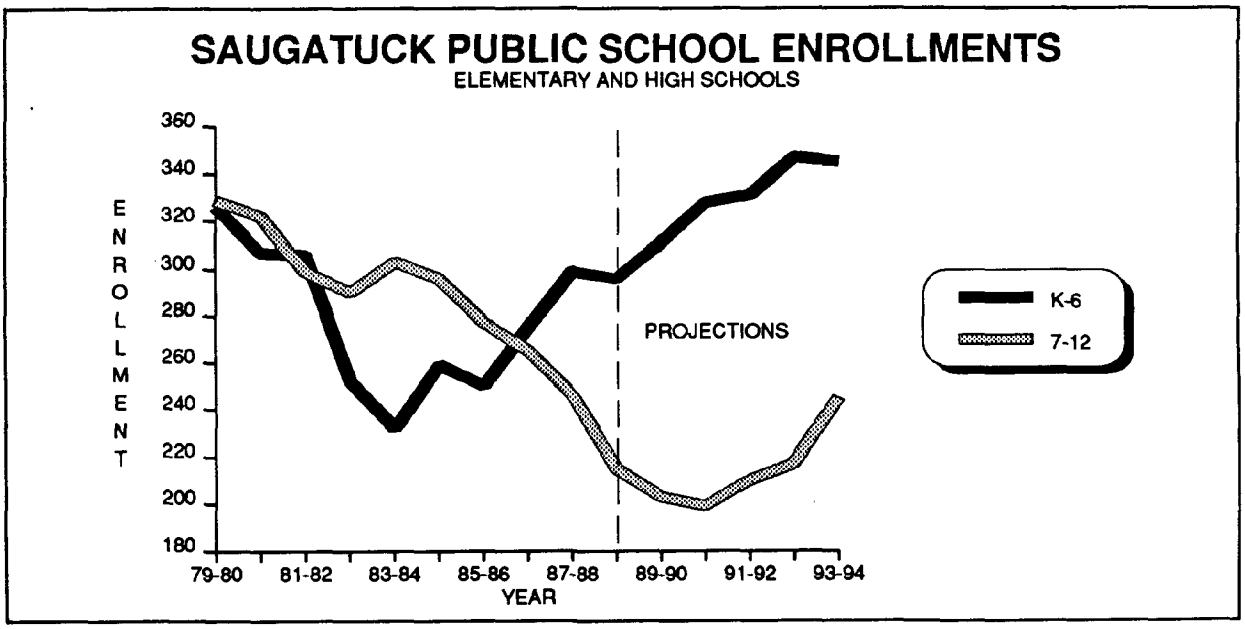


FIGURE 2.8



FUTURE TRENDS

If local demographic trends follow those projected for the county as they have in the past, then the overall proportion of retirees in the area will expand much faster than that of school age children. The Michigan Department of Management and Budget projects that Allegan County's school age population will grow only 3% by the year 2000, while senior citizens will increase by 30%. The area's small cohort of infants and children, large cohort of middle aged to elderly, and high rate of retiree in-migration suggest this will be equally true in the tri-community area.

These figures reveal the need to plan for the needs of an aging community, as well as initiate efforts to attract families with children into the area. The large cohort of individuals in their childbearing years in the Township and Village should result in a natural increase in young children, but because couples are having fewer children, school enrollments will probably expand only slightly. The Saugatuck Public School system is not likely to meet its potential capacity for enrollments unless a sequence of events or actions attracts new families with young children into the area. Two key factors will be the availability of affordable housing and nearby employment opportunities. In the meantime, schools must use space and resources efficiently as they experience tighter budgets and small enrollments.

Many of the demographic characteristics shown here have been analyzed based on 1980 census information. These trends should be updated when the 1990 census information is available. See Appendix B for more demographic information from the 1980 census.

N

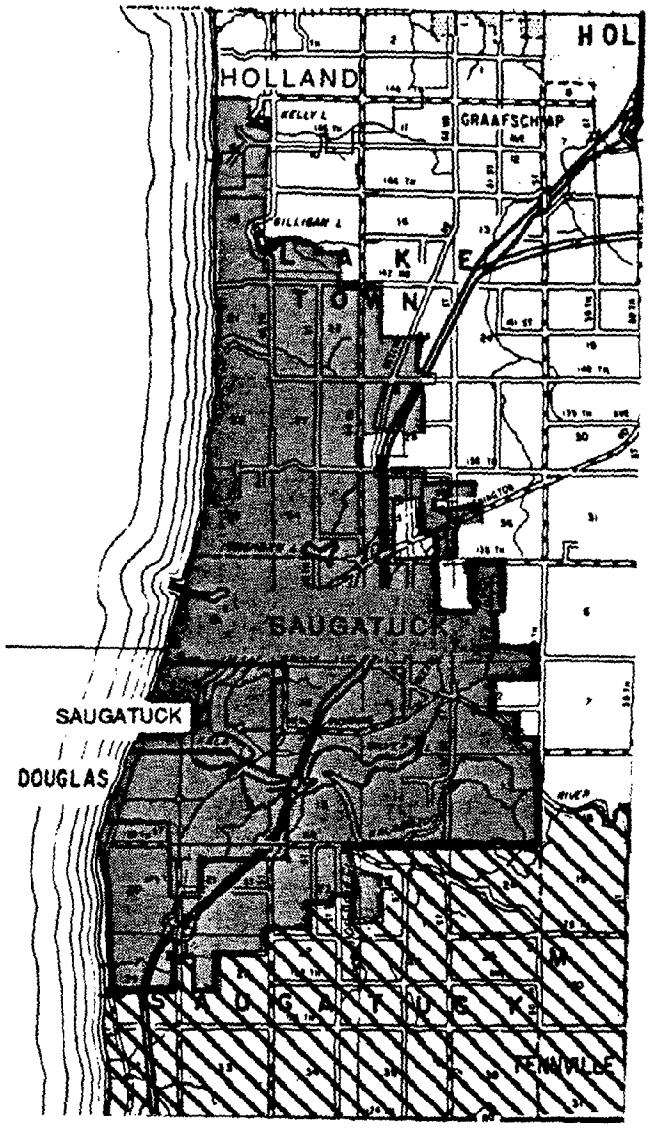
MAP 2.1 PUBLIC SCHOOL DISTRICTS

- Saugatuck
- Fennville
- Hamilton

DATA SOURCE: Respective School Districts

Planning & Zoning Center Inc, Lansing, MI

August 1989



Chapter 3

THE ECONOMY

ECONOMIC BASE

Tourism

Tourism fuels the economy of the tri-community area, with associated boating, restaurant, lodging, and strong retail sectors. Of the three jurisdictions, the City of Saugatuck relies most heavily on tourism. Although the City of Saugatuck is seen as the resort center of the area, the entire area benefits from and contributes to the tourist trade. The Village of Douglas has boating and lodging facilities which capitalize on tourism, but its commercial sector is primarily oriented towards local clientele. The Township has a small commercial sector which compliments that of the Village, but it is primarily seasonal residential and rural, with a large agricultural area to the south.

The area's resort flair is defined by: historic buildings– including quaint bed and breakfast inns; the many festivals; outstanding boating; Oval Beach; downtown Saugatuck; sand dunes; large wetlands abounding with wildlife; orchards and specialty farms; and a scenic location on Lake Michigan encompassing Silver, Goshorn, Kalamazoo and Oxbow lakes, and the Kalamazoo River. The area also has a reputation as a cultural center which serves as an artists' retreat. The Ox Bow Art Workshop and the Red Barn theater add to the area's cultural ambience.

Although it is located in Laketown Township, the Saugatuck Dunes State Park serves as another tourist attraction to the tri-community area. The Park offers no camping and thus many visitors stay in the tri-community area. Visitor counts from the Michigan Department of Resources, Parks Division, reveal that the park has increased in popularity since the 70's. Visitor counts performed by the Parks Division show that 47,463 people visited Saugatuck Dunes State Park in FY 1988– a 300% increase in park

TABLE 3.1
IMPACT OF TRAVEL ON ALLEGAN COUNTY, 1986

	TOT. TRAVEL EXPENDITURES	TRAVEL GENER. PAYROLL	TRAVEL GENER. EMPLOYMENT	STATE TAX RECEIPTS	LOCAL TAX RECEIPTS
$/Jobs	$42,413,000	$7,689,000	869 jobs	$2,191,000	$363,000
% of State Total	.56%	.49%	.62%	.71%	.49%
% change 1983-86	29.52%	37.87%	18.39%	27.98%	32.48%

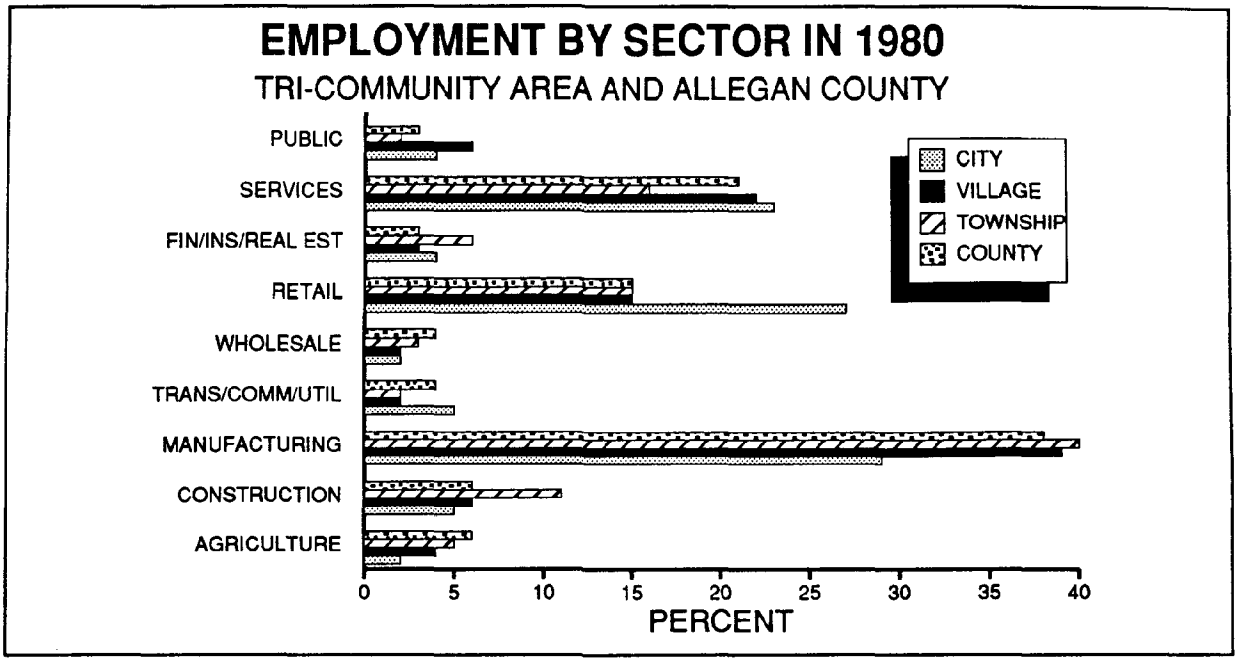
Source: U.S. Travel Data Center, **"The Economic Impact of Travel on Michigan Counties."**

TABLE 3.2
MAJOR EMPLOYERS

	PRODUCT/SERVICE	EMPLOYEES
Hansen Machine	Metal Stampings	43
Haworth	Office Furniture	238
Harbors Health Facility	Nursing Home	78
Enterprise Hinge	Manufacturing	12
Douglas Marine	Marina	21
Tafts Supermarket	Supermarket	32
Paramount Tool Co., Inc.	Machinery	24
Rich Products	Pies	85

Source: Allegan County Promotional Alliance

FIGURE 3.1



attendance since 1979, when it attracted only 11,714 visitors.

How much money does travel and tourism generate in the tri-community area? Although current travel and tourism statistics are not available for the tri-community area, studies conducted for Allegan County reveal the tremendous impact of travel and tourism on local economies in the County. This is especially true for Saugatuck-Douglas—the major resort center in the County. A study prepared for the Michigan Travel Bureau by the U.S. Travel Data Center in 1986 found that travellers spent $42.4 million in Allegan County in 1986, generating $7.7 million for payroll, 869 jobs, $2.1 million in state tax receipts, and $363,000 in local tax receipts. This ranks Allegan County 33rd out of Michigan's 83 counties in travel and tourism revenues. Selected data from this study is reproduced in Table 3.1.

TABLE 3.3
EMPLOYMENT BY INDUSTRY - 1980

	CITY	VILLAGE	TOWNSHIP	AREA	COUNTY
TOTAL	547	433	689	1,669	34,025
Agriculture	9	16	37	62	2,041
Construction	30	27	75	132	2,009
Manufacturing	156	169	274	599	13,033
TCU *	25	10	17	52	1,407
Wholesale Trade	13	7	20	40	1,398
Retail Trade	146	67	106	319	5,017
FIRE **	21	15	39	75	1,126
Services	125	96	107	328	7,105
Public Admin.	22	26	14	62	889

* Transportation, Communication, Utilities
** Finance, Insurance, Real Estate

Source: 1980 U.S. Census of Population, General Social and Economic Characteristics.

TABLE 3.4
EMPLOYMENT BY OCCUPATION - 1980

	CITY	VILLAGE	TOWNSHIP	AREA	COUNTY
TOTAL	547	433	685	1,665	34,025
Manag. & Admin	77	34	43	154	2,315
Prof. Technical	87	62	74	223	3,319
Sales	63	24	83	170	2,696
Clerical	70	45	74	189	4,189
Service	72	73	73	231	4,300
Farm, Fishing	13	13	43	126	1,885
Crafts & Repair	66	70	144	210	5,447
Machine Operators	60	90	120	270	6,129
Laborers, Mat. Moving	39	22	31	92	3,745

Source: 1980 U.S. Census of Population, General Social and Economic Characteristics.

Manufacturing

Manufacturing is central to the year-round stability of the area's economy. Although there are few manufacturing firms, they provide a high percentage of area jobs. Major area employers are listed in Table 3.2.

Agriculture

Agriculture is another strong component of the area's economic base. No data exists on farm earnings at the Township level, but Michigan Department of Agriculture statistics on Allegan County reveal the importance of farming to the county's economic base. Between 1980 and 1986, agricultural net income nearly doubled, going from 12.8 million, to over 24 million. Farm investments went from 92 thousand per farm in 1974 to 236 thousand in 1982. The market value of products sold by Allegan County farmers in 1987 totaled over $120 million and Allegan County farmers supported local business and industry by purchasing over $103 million of supplies and services.

Fruit farming is a rapidly growing agricultural enterprise in the County. Allegan County ranks within the top five producers of blueberries, peaches, grapes, pears, nectarines, potatoes, cauliflower, milk cows, and hogs and pigs. Between 1982 and 1986, the number of fruit farms increased 86%. Based on increases in overall acreage, growth in the fruit sector appears to be strongest for peaches, dwarf apples, and blueberries.

The Township contains a large amount of prime farmland (see Map 4.10). There are a number of fruit farms growing peaches, apples, cherries, and some blueberries. Corn, wheat, and soybeans are other major cash crops. Some farms also have livestock– primarily hogs and dairy cattle. Nurseries are a strong agri-business in the area. Rich Products, a major employer in the area, is another category of agri-business, which was attracted to the region because of its many fruit farms. The future of agri-industry is bright in light of Michigan Department of Commerce efforts to promote and expand food processing industries in the state.

EMPLOYMENT

Table 3.3 breaks down employment by economic sector for the tri-community area and the County in 1980. This information is illustrated in Figure 3.1. Manufacturing employs the most people in each of the three communities. Yet employment in other sectors varies. Employment by occupation in 1980 appears in Table 3.4. Information from these tables is summarized by jurisdiction below.

City of Saugatuck

Twenty-nine percent are employed in manufacturing, but retail employment is also very high in the City of Saugatuck (27%), revealing the dominant nature of retail activity in the City, as compared to the region (15%) and County (15%). The service sector employs the third largest number of Saugatuck's labor force (23%), followed by transportation/communication/utilities (5%), and construction (5%).

The highest proportion of workers in Saugatuck are professional/technical workers, followed by managerial and administrative, service, and clerical workers.

FIGURE 3.2

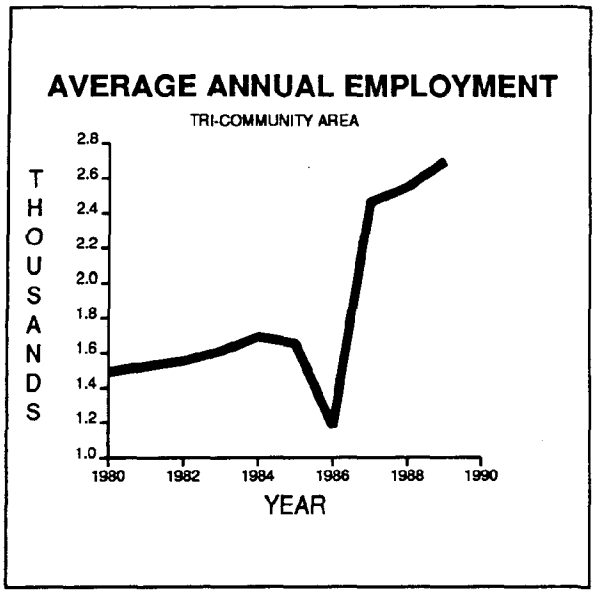
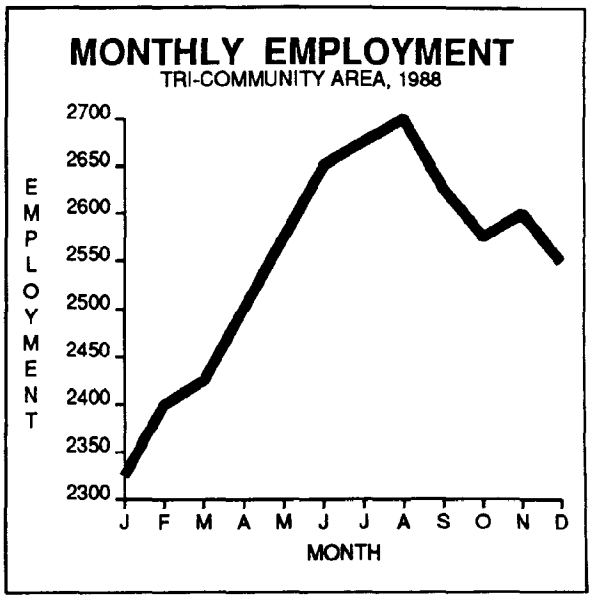


FIGURE 3.3



Village of Douglas

Thirty-nine percent of the Village of Douglas' labor force is employed in manufacturing. Yet unlike the City, the service sector dominates the retail sector. Services employ 22% of Village workers, with only 15% in the retail sector. Construction (6%) and the public sector (6%) are the fourth largest employers of village residents, and agriculture (4%) is fifth.

The highest proportion of workers in Douglas are machine operators, followed by service workers, crafts and repair workers, and professional/technical workers.

Saugatuck Township

Forty percent of Township residents are employed in the manufacturing sector, with the next largest proportion employed in the retail (15%) and service sectors (16%). Construction is fourth, employing 11% of Township workers—a much larger proportion than in the region and County. Financial/insurance/real estate services is fifth at 6%. Although nearly all of the region's farming occurs in the Township, 1980 employment by sector shows that the proportion

FIGURE 3.4

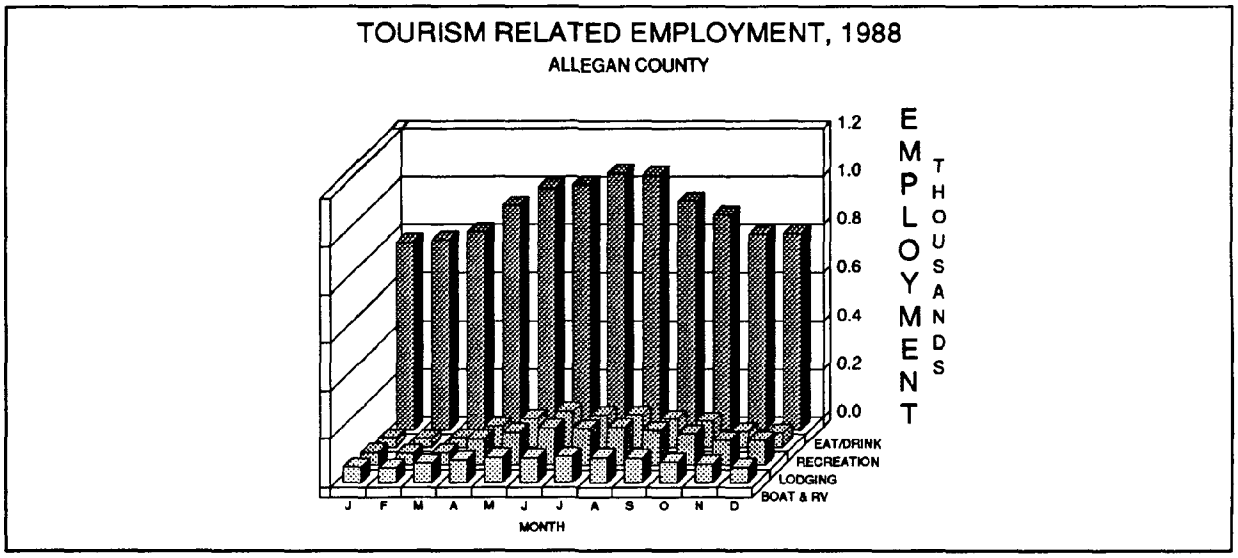


FIGURE 3.5

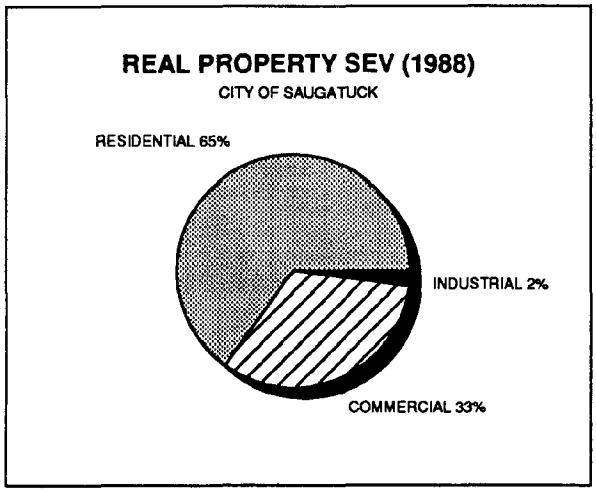
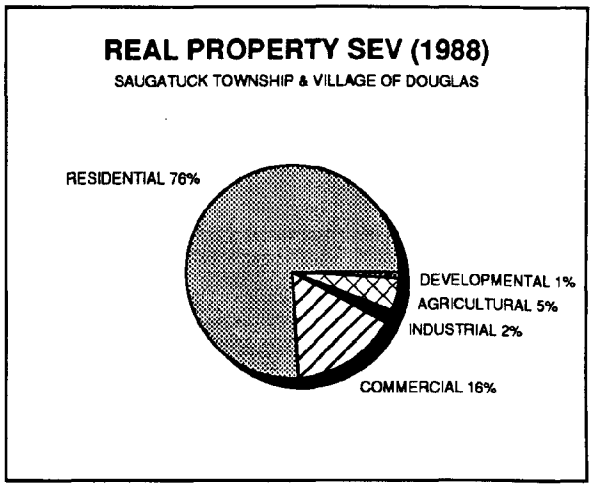


FIGURE 3.6



of the labor force employed in agriculture (5%) is low compared to the amount of agricultural activity, and only slightly higher than the Village of Douglas. Many farmers have alternative sources of income outside of farming, causing the census to count them in another employment sector.

The Township has the highest proportion of crafts and repair personnel in the region, representing employment generated by Broward Marine, Inc.—a major builder of luxury boats. Machine operators are second, and sales workers are third. The proportion of professional/technical and service workers is also high.

Average Annual Employment and Unemployment

Unemployment has declined dramatically with Michigan's economic growth of the late 80's. Table 3.5 reveals average annual unemployment rates in the area since the last statewide recession. The tri-community area has a slightly higher rate of unemployment than Allegan County, although since 1986 the unemployment rate has dipped below that of the state revealing local or regional economic growth.

Average annual employment in the tri-community area bottomed out in 1986. This reflected the loss of American Twisting, which employed about 20 people, and the burning of Broward Marine (about 100 employees) and Brighton Metal (about 10 employees). Yet in 1987, areawide employment jumped dramatically. During that year Broward Marine reopened its doors; Rich Products, Harbor Health Facilities, Paramount Tools and other area businesses increased employment; a number of small businesses and two restaurants opened; and perhaps most significantly, Haworth Corporation expanded adding two new departments. Contributing to this was the state and regional economic boom, and corresponding increases in construction and spending. Figure 3.2 illustrates this trend.

Seasonal Employment

Local employment increases each summer as tourists flood into the tri-community area. Figure 3.3 reveals the impact of tourism on employment in the tri-community area during the summer months.

The high number of jobs created during the summer months are primarily unskilled jobs in the service/retail sector, especially eating and drinking establishments and various other recreation-oriented uses. Figure 3.4 reveals the explosion in summer employment for tourism-related industries in Allegan County. This increase creates a high demand for teenage employees. Tri-community area businesses note the difficulty of filling these jobs, and the need to import seasonal labor. This is yet another impact of the demographic make-up of the area (i.e. the low number of teenage children). New industry and affordable housing in the area could attract families with children who, in turn, could staff area businesses during peak summer months.

TAX BASE

Residential uses make up the bulk of the area's tax base. Commercial uses provide 33%

of the City's real property SEV, while it provides a much smaller proportion of the (real) property tax base for the Township and Village of Douglas. Agriculture is the next highest SEV category, providing a 1988 SEV of $2,661,790 (see Figures 3.5 & 3.6).

Figure 3.7 illustrates changes in annual real property SEV between 1980 and 1987 for the tri-community area. The sharp drop in SEV for the Township between 1984 and 1985 was caused by the incorporation of Saugatuck as a City and its subsequent removal from the Township's tax base. SEV's are also shown for the Township minus the Village(s). The figure shows that each jurisdiction has experienced tax base growth since 1980. The City of Saugatuck has shown strong tax base growth and a jump in its tax base between 1983-84 after it incorporated. More complete information on annual Sev's and 1988 breakdowns can be found in Appendix B.

TABLE 3.5
AVERAGE ANNUAL UNEMPLOYMENT RATE

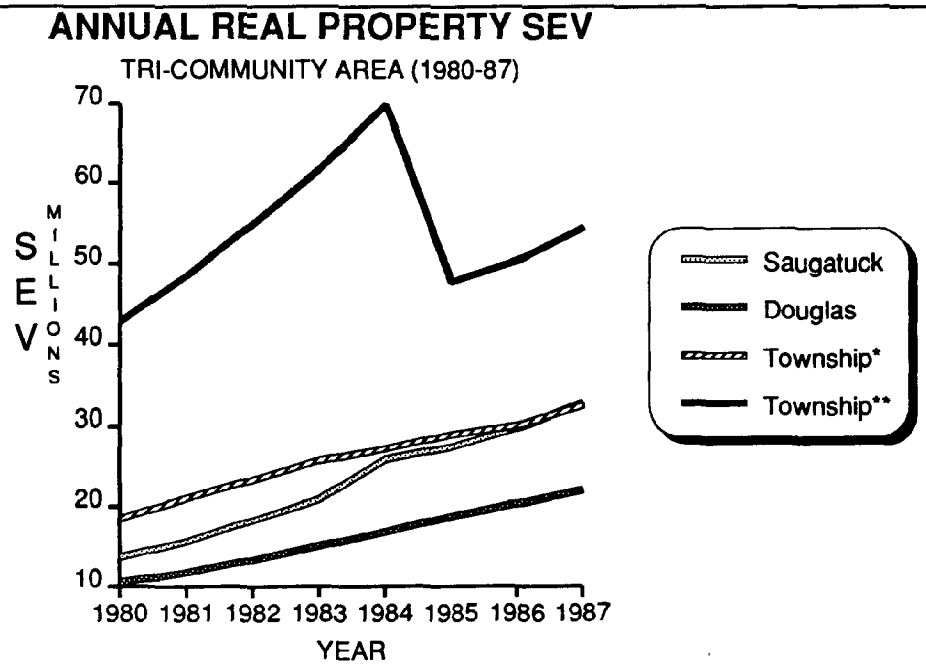
	Tri-Community	County	State
1982	15.2	14.8	15.5
1983	14.7	14.3	14.2
1984	10.8	10.5	11.2
1985	11.3	10.9	9.9
1986	6.5	7.3	8.8
1987	5.8	5.6	8.2
1988	5.2	5.1	7.6

Source: MESC, Bureau of Research & Statistics, Field Analysis Unit

INCOME

Between 1979 and 1985, census estimates show a dramatic rise in per capita income in the Village of Douglas– an increase of 47.4%– making it one of the top ten communities in terms of per capita income in Allegan County. Saugatuck Township rose from 7th to 6th place with a 40.4% increase in per capita income. The City of Saugatuck occupies a strong second place with a 39.9% increase, although it has given up first place to Laketown Township. Table 3.6 shows this comparison. (Per capita income in 1979 was $7,688 for the state and $6,744 for the county; in 1985 it was $10,902 for the state and $9,346 for the county.)

FIGURE 3.7



* not including Village(s)
** including Douglas through 1987 and Saugatuck through 1984.

Table 3.7 reveals selected income and poverty characteristics by jurisdiction in the tri-community area. Although the per capita income in the area has been consistently higher than that of the county, the median household income is lower. The median household income is the point at which 50% of the households earn more and 50% earn less. This figure is more representative of local trends as it is less easily distorted by a few high income wage earners.

Poverty data correspond with median household income. As median income goes up, the proportion of those in poverty goes down. Despite its rapid growth in per capita income, the Village of Douglas has the lowest median household income and the highest percentage of poor in the region.

Figure 3.8 reveals the proportion of those in poverty by age in 1979. The poverty level used by the 1980 census in recording this data was an annual income of $3,778 for those under 65, and $3,689 for those 65 and over. It reveals that a high proportion of the poor are elderly, especially in the Township.

FIGURE 3.8

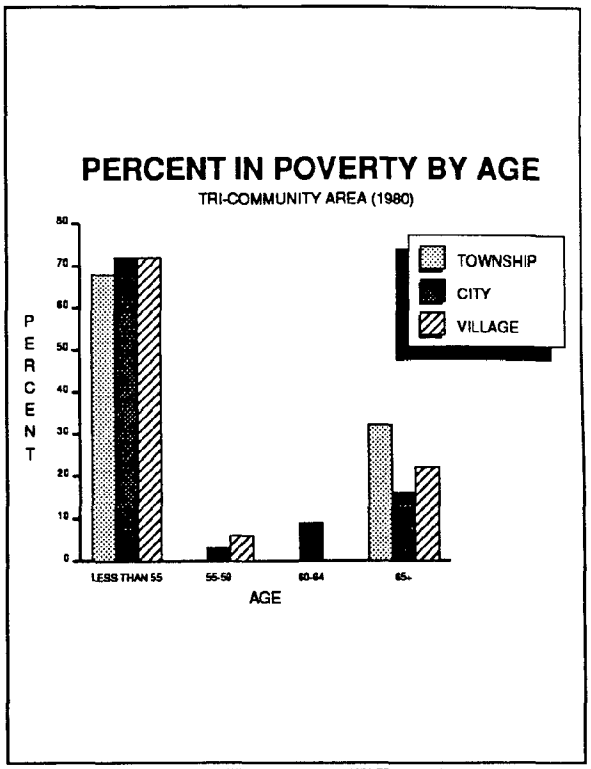


TABLE 3.6
PER CAPITA INCOME ($), ALLEGAN COUNTY (TOP TEN)

1979		1985	
Saugatuck	9031	Laketown Township	13,013
Laketown Township	8332	Saugatuck	12,631
Holland	8125	Holland	11,608
Gunplain Township	8074	Gunplain Township	10,947
Otsego Township	7437	Otsego Township	10,239
Plainwell	7396	Saugatuck Township	10,228
Saugatuck Township	7286	Douglas	10,150
Allegan Township	7170	Fillmore Township	10,120
Leighton Township	7051	Plainwell	9,886
Fillmore Township	7015	Leighton Township	9,539

Source: 1985 Per Capital Income Estimates, U.S. Census Bureau

TABLE 3.7
INCOME & POVERTY CHARACTERISTICS TRI-COMMUNITY AREA (1980)

	TOWNSHIP	CITY	VILLAGE	COUNTY
Median HH income	16,412	15,182	14,963	17,906
% in poverty	7.1%	8.6%	11.3%	8.0%
Income 200% of poverty level & above	74%	75%	73%	71%

Source: 1980 Census of Population

Chapter 4

NATURAL RESOURCES AND THE ENVIRONMENT

CLIMATE

Weather conditions affect the community's economic base. Variations in average conditions, especially during the summer months, can cause fluctuations in tourism and outdoor recreation activities, upon which the local economy is dependent. Prevailing winds determine lakeshore and sand dune erosion patterns, which impose limitations on development along the Lake Michigan shore.

Below, in Table 4.1, is relevant climatic information for the area. These conditions generally do not pose limitations on the area's growth except along the Lake Michigan shore, where natural forces can cause rapid and extensive erosion of beaches and sand dunes. The climate is also considered favorable for growing certain fruits, such as apples and blueberries.

GEOLOGY

The tri-community area is located on the southwestern flank of the Michigan Basin, which is a bedrock feature centered in the middle of the Lower Peninsula. The sandstone and shale bedrock is overlain by glacial deposits from 50 to 400 feet thick. There are no outcroppings of the bedrock and the proximity of the bedrock to the surface of the ground does not impose limitations for normal excavating or construction. Glacial deposits consist primarily of sandy lakebed deposits located between two major physiographic formations: the Lake Border Moraine, which is adjacent to Lake Michigan, and the Valparaiso Moraine, which extends through the center of the county, from north to south. Oil and gas drilling in the area occurred mostly during the period from late 1930's to the early 1950's. At present, there are no producing wells in the tri-community area.

TOPOGRAPHY

Most of the tri-community area is relatively flat, but local variations in elevation of up to 150 feet exist in some places between uplands and the floodplain of the Kalamazoo River. There are also considerable local differences in elevation in the extreme northwest portions of the Township in the sand dunes between the Kalamazoo River and Lake Michigan. The highest point in this area is Mt. Baldhead, which rises 310 feet above Lake Michigan. Areas of abrupt local variations in elevation appear as dark areas on the topographic map (Map 4.1).

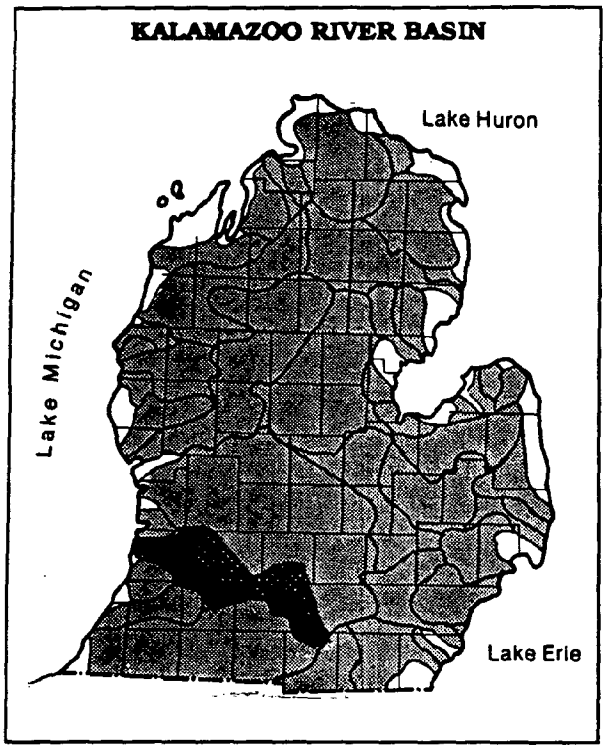
Steep slopes present impressive scenery and pose increased maintenance and construction costs as well as safety risks. This is especially true with unstable landforms such as sand dunes. Generally, slopes exceeding 7% should not be developed intensively, while slopes of more than 12% should not be developed at all because of erosion and storm water runoff problems.

TABLE 4.1
SUMMARY OF RELEVANT CLIMATE CONDITIONS

CLIMATE VARIABLES	AVERAGE CONDITION	EXTREME CONDITION
Coldest Months (January-February)	23.3° F - 25.1° F	-11° F - -35° F
Hotest Month (July)	71.5° F	96° F - 106° F
Annual Average Temperature	48.3° F	
Average Rainfall	35.7 inches	
Average Growing Season	153 days	
Average Annual Snowfall	79.7 inches	
Elevation Above Sealevel	590 feet	
Prevailing Winds	Westerly	

Source: USDA Soil Survey, Allegan County

FIGURE 4.1



DRAINAGE

Most of the tri-community area lies within the Kalamazoo River Basin, which begins near Jackson and extends westward into the tri-community area (see Figure 4.1). The extreme southwestern portion of the Township drains directly into Lake Michigan. All of the watercourses within the area drain into the Kalamazoo River, which flows westward through the middle of the Township and into Lake Michigan. Tannery Creek, Peach Orchard Creek, Silver Creek and Goshorn Creek are all short-run streams that flow into the Kalamazoo River. A network of County drains facilitates the removal of runoff from flat areas with poorly drained soils in the southern half of the Township. The sand and clay bluffs along Lake Michigan in Section 20 are being eroded by groundwater which flows through the sandy topsoil and onto the less permeable clay layer. The water flows out the side of the bluff, undermining the sandy upper layer. A County drain has been proposed which would be placed parallel to the bluff and collect runoff for discharge at one point into Lake Michigan. Most other areas of the Township drain fairly well, especially Saugatuck and Douglas. All watercourses, including county drains, are found on Map 4.2.

FLOODPLAINS

Areas adjacent to creeks, streams and rivers are susceptible to periodic flooding that can cause extensive damage to buildings and can pose a substantial threat to public health and safety. The U.S. Army Corps of Engineers has mapped the boundaries of the 100 year floodplain in the tri-community area. Those boundaries are denoted by the shaded areas on Map 4.3 and is the area that would be inundated during an Intermediate Regional Flood. The Federal Flood Insurance Program has established guidelines for use and development of floodplain areas. Those regulations indicate that development in floodplains should be restricted to open space, recreational or agricultural uses. Installation of public utilities and permanent construction for residential, commercial or industrial uses should not occur in floodplain areas.

WETLANDS

There are many wetlands in the tri-community area. Most are contiguous to or hydrologically connected to Lake Michigan, rivers, streams, or creeks. Wetlands are valuable in storing floodwaters, recharging groundwater, and removing sediment and other pollutants. They are also habitat for a wide variety of plants and animals, including a large rookery of Great Blue Herons along the Kalamazoo River.

Because wetlands are a valuable natural resource, they are protected by Public Act 203 of 1979. PA 203 requires that permits be acquired from the Michigan Department of Natural Resources (DNR) prior to altering or filling a regulated wetland. The Wetland Protection Act defines wetlands as "*land characterized by the presence of water at a frequency and duration sufficient to support and that under normal circumstances does support wetland vegetation or aquatic life and is commonly referred to as a bog, swamp, or marsh and is contiguous to the Great Lakes, an inland lake or pond, or a river or stream.*"

Regulated wetlands include all wetland areas greater than 5 acres or those contiguous to waterways. Wetlands which are hydrologically connected (i.e. via groundwater) to waterways are also regulated. Activities exempted from the provisions of the Act include farming, grazing of animals, farm or stock ponds, lumbering, maintenance of existing nonconforming structures, maintenance or improvement of ex-

TABLE 4.2
LAND COVER CODES FOR PROTECTED WETLANDS IN TRI-COMMUNITY AREA

CODE	DESCRIPTION
31	Herbaceous Rangeland*
32	Shrub Rangeland*
412	Upland Hardwoods
414	Lowland Hardwoods
421	Upland Conifers
429	Lowland Conifers
611	Wooded Swamps
612	Shrub Swamps
621	Marshland Meadow
622	Mud Flats

Source: Michigan DNR Land Cover/Use Classification System
* Wetlands are sometimes, but not always associated with these land cover types.

isting roads and streets within existing rights-of-way, maintenance or operation of pipelines less than six inches in diameter, and maintenance or operation of electric transmission and distribution power lines.

Permits will not be issued if a feasible or prudent alternative to developing a wetland exists in such areas. An inventory of wetlands based on the DNR's land use\cover inventory are illustrated on Map 4.4. Table 4.2 shows the land use\cover codes pertaining to regulated wetlands in the area. Herbaceous and shrub rangelands may not actually meet the statutory definition of wetland, so on site inspections will be necessary to establish whether a wetland indeed exists in such areas. Areas of hydric soils in the south-central part of the Township would be classified as wetlands if they were not in agricultural use and served by county drains.

SOILS

A modern soil survey was completed for Allegan County by the USDA Soil Conservation Service in March, 1987. The soil types present in the tri-community area shown on the map and table in Appendix D. Each soil type has unique characteristics which pose opportunities for some uses and limitations for others. The most important characteristics making the soil suitable or unsuitable for development are limitations on dwellings with basements, limitations on septic tank absorption fields, and suitability for farming. Soil limitations have been classified into three categories, which are described below.

- Slight: Relatively free of limitations or limitations are easily overcome.
- Moderate: Limitations need to be considered, but can be overcome with good management and careful design.
- Severe: Limitations are severe enough to make use questionable.

Large areas of soils in the Township have severe limitations on residential and urban development. The degree of soil limitations reflects the hardship and expense of developing the land. Fortunately, most of the soils which are not suited for residential development are also considered prime farmland soils by the U.S. Department of Agriculture.

Basement Limitations

Limitations for dwellings with basements are shown on Map 4.5. Some soils impose severe limitations on basements because of excessive wetness, low strength, excessive slope, or shrink-swell potential. These areas are found primarily in the northeast corner and in the southern half of the Township.

Septic Limitations

Soils in most of the tri-community area impose severe limitations on septic tank absorption fields for a wide variety of reasons. The permeability of soils in the area ranges from very poorly drained to excessively drained. There are only a few small areas which are neither poorly nor excessively drained, do not have a high water table, and are therefore well suited for septic tank absorption fields. These areas are located in the southeast corner of the Township and in the southwestern portion of Douglas. Most of the tri-community area that is likely to experience future growth has moderate to severe limitations for on-site septic systems. Map 4.6 shows the septic limitations for the area. This map suggests the need for municipal sewers to accommodate new development in many areas.

The degree of soil limitations reflects the hardship and expense of developing that land for a particular use. Those soils classified as "severe" have varying degrees of development potential based on the nature of the limitation. Map 4.7 provides this more detailed analysis of severe limitations on septic tank absorption fields. The "severe" soils have been categorized as follows:

A. Sandy, moderate to rapid permeability
B. Rapid permeability, wetness and high water table
C. Wet, ponding, heavier (clay) soils, slow permeability
D. Very wet soils, organics, wetlands, floodplains, unable to support septic fields.

Soils in categories B and D are not able to support septic fields because of extreme wetness. Soils in category A are classified as "severe" by the Soil Conservation Service, however the Allegan County Health Department considers them to have only moderate limitations for septic systems. They can be made suitable for development by increasing the distance between the septic system and the water table. Soils with moderate and slight limitations also appear on Map 4.7. Soils that are most suitable for development, with respect to basement and septic limitations, are shown in Map 4.8.

Some areas of the tri-community area have been designated by the Allegan County Health Department as unsuitable for new development without sewers. Among these areas are the Felkers Subdivision in Douglas, Blue Star Highway from Douglas south to the freeway exit, 129th Street south of Douglas, and along Old Allegan Road in Section 10 east of Saugatuck. Permits for commercial and single family uses have been denied in all of these areas due to on-site soil conditions. The Health Department has also outlined areas with particularly severe limitations for septic fields. These are in Sections 3 and 4 of the Township and the Goshorn Lake area, which have a highly permeable soils and a high water table, and large portions of the southern half of the Township, which have heavy clay soils. Health Department officials do not recommend further development of these areas without sewers.

Standards for Septic Systems

The Allegan County Health Department has established certain standards for septic systems. These standards apply somewhat different site characteristics when determining the degree of limitations for septic systems, compared to the Soil Conservation Service approach, which focuses on soil types and slope. Below is a review of these standards by development type.

Single Family Residential
Before a permit is considered, there must be four feet of dry soils between the bottom of the septic system and the water table. In addition, there must be one foot between the existing ground surface and the seasonal water table, and two feet between the existing ground surface and the clay. Special permits will be considered only if the site size is at least two acres and the septic system is put on top of four feet of sand. Residential sites that fail to meet those requirements, such as the small lots in Felkers Subdivision, will not be issued septic system permits.

All Other Residential, Plus Commercial
These fall under State guidelines of two feet between the existing ground surface and the water table and four feet of dry soil between the bottom of the septic system and the water table. No special permits are issued for these uses. Most of the land along the entire length of Blue Star Highway does not meet these State standards and has been denied commercial permits (refer to Map 4.7a). Public sewers will be necessary.

Hydric Soils

Hydric soils are another limitation on development. They are very poorly drained, saturate easily and retain large quantities of water. If artificially drained, they are often suitable for farmland use. Map 4.9 shows where these soils are. In the tri-community area, most of the hydric soils are found near watercourses and correspond to present or former wetlands. There is a large area of hydric soils in the southwest portion of the Township which is currently being farmed. Residential, commercial and industrial development in areas containing hydric soils should be discouraged.

Prime Farmland

Prime farmland soil types have been identified by the Soil Conservation Service as those best suited for food production; they require minimal soil enhancement measures such as irrigation and fertilizer. There is a very large area of prime farmland soils in the south central portion of the Township. These areas contribute significantly to the area's economic base. The loss of prime farmland to other uses results in farming on marginal lands, which are more erodible and less productive. Soils in prime farmland categories that have frequent flooding or seasonal high water table, such as those in the southern half of Saugatuck Township, qual-

ify as prime farmland because those limitations have been overcome by drainage. Unique farmlands are based on certain soil types as well as other factors, such as landscape position (proximity to water supply, orientation to sunlight, slope, etc.), moisture supply and present management practices. Prime farmland soils and unique farmlands are shown on Map 4.10. Unique farmland and lands enrolled in the Farmland and Open Space Preservation Program (PA 116 of 1974) are depicted on Map 5.3.

GROUNDWATER

Groundwater is an unseen resource and is therefore particularly vulnerable to mismanagement and contamination. Prior to the 1980's, little was known about groundwater contamination in Michigan, and some startling facts have recently been revealed.

The leading causes of groundwater contamination in Michigan are from small businesses and agriculture. More than 50% of all contamination comes from small businesses that use organic solvents, such as benzene, toluene and xylene, and heavy metals, such as lead, chromium, and zinc. The origin of the problem stems from careless storage and handling of hazardous substances. On paved surfaces where hazardous materials are stored, substances can seep through or flow off the edge of the pavement. Materials can get into floor drains which discharge to soils, wetlands or watercourses.

At present, groundwater is the only tapped source of potable water for the City of Saugatuck, the Village of Douglas and Saugatuck Township. The glacial drift aquifers in the area are especially vulnerable to contamination because of rapid permeability and high water table. In a local example, Douglas' municipal water supply has been contaminated by volatile organic compounds (VOC's), supposedly by an industrial site within the Village. Some areas without municipal sewer and water service are in danger of groundwater contamination due to septic systems, intensive development and a high water table. In the Goshorn Lake area, household wells are susceptible to contamination from septic systems due to intensive development and a high water table. The Allegan County Health Department recommends provision of public water and sewer to households in that area.

Protection of groundwater resources is problematic because of difficulties in locating aquifers. Well depth records indicate the relative location of groundwater at particular points. According to well logs from Michigan Groundwater Survey (MGS) data, well depths range from 29 ft. in the north central area to 360 ft. in the extreme southwest corner of the Township. Soils most vulnerable to groundwater contamination are found on Map 4.11. Well locations are indicated by small triangles on Map 4.12.

SPECIAL FEATURES

Lake Michigan Shoreline and Beaches

The entire shoreline, from M-89 to the sand dunes, is flanked by single family homes overlooking sand and clay bluffs. The Lake Michigan shoreline in Saugatuck Township is very susceptible to wind and water erosion during storms and high lake levels due to resultant wave action. The current closing of Lakeshore Drive due to bluff erosion is a graphic example of the power of wave action. These natural processes pose hazards to public health and safety. The Shorelands Protection Act of 1970 was enacted to identify areas where hazards exist by designating them and by passage of measures to minimize losses resulting from natural forces of erosion. High risk erosion areas are defined as areas of the shore along which bluffline recession has proceeded at a long term average of 1 foot or more per year. The entire Lake Michigan shoreline in the tri-community area has been designated as a high risk erosion area, with some portions eroding at a rate of 1.7 feet per year. Within the designated area, shown on Map 4.13, alteration of the soil, natural drainage, vegetation, fish or wildlife habitat, and any placement of permanent structures, requires a DNR review and permit, unless the local unit of government has an approved high risk erosion area ordinance. Saugatuck Township has such an ordinance, while Douglas and Saugatuck do not.

Sand Dunes

The sand dunes along Lake Michigan in the northwest corner of the Township represent a unique and fragile physiographic formation and ecosystem that is very susceptible to wind and water erosion, and destruction due to careless use or development. The dune area which is in Saugatuck Township and the City of Saugatuck has been identified by the Michigan Department of Natural Resources (DNR) as a critical dune area, subject to protection under the Michigan Sand Dune Protection and Management Act, PA

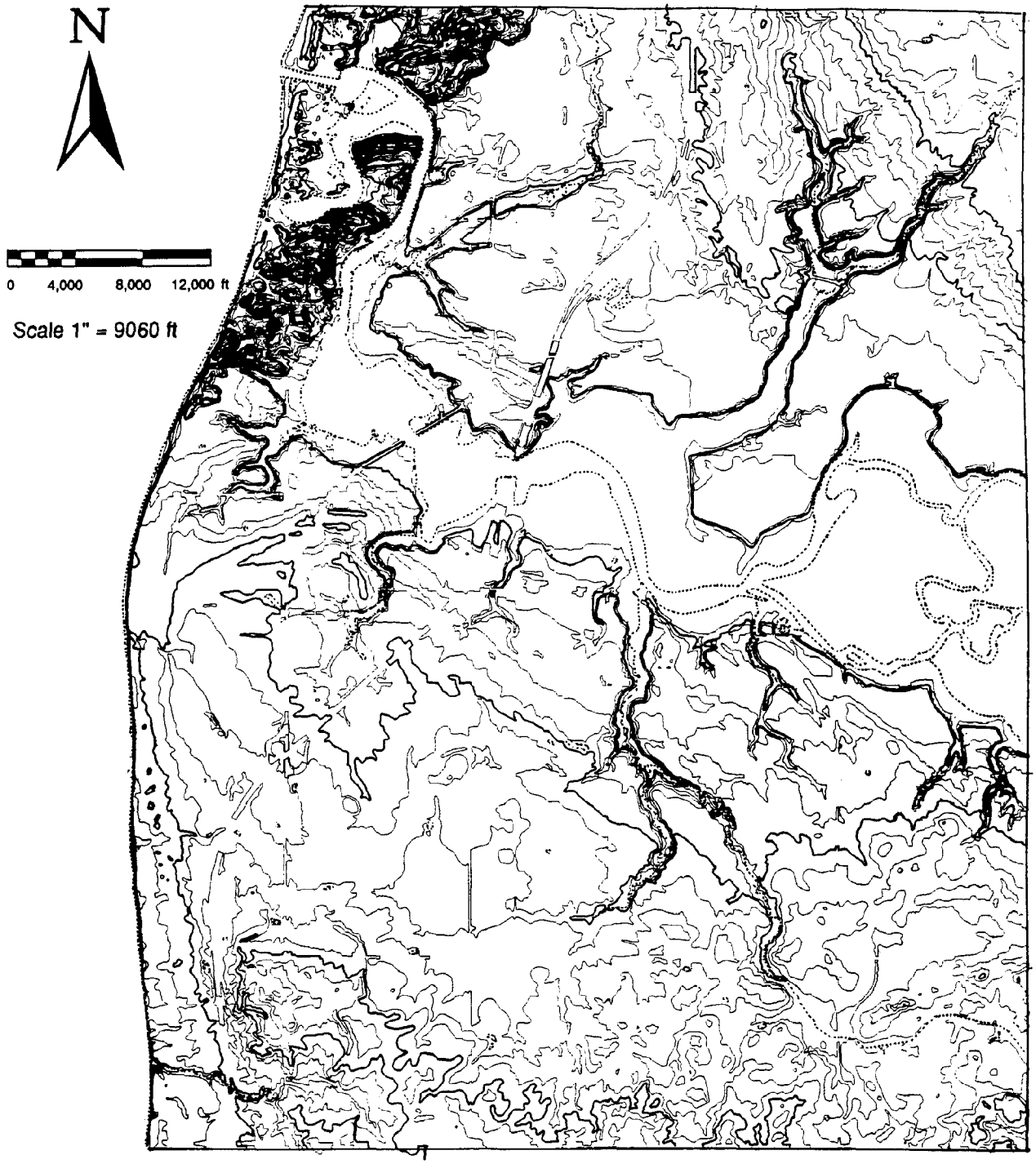
222 of 1976. The designated critical dune area is shown in the shaded region of Map 4.14.

Recent legislation (PA 147 & 148 of 1989) provides for additional protection of critical dune areas. Under these Acts, all proposed commercial or industrial uses, multifamily uses of more than 3 acres, and any use which the local planning commission or the DNR determines would damage or destroy features of archaeological or historical significance must be approved by the State. Single family residential development is to be regulated at the local level. The law prohibits surface drilling operations that explore for or produce hydrocarbons or natural brine as well as mining activities (except in the case of permit renewals). The legislation also imposes certain standards on construction and site design in critical dune areas.

Site design and construction standards for sand dunes should be enhanced at the local level to prevent further deterioration of this fragile environment. Areas needing special attention in such standards are vegetation, drainage and erosion protection.

WOODLANDS

The wooded areas of the tri-community area are a mixture of hardwoods and conifers. Large areas of upland hardwoods are found in the sand dune areas, along Lake Michigan, and in the northeast quarter of the Township. A large area of lowland conifers exists in the southeastern portion of the Township east of I-196. Other smaller patches of upland and lowland hardwoods and conifers are scattered throughout the area, as shown on Map 4.15. Mature trees represent a valuable resource in maintaining the aesthetic character of the area, not to mention their overall importance to wildlife and the natural environment. In particular, the wooded sand dunes along the Kalamazoo River and Lake Michigan, and those buffering adjacent uses from I-196, are especially important. They should be managed to insure their long term existence.



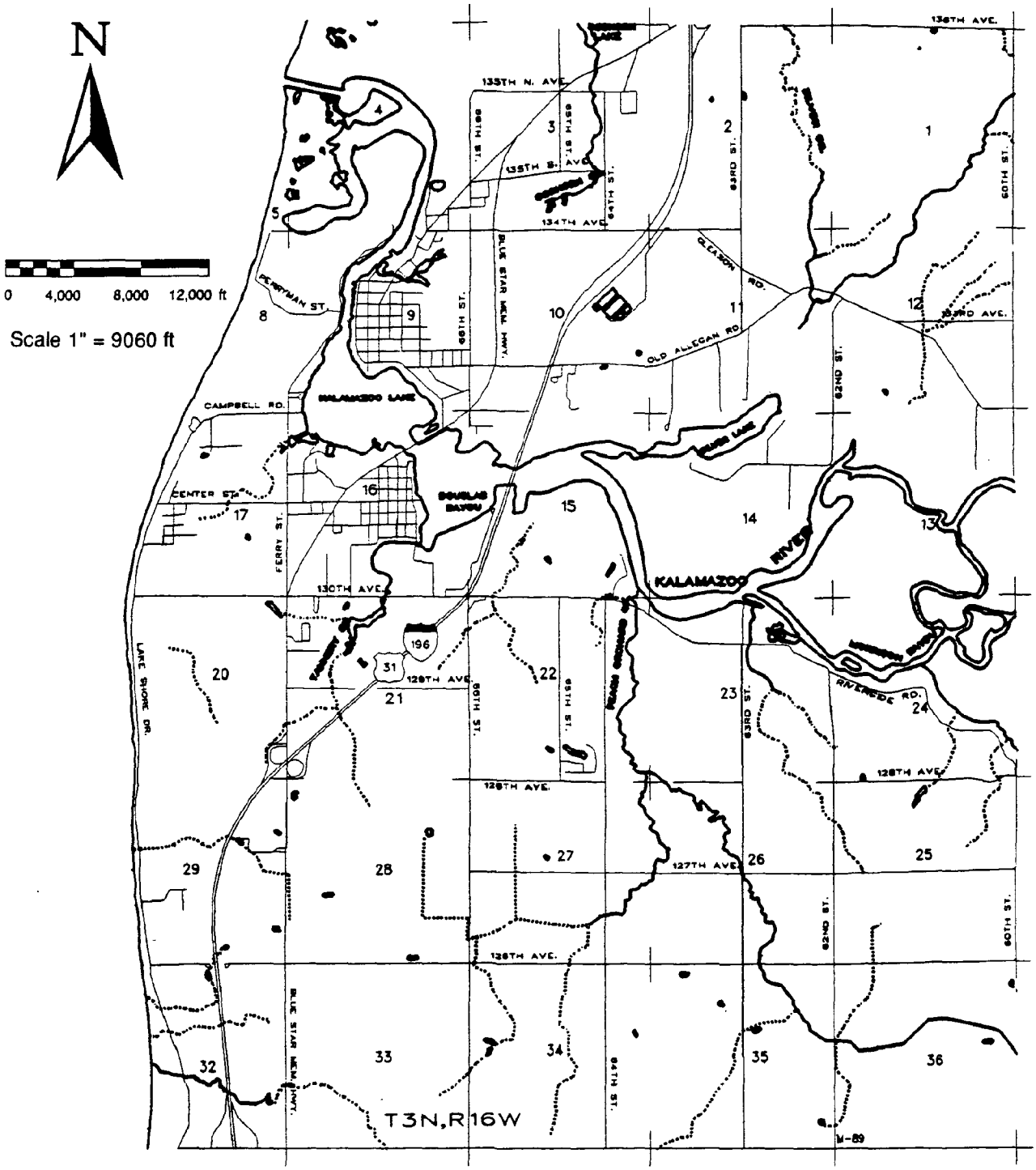
MAP 4.1 TOPOGRAPHY

Tri-Community

Contour interval is ten feet

Darker lines are 50 foot contours

August 1989 DATA SOURCE: USGS Quadrangle Maps Planning & Zoning Center Inc, Lansing, MI



MAP 4.2 WATERCOURSES

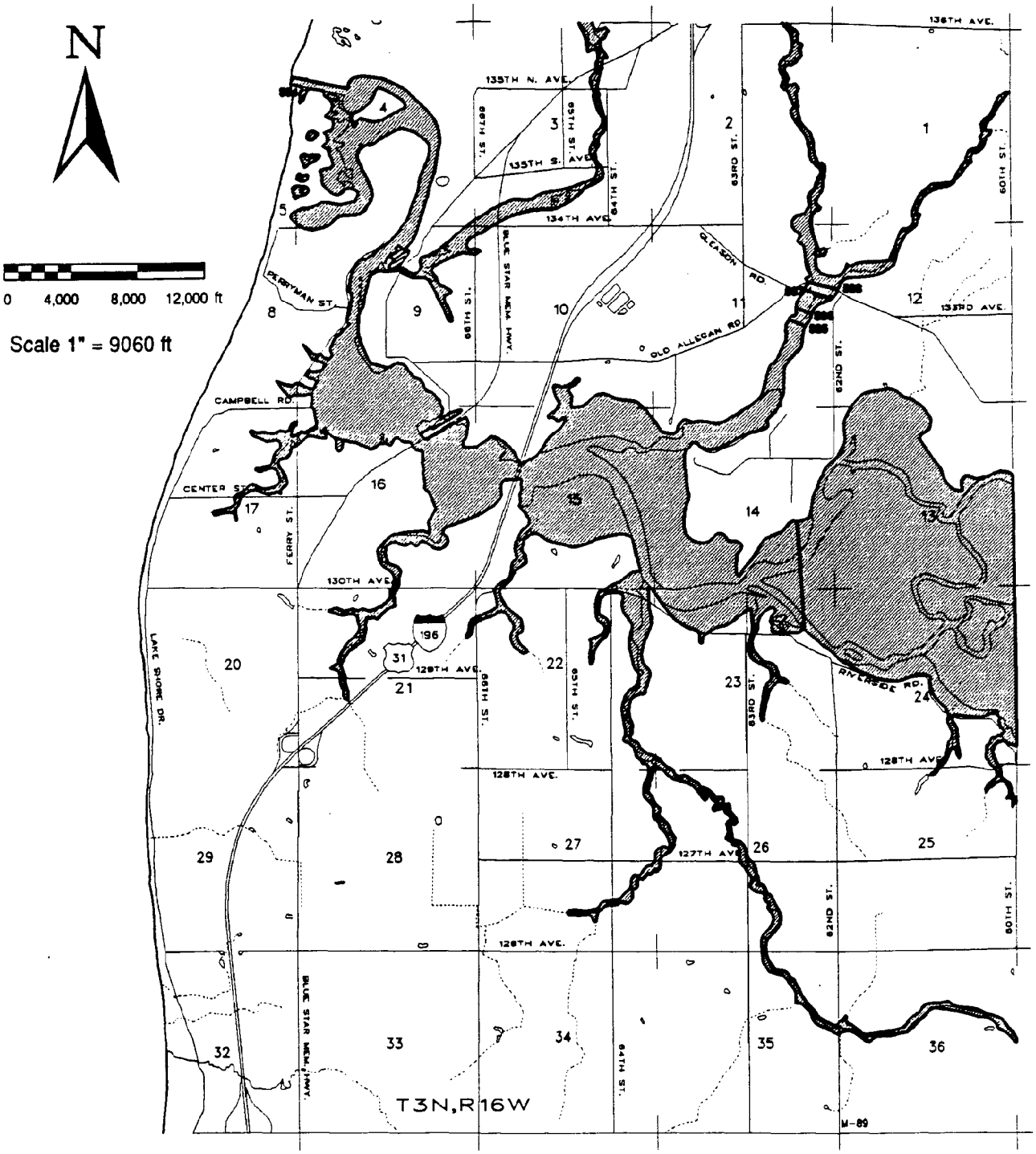
Tri-Community

Lakes, rivers and streams

Drains and intermittent streams

August 1989 DATA SOURCE: MDNR

Planning & Zoning Center Inc, Lansing, MI



MAP 4.3 FLOODPLAINS

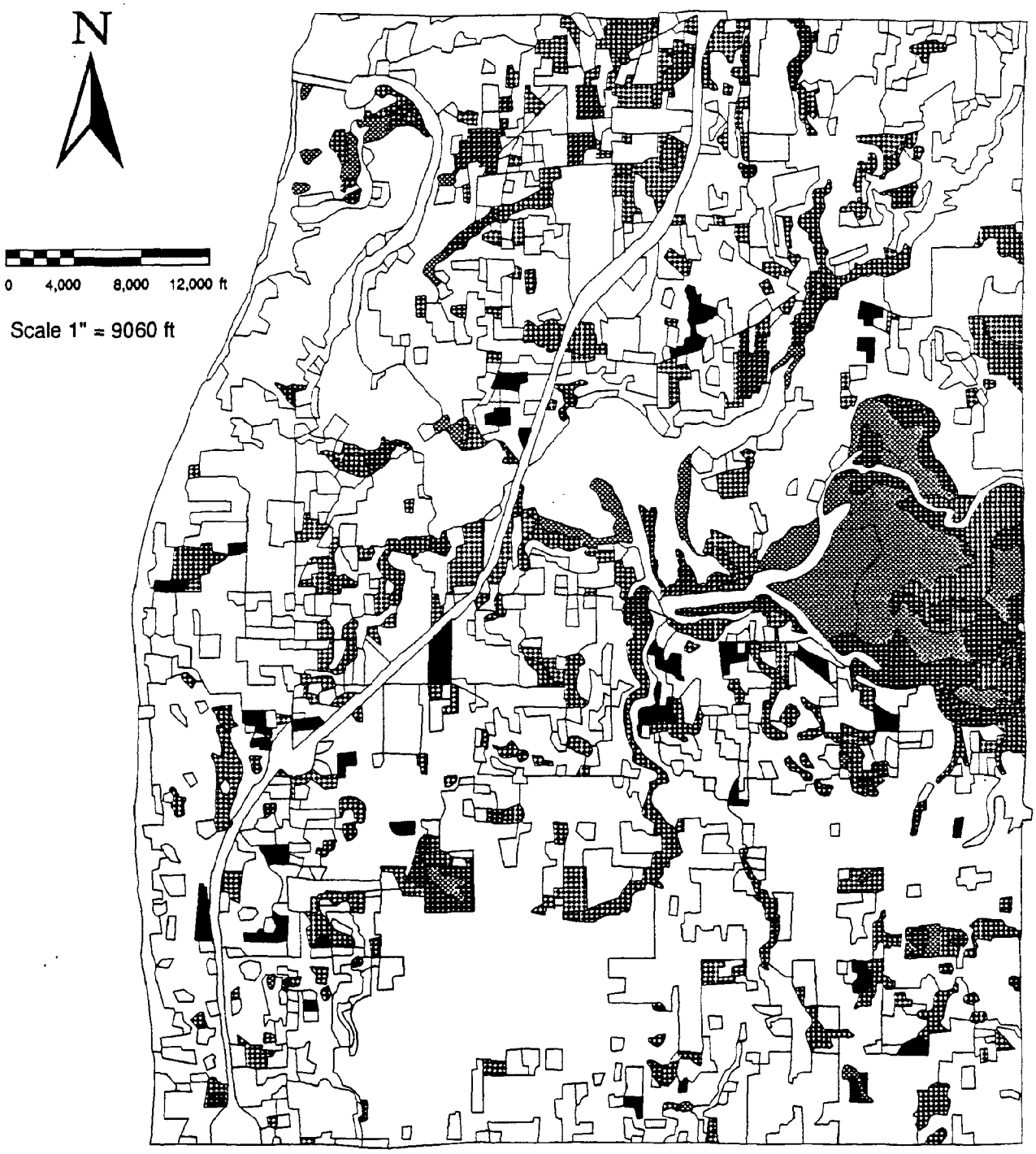
Tri-Community

100 Year Flood Area

500 Year Flood Area

August 1989 DATA SOURCE:MDNR

Planning & Zoning Center Inc, Lansing, MI



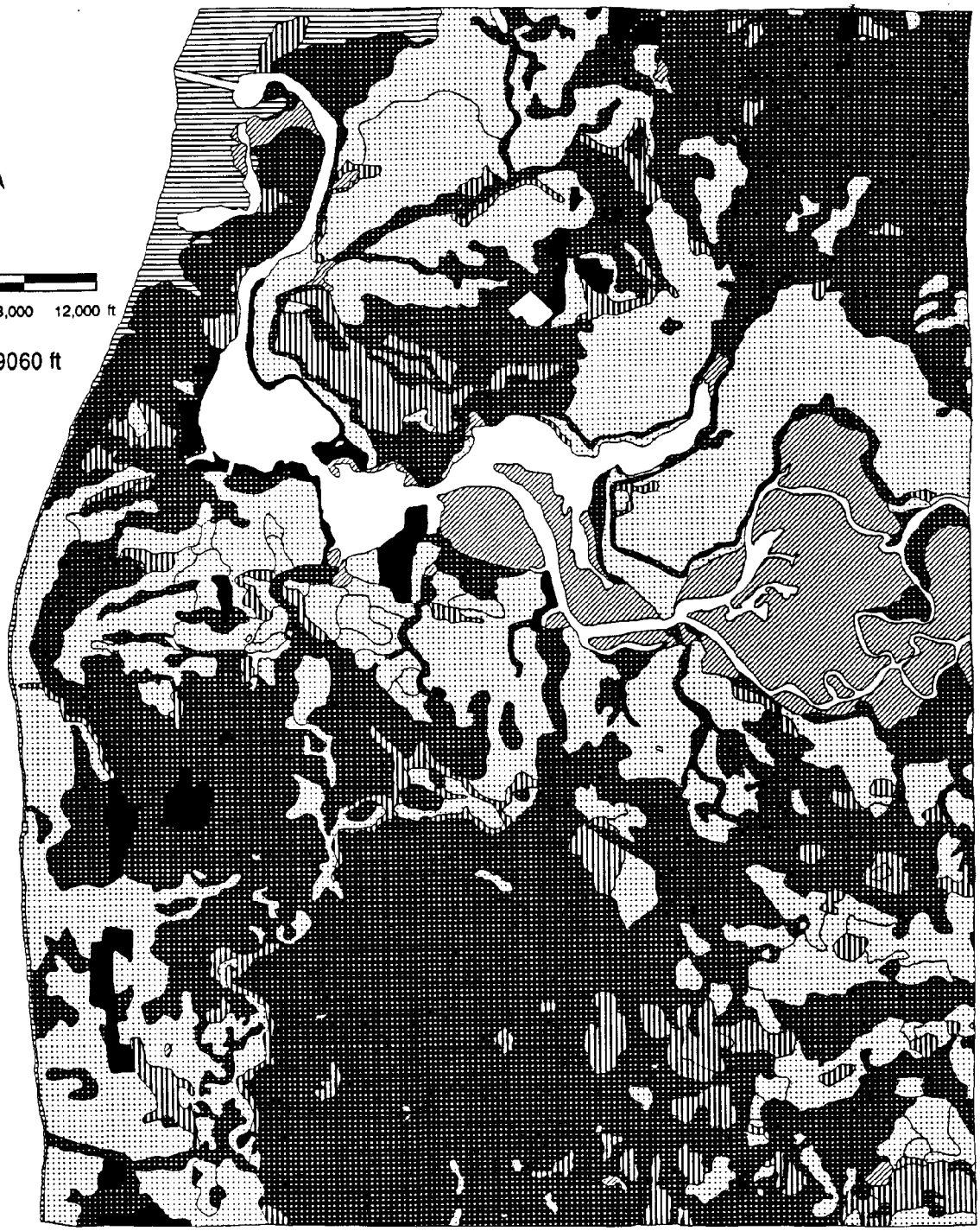
MAP 4.4 WETLANDS

Tri-Community

- Lowland Hardwood
- Lowland Conifer
- Wooded Swamp
- Shrub Swamp
- Herbaceous Rangeland
- Shrub Rangeland
- Marshland Meadow & Mud Flats

August 1989 DATA SOURCE: MDNR

Planning & Zoning Center Inc, Lansing, MI

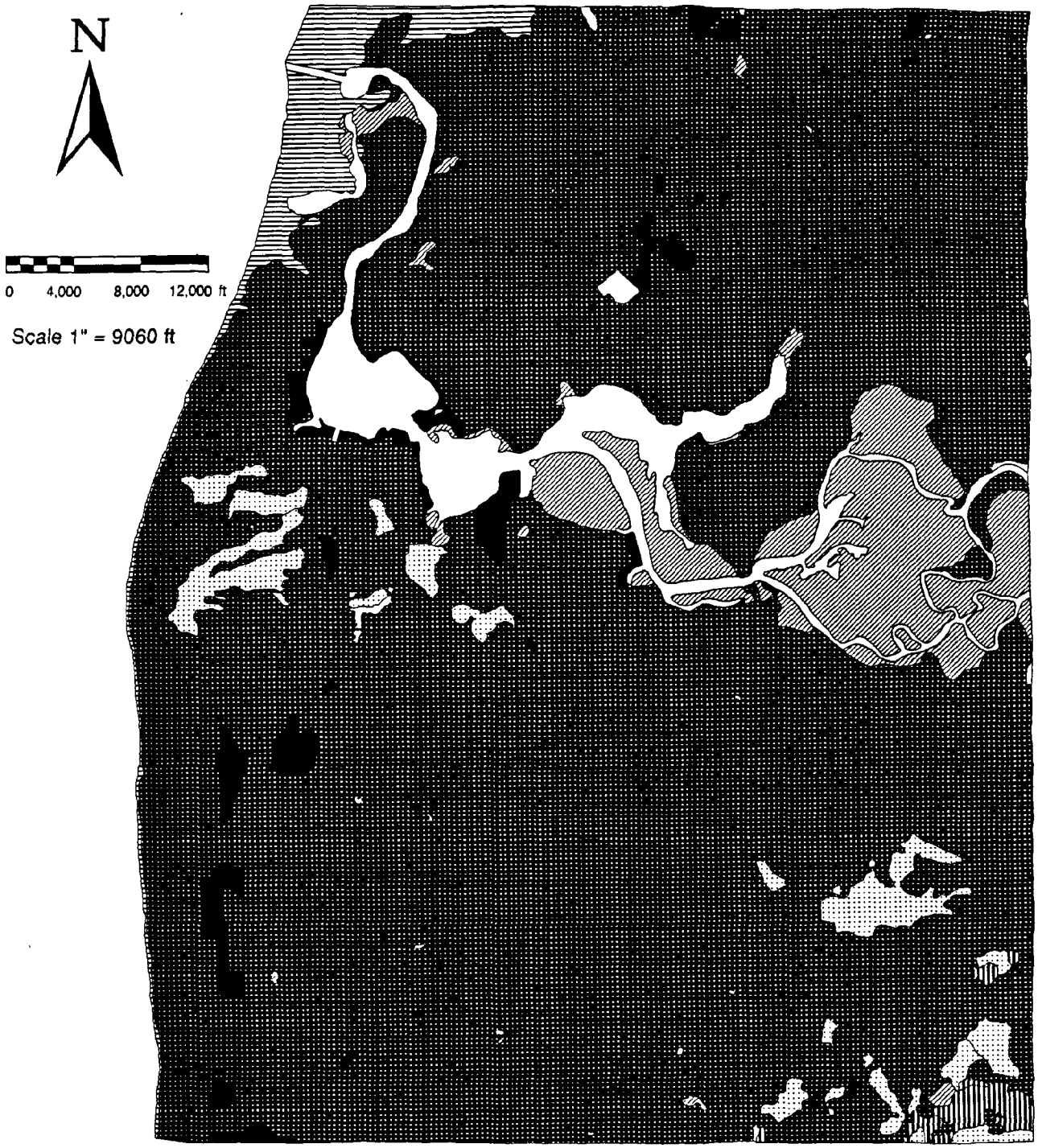


MAP 4.5 BASEMENT LIMITATIONS

Tri-Community

- Severe
- Moderate
- Slight
- Excavated
- Wetland Soils
- Sand Dunes

August 1989 DATA SOURCE: USDA Soil Survey, Allegan County: Planning & Zoning Center Inc, Lansing, MI



MAP 4.6 SEPTIC LIMITATIONS

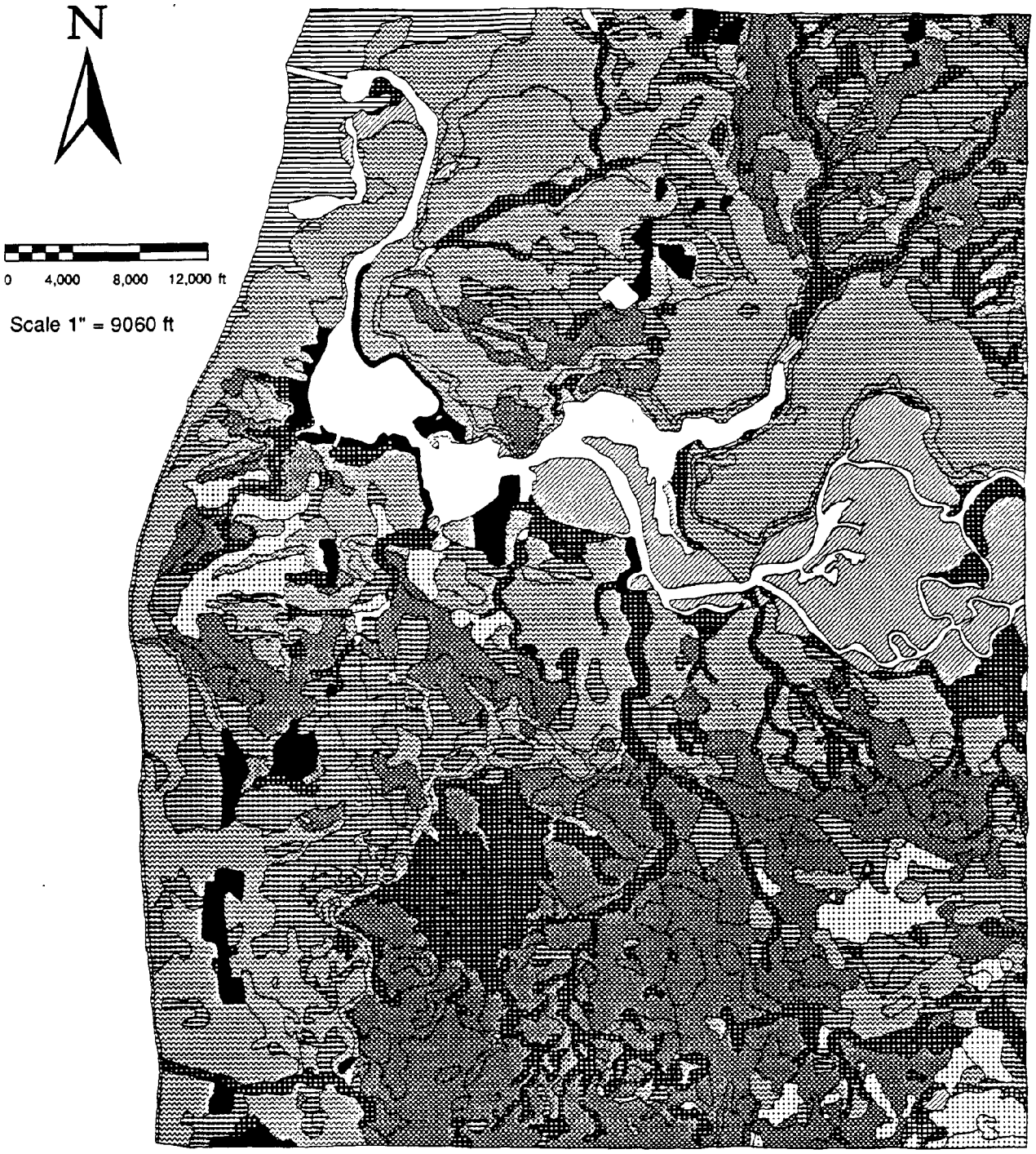
Tri-Community

- Severe
- Moderate
- Slight
- Excavated
- Wetland Soils
- Sand Dunes

August 1989

DATA SOURCE: USDA Soil Survey, Allegan County:

Planning & Zoning Center Inc, Lansing, MI



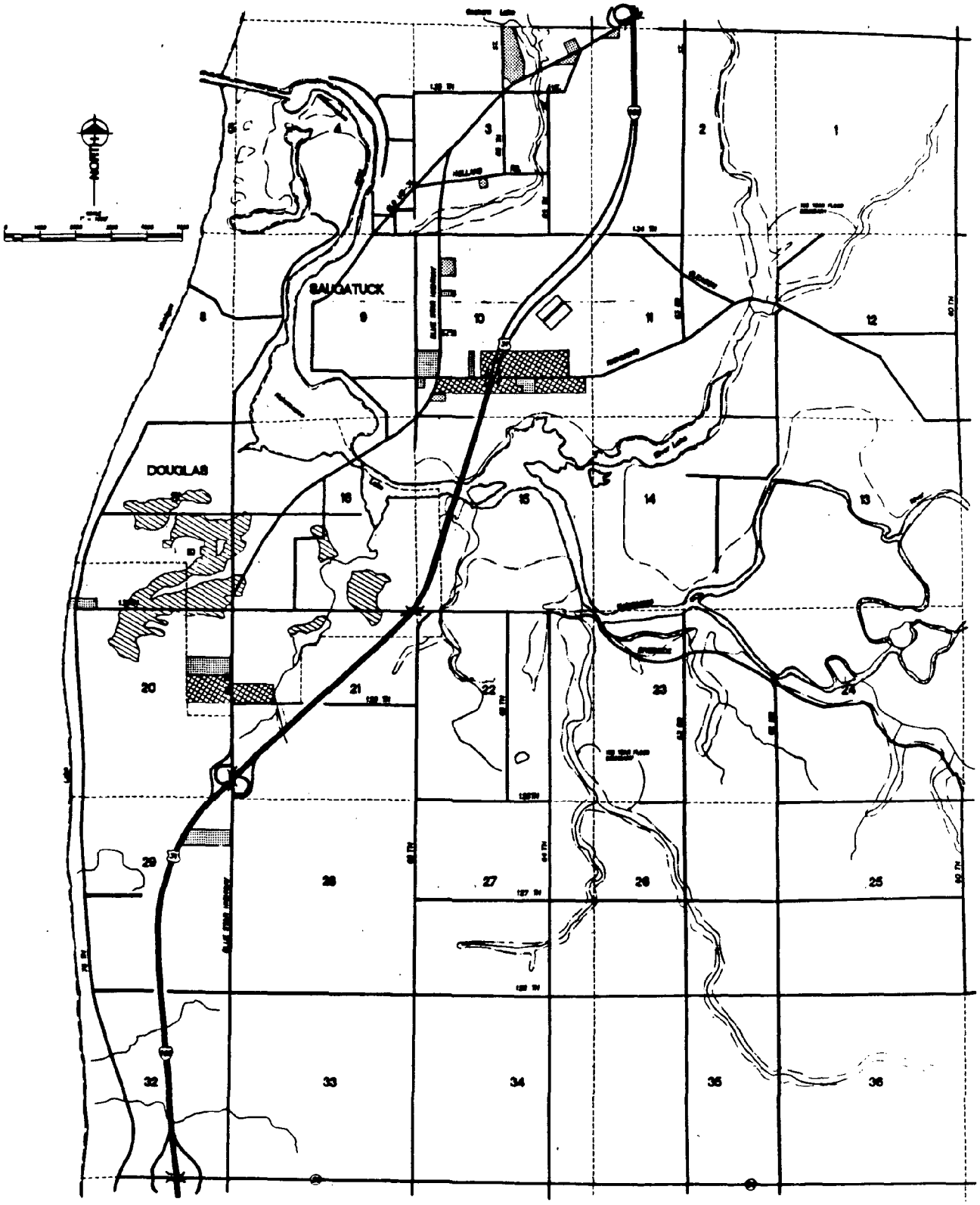
MAP 4.7 SEPTIC LIMITATIONS

Tri-Community

- Sandy, moderate to rapid permeability
- Rapid permeability, wetness of highwater table
- Wet, ponding, heavier clay soils,slow permeability
- Moderate Limitations
- Slight Limitations
- Excavated
- Sand Dunes
- Wetland Soils
- Very wet soils, organics, wetlands, floodplains

August 1989 · DATA SOURCE: USDA Soil Survey, Alleg. Cnty Hlth Dept

Planning & Zoning Center Inc, Lansing, MI



LEGEND

SEPTIC SYSTEM FAILURES OR REPAIRS (A.C.H.D.)

SEPTIC SYSTEM PERMITS DENIED (A.C.H.D.)

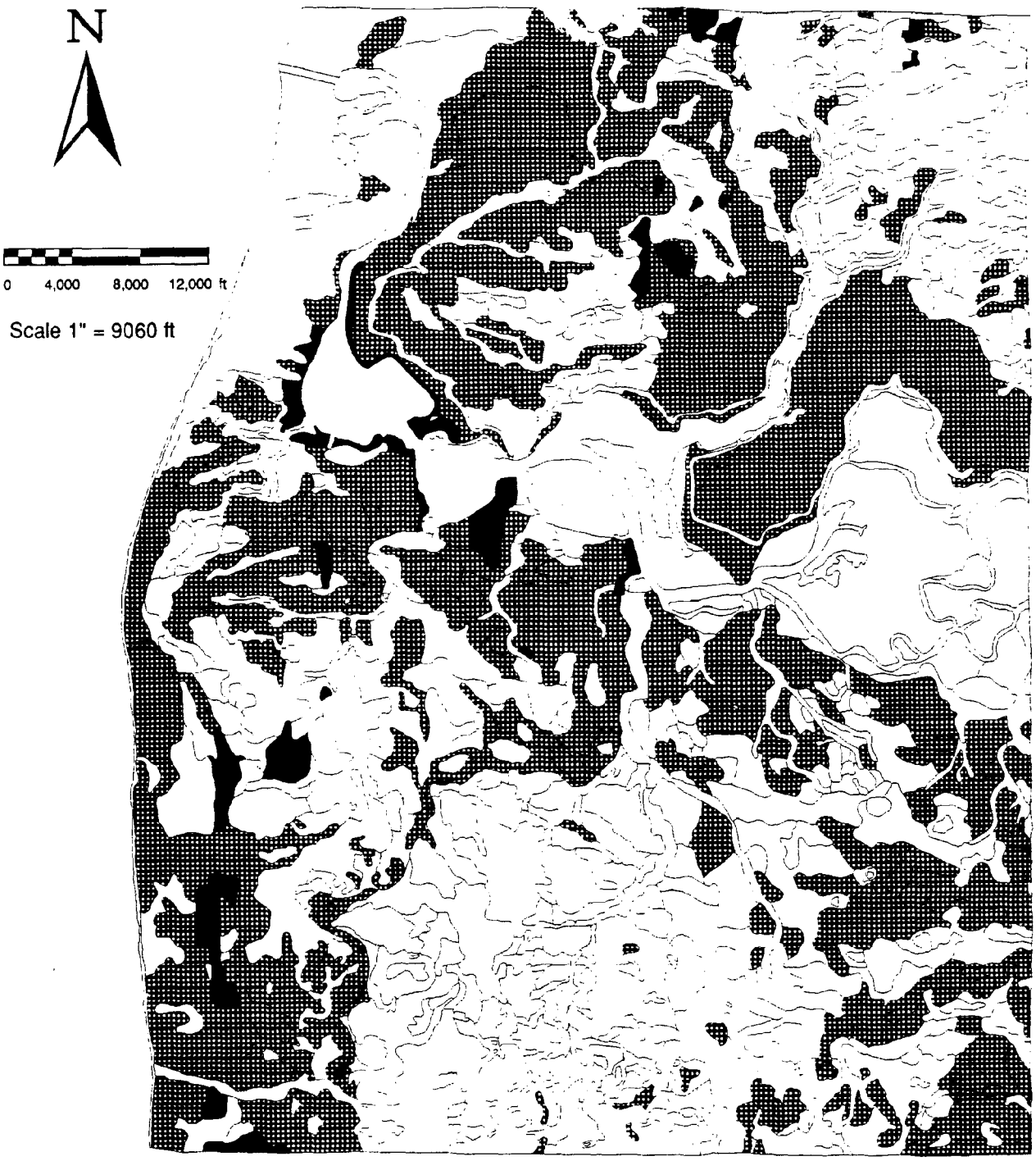
LOCATIONS IN PROPOSED SERVICE AREAS THAT DO NOT HAVE SEVERE RESTRICTIONS TO ONSITE SEPTIC SYSTEMS (U.S.D.A. S.C.S.)

Tri-Community

MAP 4.7 A

ONSITE WASTEWATER TREATMENT LIMITATIONS

FIG. NO. 2



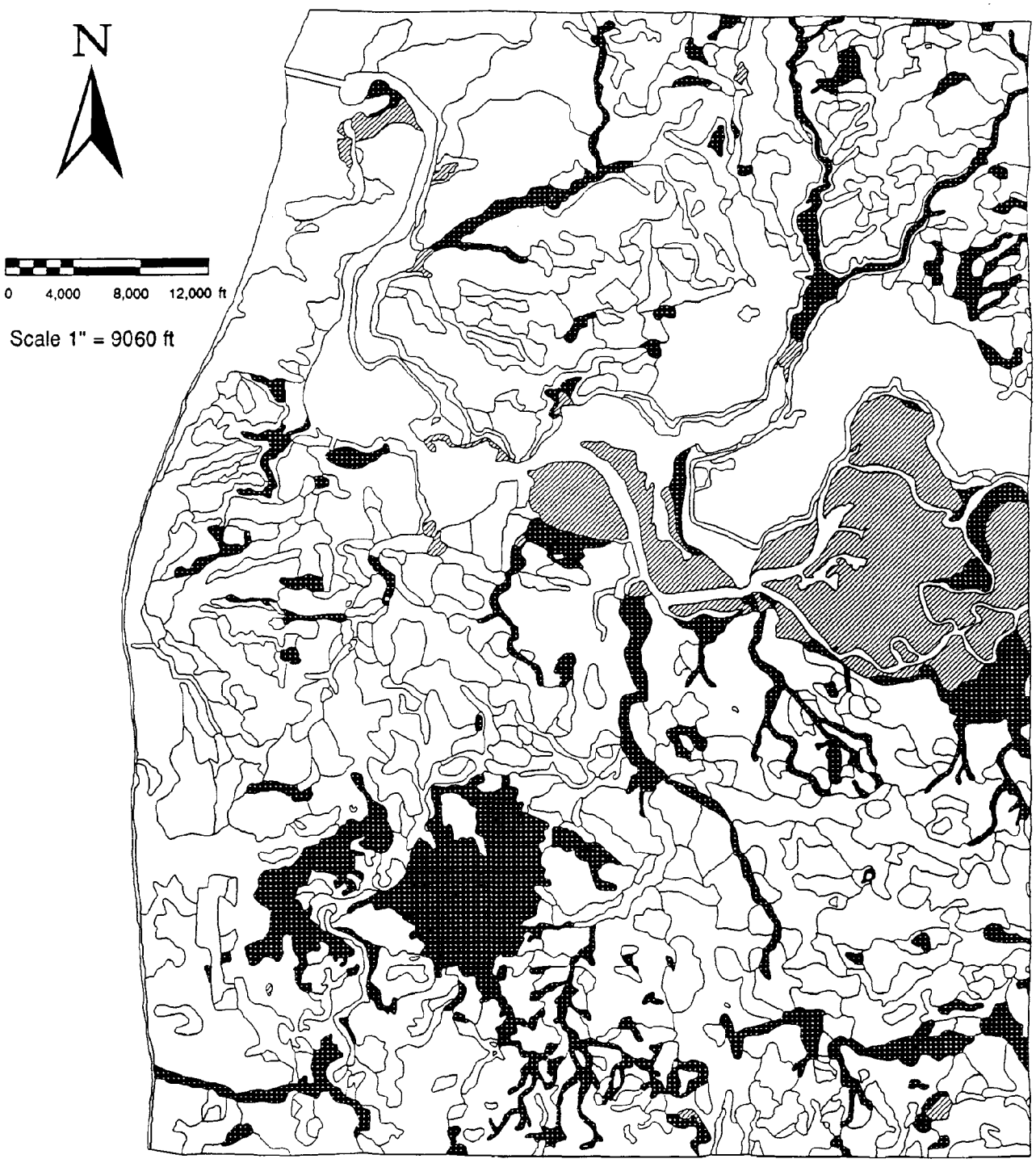
MAP 4.8 MOST SUITABLE SOILS

Tri-Community

Soils Most Suitable For Development

Excavated Areas

August 1989 DATA SOURCE: USDA Soil Survey, Allegan County Planning & Zoning Center Inc, Lansing, MI



MAP 4.9 HYDRIC SOILS

Tri-Community

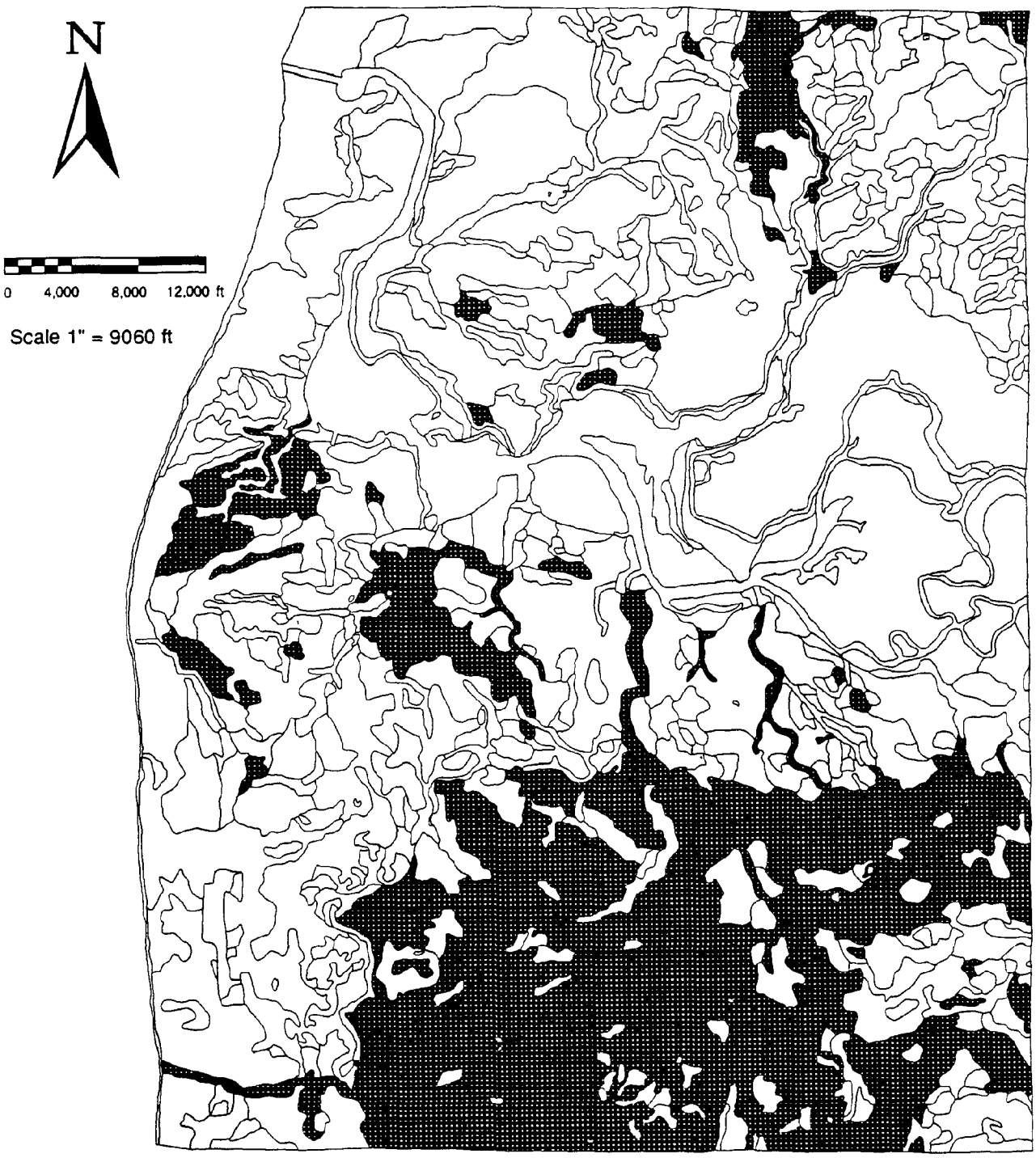
Hydric Soils

Wetland Soils

August 1989

DATA SOURCE: USDA Soil Survey, Allegan County

Planning & Zoning Center Inc, Lansing, MI

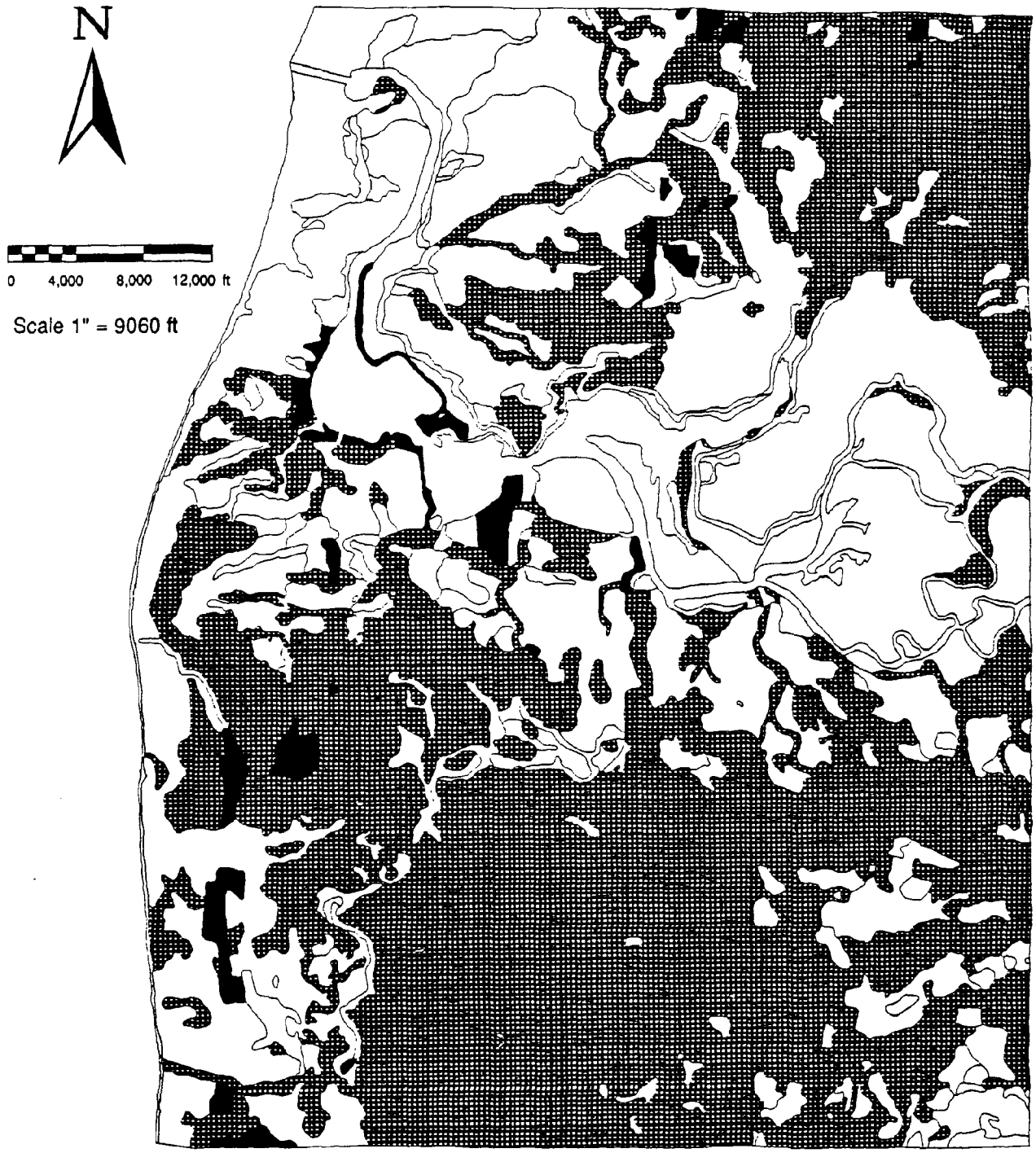


MAP 4.10 PRIME FARMLANDS

Tri-Community

Prime Farmlands

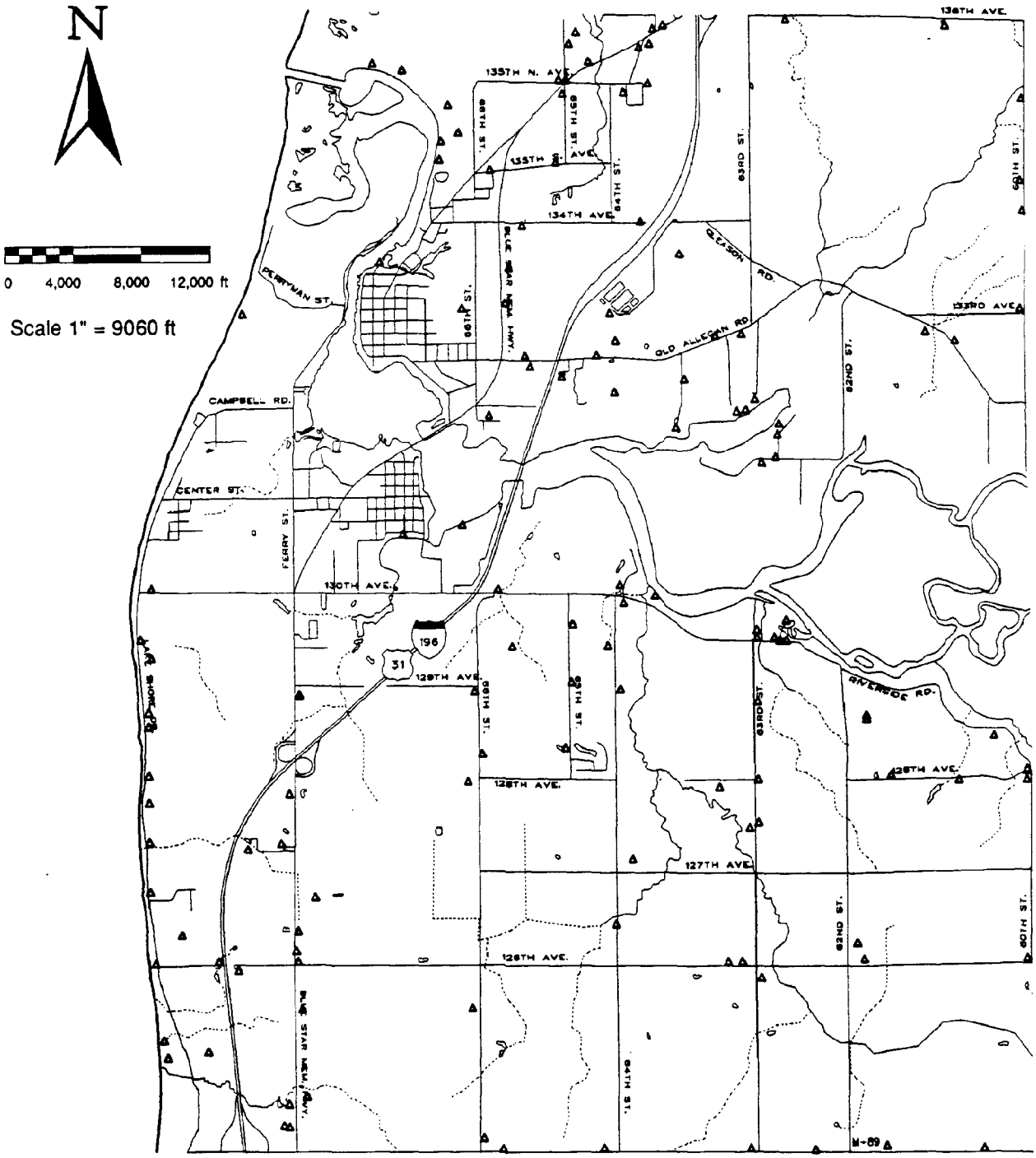
August 1989 DATA SOURCE: USDA Soil Survey, Allegan County Planning & Zoning Center Inc, Lansing, MI



MAP 4.11 GROUNDWATER VULNERABILITY Tri-Community

- Areas most susceptible to contamination
- Excavated Areas
- Wetland Soils

August 1989 DATA SOURCE: USDA Soils Survey & Alleg. Hlth Dept. Planning & Zoning Center Inc, Lansing, MI

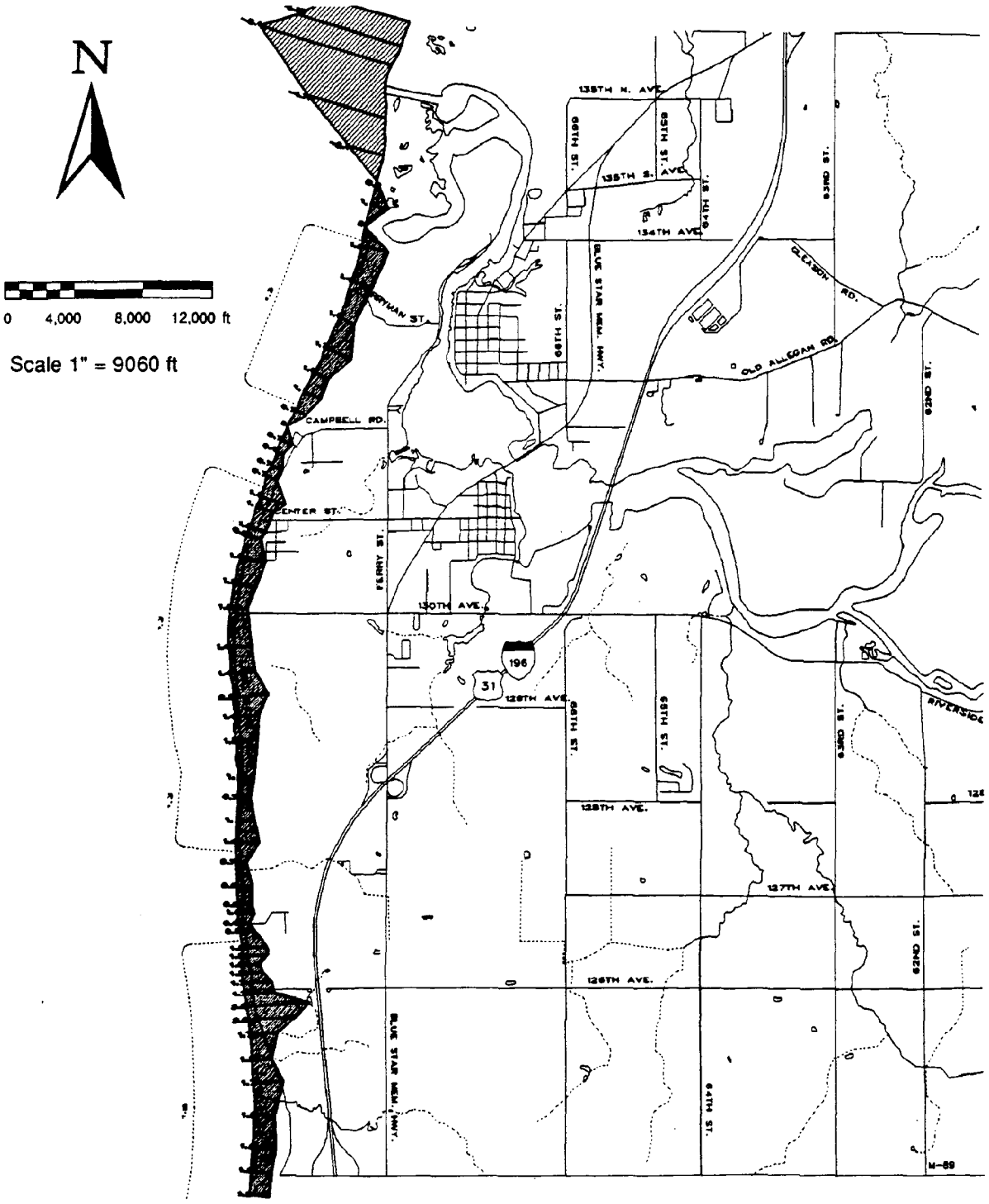


MAP 4.12 WATER WELLS

Tri-Community

▲ Well Location

August 1989 DATA SOURCE:MI Groundwater Survey Planning & Zoning Center Inc, Lansing, MI



MAP 4.13 HIGH RISK EROSION AREAS

Tri-Community

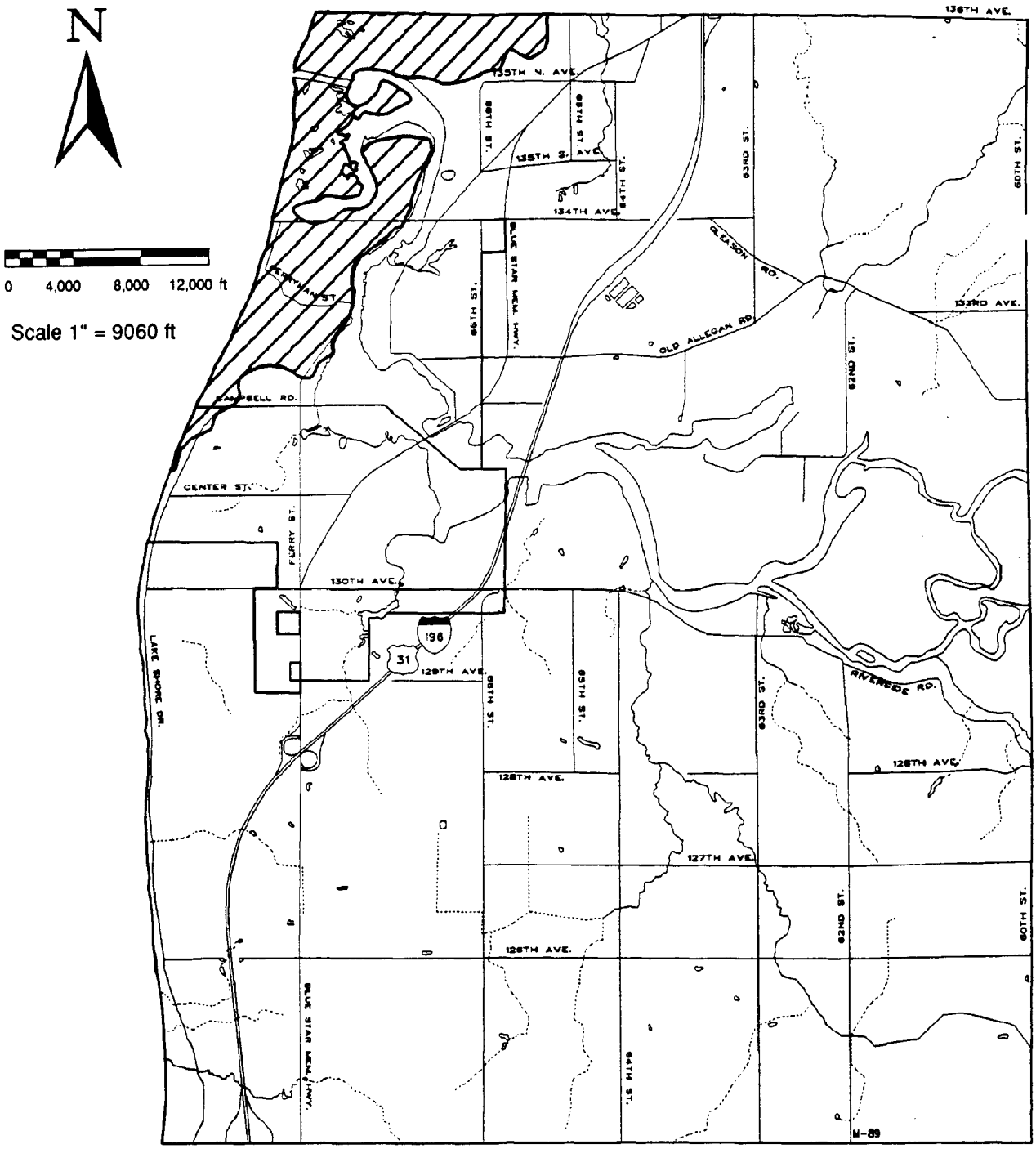
Accretion Area

Recession Area

Numbers indicate accretion/recession rate in feet per year

August 1989 DATA SOURCE: MDNR

Planning & Zoning Center Inc, Lansing, MI

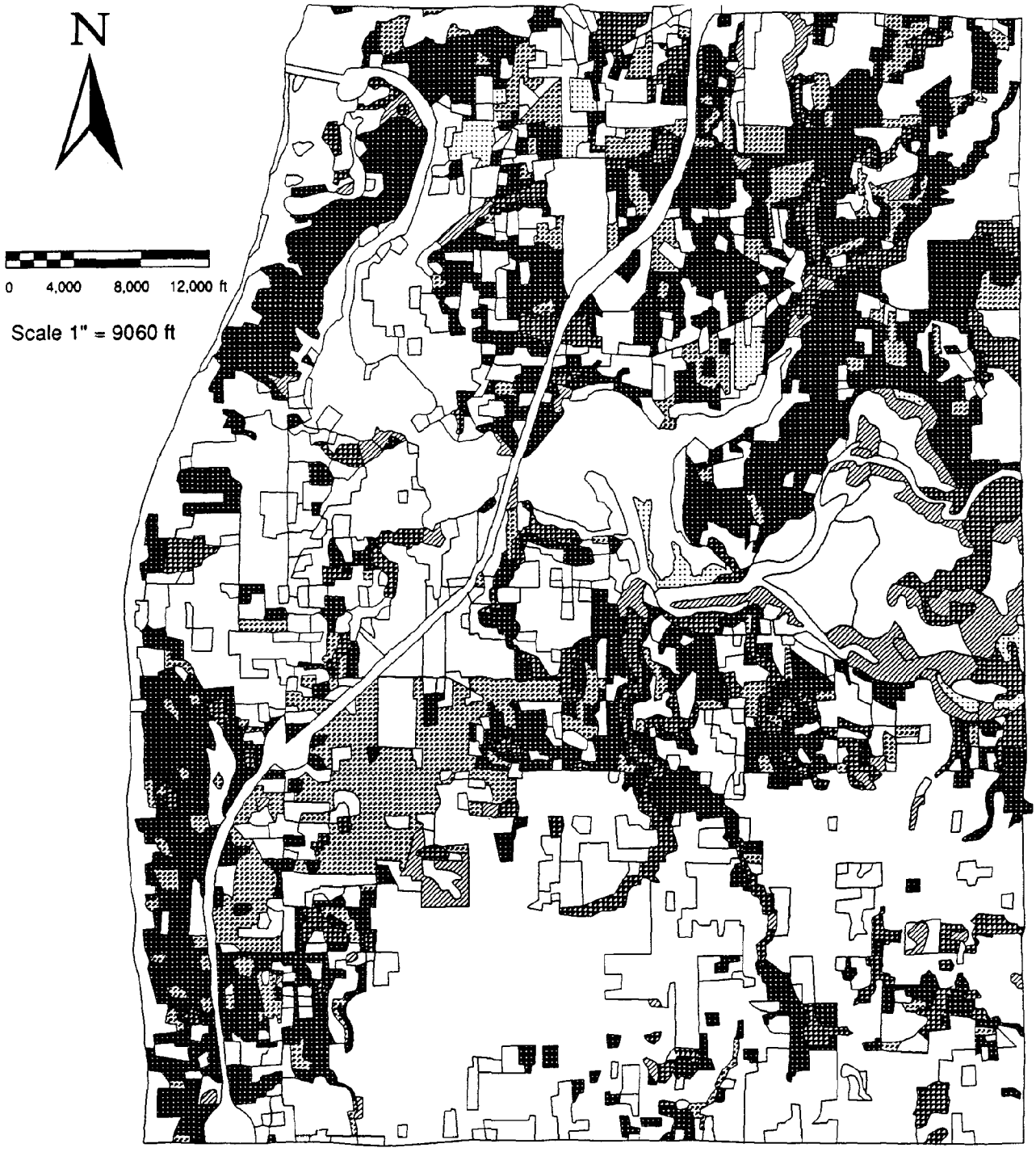


MAP 4.14 CRITICAL DUNE AREAS

Tri-Community

Critical Dune Areas

August 1989 DATA SOURCE: MDNR Planning & Zoning Center Inc, Lansing, MI



MAP4.15 WOODLANDS

Tri-Community

- Lowland Hardwood
- Upland Hardwood
- Lowland Conifer
- Upland Conifer
- Wooded Swamp
- Shrub Swamp

August 1989 DATA SOURCE: MDNR

Planning & Zoning Center Inc, Lansing, MI

Chapter 5

EXISTING LAND COVER AND USE

LAND USE/COVER DATA SOURCES

Land cover and use refers to an inventory of existing vegetation, natural features, and land use over the entire tri-community area. This data was obtained in computerized form from the Michigan Resource Inventory System (MIRIS) database, which is maintained by the Michigan Department of Natural Resources (DNR). The data came from photo interpretations of aerial infrared photos by trained interpreters at the West Michigan Regional Planning Commission. The DNR will update this data every 5 years. Land cover and use categories included in the data are explained on the legend to Map 5.1. The wetlands and woodlands maps in Chapter 4 were also derived from this data.

MIRIS data was supplemented by a thorough land use inventory of the tri-community area conducted in the summer of 1988. The inventory was based on ownership parcels and conducted both on foot, in urbanized areas of Saugatuck and Douglas, and through a "windshield survey" of outlying areas. The existing use of every parcel was recorded and evaluated in combination with low-level aerial imagery available from the Allegan County Equalization Department and the MIRIS land cover/use map to prepare the existing (parcel-based) land use map (see Map 5.2). The following description is based on these maps and data sources and the USDA Soil Survey of Allegan County.

Land use by category for the entire tri-community area is shown in Table 5.1. This information was derived from the aforementioned data sources and areas were calculated using CMAP computer mapping software.

The predominant land use in the tri-community area is agricultural, followed by single family residential. Vacant land comprises forty four percent of the total land area (street ROW's excluded).

AGRICULTURAL

The size of farms in Saugatuck Township ranges from over 300 acres to under 10 acres, with the average size being from 120-140 acres. Agricultural land in the Township is used primarily for crops and orchards, with some livestock.

Prime Farmlands

Prime farmland is generally concentrated in the south central part of the Township. Prime farmland is of major importance in meeting the nation's short and long term needs for food. Prime farmlands have been identified by the U.S.D.A. Soil Conservation Service so that local governments can encourage and facilitate the wise use of valuable farmlands. Prime farmland is that which is best suited to food, feed, forage and oilseed crops. The soil qualities, growing season and moisture supply are those needed to economically produce a sustained high yield of crops. Prime farmlands are shown on Map 4.10.

TABLE 5.1
EXISTING LAND USE

LAND USE	ACRES	% TLAMSROW*
Residential		
single-family	1708	9.91%
multi-family	61	0.35
mobile home	43	0.25
Commercial	196	1.14
Industrial	92	0.53
Institutional	317	1.84
Agricultural	3938	22.84
Parks	311	1.80
Golf Courses	240	1.39
Boat Storage & Service	70	0.41
Kalamazoo River Wetland	1017	5.90
Streets & Roads	1602	9.29
Vacant	7637	44.30
Commercial/Residential	6.6	0.04
TOTAL	17239	100%

* % of total land area minus street ROW's

Unique Farmlands

Unique farmland is land other than prime farmland for the production of specific high-value food crops, such as vegetables, and tree, vine and berry fruits. Although these areas are not prime farmland, their unique quality and value to the local economy merit special consideration in land use decisions. They are shown on Map 5.3 with PA 116 lands described in the next section.

Michigan Farmland Preservation Act

The Michigan Farmland Preservation Act of 1974 (PA 116) allows landowners to enter into a voluntary agreement with the State whereby the land will remain in agricultural use for at least ten years. In return, the landowner is entitled to certain tax benefits. The program has been effective in helping to ensure that suitable lands are retained for farming. There are over 1100 acres of PA 116 lands in the Township, most of them in the southern half.

Most of the prime farmlands in the Township are not suitable for development because of soil limitations. However, there are some farmlands that are suitable for development. Alternatives to conversion of agricultural land should be considered when land use decisions are made.

RESIDENTIAL

Residential areas in the tri-community area vary widely in character between the rural areas of the Township and the urbanized areas of Saugatuck and Douglas. The majority of residential development in the Township is scattered along county roads and along the Lake Michigan Shore. Most resort-residential development in all three communities is located along the Kalamazoo River and Lake Michigan. Single family structures are the predominant residential type. The "hill" in Saugatuck and the neighborhood surrounding the Village Center in Douglas are other distinct residential areas. Most multiple family structures are concentrated in Saugatuck and Douglas, with only one such development in the Township (Section 3). There are four mobile home parks in the tri-community area: two in the Village of Douglas and two in the southern half of the Township. Some distinct residential areas existing within the three communities are described further below.

Lakeshore Area

The Lake Michigan shore is fronted by many large single family homes along Lakeshore Drive for five miles from M-89 to the City of Saugatuck. This area is characterized by scenic vistas of the lake and the bluffs. Large trees line the road and many homes are on wooded lots. Lot sizes average from 5-8 acres and many of the lots are very long and narrow.

Kalamazoo River

Much of the area surrounding the Kalamazoo River east of Douglas is a wetland, unsuitable for residential use. The area is also wooded and is habitat to many birds and other wildlife. In some places, homes overlook the Kalamazoo River and Silver Lake (a shallow bayou connected to the Kalamazoo River). The character of the Kalamazoo River area is widely different from other residential areas of the township in that there are no farms or commercial/industrial development—aside from a marina in Section 23. Lot sizes in this area vary widely. Lots on the north side of Silver Lake tend to be very long and narrow and could pose land development problems if permitted to be subdivided any further.

Rural Areas

The rural areas of the Township are the southern agricultural, northeast, and riverfront - dunes areas. The southern agricultural area consists of farms, orchards, and a growing number of single family homes on large lots (10+ acres). Typically, these homes are located along the county roads at the perimeter of the sections. In addition to scattered development on large lots, there are several subdivisions. These are developments with 30 or less lots averaging approximately one acre each in size. The northeast area is a mix of woodlands and farms, with some steep slopes. Residences are mostly on large lots (40+ acres), with some on small lots within the large lots. Residences in the riverfront - dunes area north of Saugatuck are mostly on small lots fronting the Kalamazoo River. Most of that area is unspoiled wetland, dunes and beaches.

Douglas

Approximately 25 blocks of long-established neighborhoods surround the center of the Village of Douglas. These consist primarily of older homes with some homes less than 30 years old scattered throughout. Elsewhere in the Vil-

lage, residential development is concentrated along Lakeshore Drive and along Campbell Road, 130th. Avenue, and Water Street.

Saugatuck

A majority of the homes in the downtown area are old and large, with some over 100 years old. These houses are increasingly expensive to maintain and to heat in the winter and are being adapted for profitable commercial use or for bed and breakfast establishments. Condominiums line the shore of Kalamazoo Lake along Lake St. and block a scenic view of the lake. Most of the City's year-round residents live above the steep ridge ("the hill") which separates the waterfront area from the rest of the City. Small cottages on very small lots line the west shore of Kalamazoo Lake along Park St.

COMMERCIAL

The major commercial areas in the tri-community area are in the northern part of the Township along Blue Star Highway, downtown Saugatuck, the Douglas village center, and in Douglas along Blue Star Highway.

Blue Star Highway

The commercial areas along Blue Star Highway represent an early form of scattered commercial strip development. Commercial strips are a haphazard form of development and often have inconsistent setbacks, an excessive number of driveways, excessive signs, poorly controlled ingress and egress, and are poorly designed with respect to the natural environment. These characteristics make the strip unattractive, environmentally incompatible, and potentially dangerous. The negative effects of commercial strip development can be mitigated by consolidation of driveways and parking facilities, grouping of stores into "mini malls", and site design standards which require that natural features be positively incorporated into new developments, as well as minimizing "asphalt landscaping". Siting new development back from the highway would be a major improvement. Sixty five percent of the people responding to the 1988 Public Opinion Survey indicated that they did not want to see future strip commercial development in the future.

Commercial uses along Blue Star Highway include restaurants, gas stations, boat service, motels, junkyards, a campground, small offices and a mixture of small retail establishments. Blue Star Highway from 130th. Avenue south to M-89 has a rural character with a combination of wooded areas, open land, scattered residential development, and a "you pick" blueberry farm. Some highway oriented commercial uses are clustered around the interchanges with I-196.

Downtown Saugatuck

Commercial uses in downtown Saugatuck are primarily oriented to tourists and seasonal residents. Many of the businesses occupy large, older residential structures. Others occupy the old and historic buildings lining Butler Street. This business district has few parking spaces due to the compact arrangement of the area's original design and heavy pedestrian traffic. Parking is a seasonal problem and a permanent solution has not yet been formulated. Businesses include bed and breakfasts, small and large restaurants, clothing, art galleries and numerous specialty shops, with boat service and marina facilities located along the waterfront. This commercial district has a unique historic character worth preserving and further enhancing and represents a great asset to the tri-community area as well as to the region and the state.

Douglas Village Center

This small retail area consists of restaurants, public and private offices and specialty shops and is used mostly by local residents. Uses include the Post Office, Village Hall, party stores, restaurants, beauty salon, police department, insurance, real estate and legal services, antique shops and the public library. Parking is located along both sides of Center St. and is adequate to meet current needs. There are several vacant lots and buildings in this area which could be used for new retail development.

INDUSTRIAL

Industrial development is limited in the tri-community area. Less than 1% of the total land area is devoted to industrial uses. Office furniture manufacturing and food processing are the two major industrial types in the area. There are also several small machine shops, and a luxury boat building establishment located near the mouth of the Kalamazoo River. A major deterrent to new industries locating in the area is lack of adequately sited land served with good public facilities (sewer and water). The tri-community area is located 150 miles from Detroit, 180 miles from Chicago and 36 miles from

Grand Rapids along a major interstate highway. There is also a railroad within five miles. This is an advantageous location for small scale, light industrial development.

HISTORIC & ARCHAEOLOGICAL FEATURES

The tri-community area is rich in history and many historic and archaeological sites can be found throughout the area. Singapore, Michigan's most famous "ghost town" and once a thriving lumber town, lies buried at the mouth of the Kalamazoo River. A plaque commemorating its existence stands in front of the Saugatuck City Hall. Historic and archaeological sites are designated by the Michigan Bureau of History.

Historic Buildings and Sites

The Michigan State Register of Historic Sites was established in 1955 to provide official recognition for historic resources in Michigan. Designated historic sites have unique historic, architectural, archaeological, engineering, or cultural significance. There are numerous State historic sites throughout the tri-community area, which are listed on Table 5.2. Old Allegan Road in Saugatuck Township is currently pending official designation as a State Historic Site.

State historic site designation does not include any financial or tax benefits, nor does it impose any restrictions upon the owner of the property.

Historic Districts

The City of Saugatuck has also taken local steps to preserve its historic character. PA 169 of 1970 permits the legislative body of a local government to regulate the construction, demolition and modification of all structures within a designated historic district. The City of Saugatuck has established an historic district within the oldest part of the city. Within this district, construction, demolition and modification of structures must comply with requirements set forth in the zoning ordinance. Historic districts provide a means for the community to protect its historic resources from development pressures.

Archaeological Sites

Archaeological sites are of particular scientific value to the fields of anthropology, ecology and biology, and may have historic or ethnic significance as well. There are 120 archaeological sites scattered throughout the tri-community area, mostly related to Ottawa and Potawatomi cultures. Their exact locations have not been disclosed by the Bureau of History to protect them from exploitation. One of these sites, the Hacklander Site, located in Section 23, is listed on the National Register of Historic Places and has components representing Middle and Late Woodland periods. Recipients of Federal assistance must ensure that their projects avoid damage or destruction of significant historical and archaeological resources. The Mich-

TABLE 5.3
STATE HISTORIC SITES

DESCRIPTION	LOCATION
Saugatuck:	
All Saints Episcopal Church	252 Grand St.
Singapore (Village Hall)	Marker on Village Hall on Butler St.
Clipson Brewery Ice House - Twin Gables Hotel (Singapore Country Inn is common name)	900 Lake St.
Horace D. Moore House	888 Holland St.
Warner P. Sutton House (Beachwood Manor)	736 Pleasant St.
Fred Thompson-Willliam Springer House	633 Pleasant St.
Douglas	
Dutcher Lodge #193 Hall	86 Center St.
Asa Goodrich House	112 Center St.
Sarah Kirby House	294 W. Center St.
Saugatuck Township	
Shiver's Inn (historic name), Oxbow Inn (common name)	Built in 1860's, originally used as a resort during lumbering era. In 1910 Art Institute of Chicago used it for summer art school
Hacklander Site (National Historic Site)	Section 23

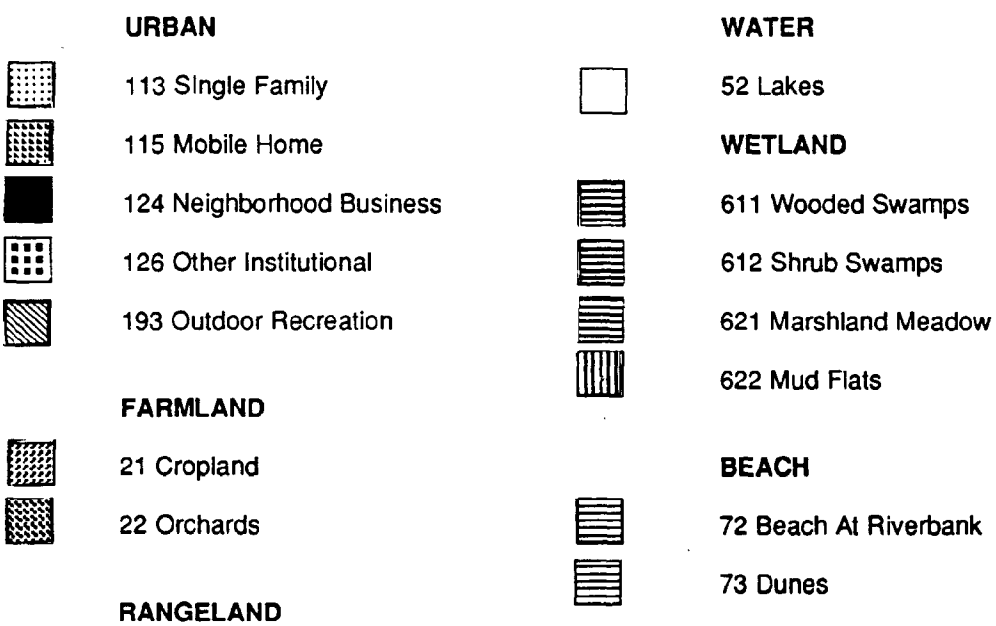
Source: Michigan Bureau of History

igan Bureau of History reviews these projects to assess their impact on archaeological sites.

The Bureau of History also recommend that those proposing development projects in Saugatuck Township contact the State Archaeologist to determine if the project may affect a known archaeological site. This is particularly critical given the existence of Indian Burial sites in the area. If an important archaeological site will be affected, archaeologists will negotiate a voluntary agreement to preserve those artifacts. Th Bureau of History serves in an advisory capacity and has no legal authority to restrict development rights.

MAP 5.1 LAND USE/COVER

Tri-Community



August 1989

DATA SOURCE: MDNR

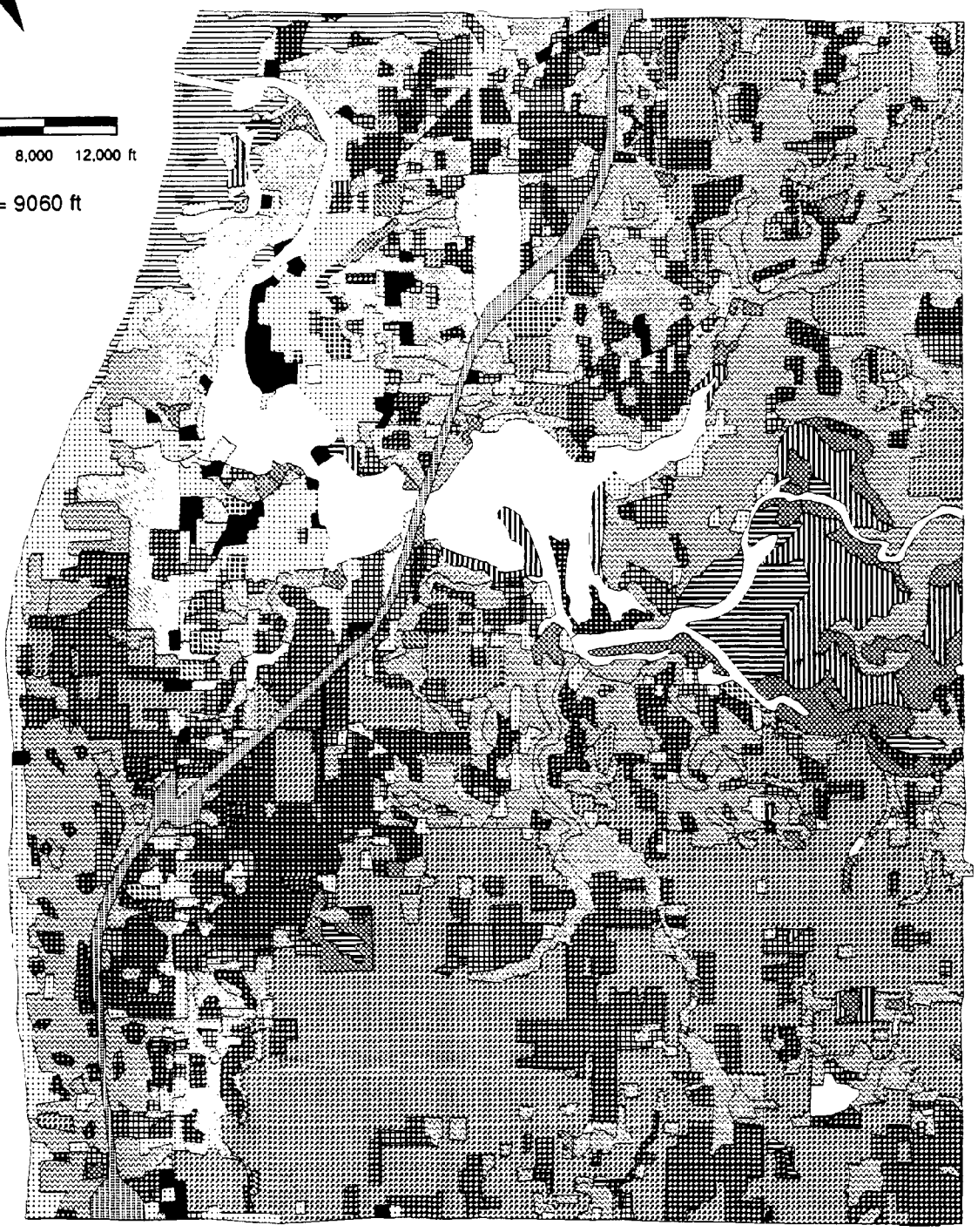
Planning & Zoning Center Inc, Lansing, MI

Tri-Community
LAND USE/COVER

N

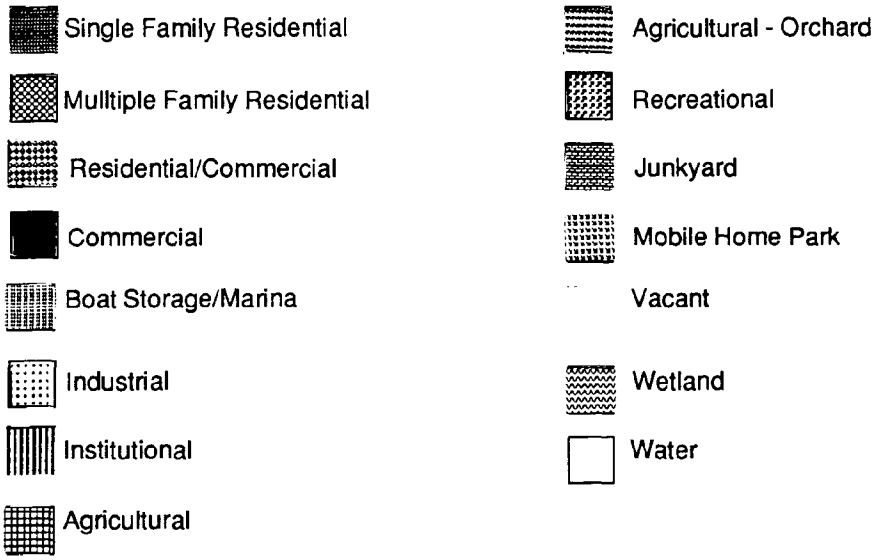
0 4,000 8,000 12,000 ft

Scale 1" = 9060 ft



MAP 5.2 EXISTING LAND USE

Tri-Community



August 1989 SOURCE: PZC Land Use Survey

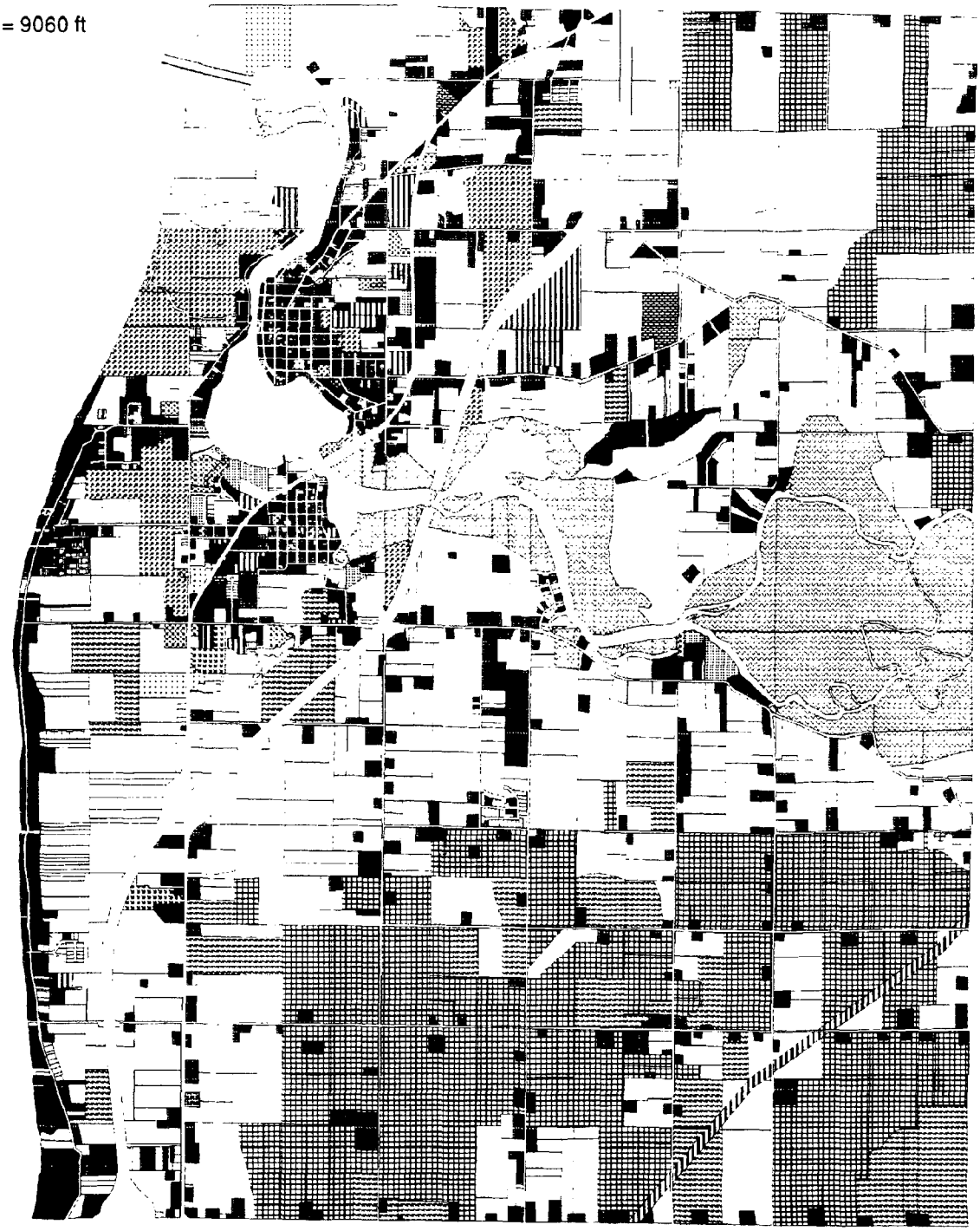
Planning & Zoning Center, Inc, Lansing, MI

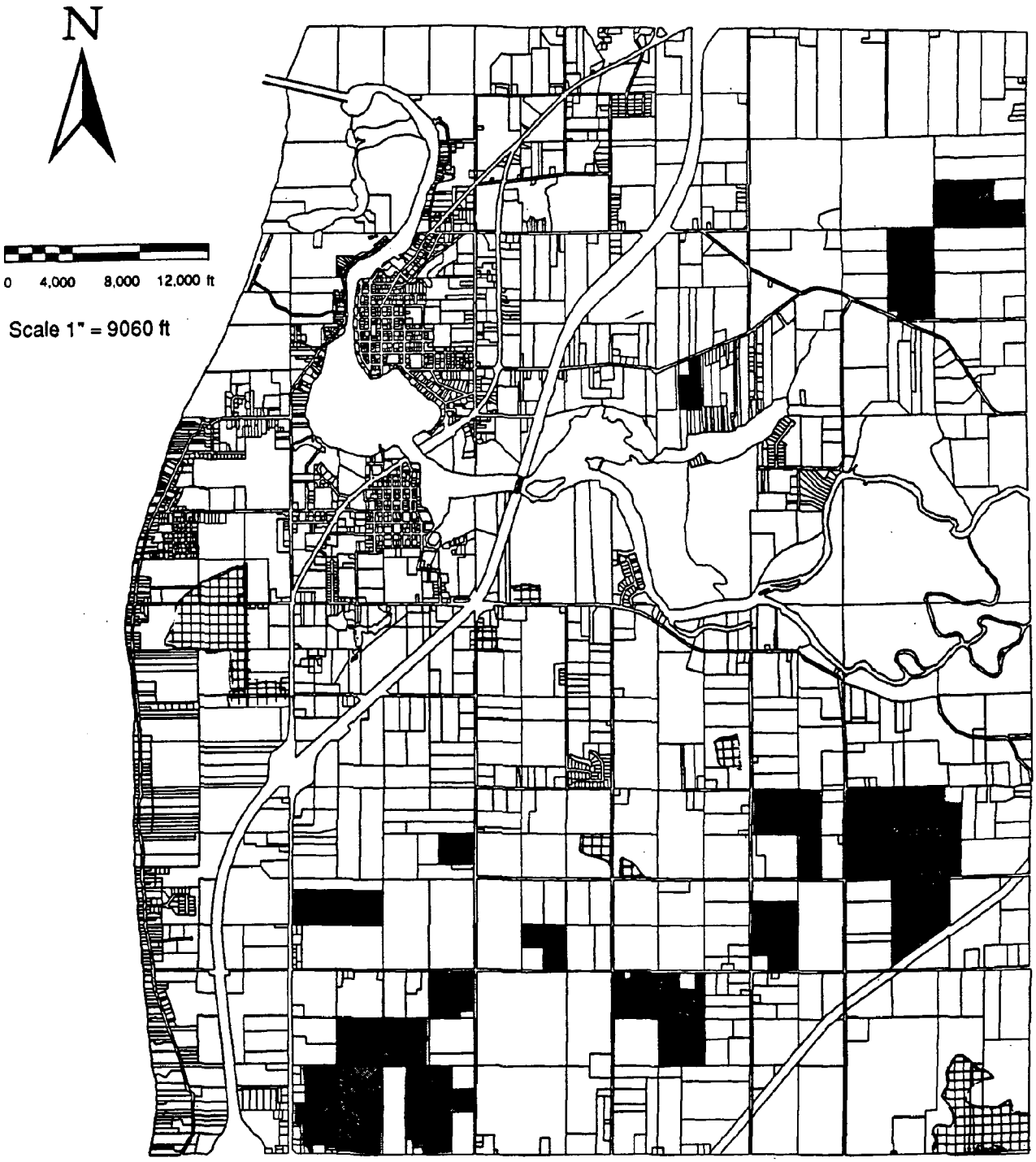
N

Tri-Community
EXISTING LAND USE

0 4,000 8,000 12,000 ft

Scale 1" = 9060 ft





MAP 5.3 PA 116 LANDS & UNIQUE FARMLANDS

Tri-Community

PA 116 Lands

Unique Farmlands

August 1989 DATA SOURCE: MDNR

Planning & Zoning Center Inc, Lansing, MI

Chapter 6

PUBLIC FACILITIES AND SERVICES

NON-PARK PUBLIC FACILITIES

A listing of all non-park public facilities in the tri-community area is found on Table 6.1. This includes police and fire stations, municipal government offices, vacant lands and other public facilities. All are shown on Map 6.6.

UTILITIES

Sewer and Water

The Saugatuck-Douglas area sewer and water systems are managed by the Kalamazoo Lake Sewer and Water Authority, which is responsible for operation and maintenance and provides water production and wastewater treatment. Each community is responsible for providing and financing their own infrastructure. The KLSWA performs the construction work or contracts it out.

The service areas for the sewer and water systems, shown on maps 6.1 and 6.2, extend only for very short distances into Saugatuck Township. The Township did not participate in initial construction of the water or sewer systems because of the disproportionate financial impacts on the few property owners who would have been served. In effect, the Township is not served by public sewer and water. This severely limits the growth potential for areas outside of Saugatuck and Douglas, due to the fact that the soils are not suitable for multi-family or commercial septic systems, and in many areas even residential development is not appropriate except at very low density. If this continues, development in the tri-community area may be brought to a standstill because of a lack of developable land.

Numerous engineering studies have been conducted which discuss various alternatives for improvement of utilities. These include using Lake Michigan for the municipal water supply and extending public utilities into the Township. Proposals must take into consideration the permanent population, seasonal population, number of daily visitors, and future industrial flow. Peak periods for public utilities in the tri-community area are more pronounced than in typical communities due to the relatively high seasonal and daily visitor populations. The costs of developing an independent utility system for Saugatuck Township are not considered feasible. The absence in all three jurisdictions of capital improvements plans for financing the needed improvements further complicates the matter. The recent decision by the Township to join the KLSWA is a step towards the obvious regional solution of the Township connecting to the existing Douglas and Saugatuck system.

Water System

The reliability of the water system depends on water supply sufficient to meet peak demands, storage capacity to provide fire flows for sufficient duration, adequate water pressure and distribution system loops. The existing system is deficient with respect to meeting peak demands. The water is not treated, except for chlorination and iron sequestering. Parts of the current water system date back to 1907 in Saugatuck, and to 1914 in Douglas. In addition, the water mains are old, small and substandard, leaks are a problem on older service lines, and there may be some unmetered taps. Growth is restricted in areas not serviced by the system and is limited overall at present because of insufficient pumping capacity.

The existing water system also has many dead end lines, which are susceptible to water discoloration and development of tastes and odors due to stagnation. The best arrangement for water mains is the gridiron system, where all primary and secondary feeders are looped and interconnected, and the small distribution mains tie to each loop to form a complete grid. If an adequate number of valves are inserted, only a small 1 block area will be affected in the event of a break. A primary feeder from the Saugatuck wells to the system's primary 12" feeder loop has been installed, and all of the primary 12" feeder loop has been completed, including two river crossings.

In 1984 and 1985, a one million gallon above ground storage tank was constructed, which allowed Saugatuck and Douglas to meet normal and fire protection demands. If Saugatuck Township is included in the system, the storage tank is adequate for fire protection

TABLE 6.1
(NON-PARK) PUBLIC PROPERTY & PUBLIC FACILITIES INVENTORY

NAME	LOCATION	USE	SIZE *	CONDITION	VALUE
SAUG. TWP.					
Township Hall	36 Center St., Douglas	Twp offices, interurban offices, Douglas police, 2 rental apartments	56'x120' (45'x64')	Below average	$175,000-$200,000
Saugatuck Riverside Cemetery	135th & Blue Star	Burial	1350'x730'	Average	
Douglas Cemetery	130th southside	Burial	690'x440'	Average	
Douglas North annex cemetery	130th northside	Burial	330'x530'	Average	
SAUGATUCK					
City Hall	102 Butler	City offices, council chambers		Built 1882, remodeled 1989	$475,000
Maintenance bldg.	3338 Washington Rd.	Public works		Built 1985	$275,000
Sand & salt storage	3338 Washington Rd.			Built 1985	$25,000
Pump House #1	Maple St.	Water			$65,000
Pump House #2	Maple St.	Water		Built 1973	$80,000
Mt. Baldhead Park	Park St.	Residence		Remodeled 1978	$94,000
Butler St. comfort statoin	Butler & Main	Restrooms		Built 1988	$97,000
Park St. comfort station	Mt. Baldhead	Restrooms		Fair	$6,400
Water St. comfort station	Wicks Park	Restrooms		Fair	$13,000
Beach storage bldg.	Oval Beach	Storage, restrooms, concessison		Poor	$4,000
DOUGLAS					
Vacant lot	Corner Ferry & Center	Gravel storage	28,000 sq. ft. (1/2 acre+)	Dry	$35,000

TABLE 6.1 (continued)
(NON-PARK) PUBLIC PROPERTY & PUBLIC FACILITIES INVENTORY

NAME	LOCATION	USE	SIZE *	CONDITION	VALUE
Library (Saugatuck-Douglas)	Mixer & Center Sts.	Library	4327 sq.ft. (1 lot-8400 sq.ft.)	Good	$96,000
Fire barn	Spring & Center Sts.	Office, fire barn	2560 sq.ft. (1/4 acre-10,000 sq.ft.)	Good	$100,000
DPW barn	Water & Center Sts.	Barn (launch ramp curently closed)	2432 sq.ft. (1 3/4 acres-80,000 sq.ft.)	Poor	Land is valuable, river frontage & walk be converted to park and/or marina
Two pumphouses & pumps	DPW barn	Well housing	combined bldgs=360 sq.ft. (land includes DPW barn)	Good	$26,000
1/2 vacant street ends on K. River & Lake	Gerber, South, Fermont, Randolph, Spencer	None	66 sq.ft. wide	Varied	

* Land = acres or square feet (Building = square feet)

for the near future, but additional capacity is needed if service were extended to the southern portions of the Township.

Recent chemical contamination of the Douglas municipal water supply has led to an overburdening of the City of Saugatuck water system, which is presently serving the entire network and is working at full capacity; 24 hours per day during peak months. This has led to restrictions on non-essential uses such as lawn sprinkling, car and boat washing, and has reduced the minimum reserve needed for fire protection (600,000 gallons) down to 2/3 of the needed amount. A moratorium has been imposed on new development other than one or two family dwellings. The pumping capacity of both wells has dropped due to depletion (drawdown) of groundwater.

Communications from the Michigan Department of Public Health have demanded that substantial progress be made towards a solution to the water supply problem in the near future. The Health Department has also questioned the usefulness and reliability of both Douglas wells because well #1, which is out of use, is contaminated, and well #2, which is used for emergency purposes only, may become contaminated through further use. As a result, alternatives for additional water sources are currently under review, with Lake Michigan and the City of Holland water system being considered the most viable options. Engineering studies have indicated a cost of nearly $4.5 million for construction of a Lake Michigan water treatment facility which would provide a clean and abundant source of water. A large service area, formed by including large portions of Saugatuck Township, would reduce the per capita cost burden on users. This facility would be capable of pumping 3 million gallons per day, which could serve the needs of all three communities well into the future. This, combined with a desire to retain local control over the water system,

makes using Lake Michigan water the favored alternative.

Sewer System

Wastewater treatment is provided at a treatment plant located in Saugatuck Township north of the Kalamazoo River. The facility was constructed by the City of Saugatuck and the Village of Douglas in 1980. The treatment system provides biological and clarification processes for the reduction of BOD (biochemical oxygen demand) and suspended solids, including chemical precipitation for the reduction of phosphorus from fertilizers and detergents. The plant has two aerated lagoons and was designed for incremental addition of lagoons to accommodate increased wastewater flow. The facility was designed for heavier BOD loading than other facilities its size, in order to accommodate a pie factory and thus may not need more capacity of that type for many years. The discharge is to the Kalamazoo River on the north side of Saugatuck.

In 1957, many of the storm sewers in the City of Saugatuck were converted to sanitary sewers. This system was expanded in 1979 with PVC pipe, and some improvements were made to the old system. The sewer system in Douglas was built entirely since 1978. The two jurisdictions merged their facilities in the late 1970's to form the KLSWA. There has been some infiltration into the system from groundwater due to bad manholes, pipe, and roof drains. The impacts of this infiltration were most pronounced when Lake Michigan water levels were high. The capacity of the sewer system is sufficient to meet the needs of Saugatuck and Douglas until approximately 2008. The capacity of the wastewater treatment facility would have to re-rated to 1.2 MGD for the Township to use the system until 2008. Thirty year projections for wastewater treatment for Saugatuck Township include extending service to the south lakeshore residential area and the area of the Township northeast of I-196. They are shown in Table 6.2.

TABLE 6.2
PROJECTED SAUGATUCK TOWNSHIP WASTEWATER FLOWS

AVERAGE DAY - MGD

PERIOD	NORTH	SOUTH	TOTAL
Immediate	0.07	0.05	0.13
10-year	0.28	0.19	0.47
20-year	0.43	0.31	0.74
30-year	0.65	0.53	1.18

Source: Saugatuck Township Area Utility Service Study, March 1988.

The treatment facility was designed for a twenty year planning period through 1998, based on a population tributary of 7,695 and a wastewater flow of 0.75 million gallons per day (MGD). The treatment facility is rated at 0.8 million gallons per day by the Michigan Department of Natural Resources (MDNR). The facility was designed for a peak flow of 2 MGD. The present average flow is 0.4 MGD. A larger flow can be accommodated by increasing hours of operation, provided that the lagoons can treat the sewage well enough. An engineering study in 1987 determined that August (maximum day was Aug. 14) is the month of peak flow for wastewater, with 0.598 MGD. Based on the study, the treatment facility operated at 75% of flow capacity, 55% of BOD capacity, and 30% of suspended solids capacity. Existing effluent quality and treatment efficiency was found to be excellent. Increasing the rated capacity of the facility to 1.2 MGD with two aerated lagoons would accommodate all three jurisdictions through 2008 and possibly beyond. Pursuing this option would require detailed preparation of data accompanied by a formal request to the DNR from the KLSWA. Further capacity could be obtained by adding another aerated lagoon, estimated to cost $900,000 in 1987.

The two basic alternatives for expanding the wastewater collection system in the Township are pressure sewers and gravity sewers. Pressure sewers are generally used where topography or spacing between services prohibit the use of gravity sewers or where high water table and difficult soil conditions prevail, such as in the tri-community area. These systems have lower construction costs and higher maintenance and operation costs than gravity sewers. Gravity sewers are the most common in use due to their minimal operation and maintenance expense. However, the cost of initial construction can be substantial for small communities, especially if construction costs are further aggravated by difficult topography and soil conditions. In addition, it is rare that an entire community can be served by gravity sewers. The existing system in Saugatuck and Douglas is a gravity system, with local areas of pressure.

Storm Sewers

There are very few mapped stormwater drains in the tri-community area. Drainage has not been a significant problem in most developed areas because of sandy, high permeability soils and lack of large paved areas. There are suspected to be some stormwater drains, individual residential and business gutters flowing into the sanitary sewer system which need to be removed. Efforts are currently underway to improve stormwater drainage.

County Drains

County Drains are found throughout the tri-community area, but mostly in the southern portion of the Township. A network of drains in Sections 27, 28, 34, 35 and 36 facilitates the removal of water from an area of poorly drained soils which is used as farmland. The Allegan County Drain Commission recently added four new drains along the Lake Michigan shore in Sections 20 and 29. These drains are needed to stabilize sand and clay bluffs along Lake Michigan, which are being eroded by groundwater. Other County drains in the area are located in the northeast corner of the Township, east of Saugatuck and south of Douglas. County drain names and locations are shown on Table 6.3.

TABLE 6.3
COUNTY DRAINS

DRAIN NAME	LOCATION
Silver Creek Drain	Sections 2, 11
Ash Drain	Section 12
Mead Drain	Section 12
Golf Drain	Section 3, Saugatuck
Falconer Drain	Section 10
Barr Drain	Section 10
Terrill Drain	Section 35
Rose Drain	Section 36
Rose Marsh Drain	Section 36
Wadsworth Drain	Section 27
Ruplow Drain	Section 27
Nuckelbine Drain	Section 27
Hudson Drain	Section 33, 34
Kerr Drain	Section 29
Herring Drain	Section 20, 21
Jager Crane Drain	Section 20, Douglas
Warnock Drain	Section 20, Douglas
Lakeshore #1	Section 20, 29
Lakeshore #2	Section 29
Lakeshore #3	Section 20, Douglas
Section 20 interceptor	Section 20

Gas, Electric and Telephone

There are no major gas or oil pipelines in the tri-community area. Gas service is provided by Michigan Gas Utilities Company and approximate locations of gas mains are shown on Map 6.3. There is one major 760 kilovolt electric transmission line which crosses the extreme southeast corner of the Township. Electricity in the tri-community area is provided by Consumers Power Company. Telephone service is provided by General Telephone and Electric Co. (GTE).

TRANSPORTATION

Transportation facilities within the tri-community area include streets and roads and a public transportation system (Interurban). The tri-community area is served by a major Interstate highway (I-196) and by a State highway (M-89). Blue Star Highway, part of the Great Lakes Circle Tour, is the other major highway serving the area. The nearest railroad is the Chesapeake and Ohio R.R., which runs north and south one mile east of the Township boundary. Kent County International Airport is within 50 miles and is served by 3 major airlines, with 126 flights per day. The area is also served by Greyhound Bus Lines. Transportation facilities are important in stimulating growth for the tri-community area and its location is an asset for attracting further economic and industrial development.

Streets and Roads

Streets and roads are classified according to the amount of traffic they carry and the nature of the traffic. Four common categories are local streets, collectors, local arterials, and regional arterials. Local streets typically provide access to residences, with speeds from 20 to 25 mph (Mason St.). Collectors connect local streets to arterials and speeds average 25-35 mph. (Center St.). Local arterials facilitate larger volumes of traffic which originates and terminates within the tri-community area, with a trip length of ten miles or less and an average speed of 35-45 mph. (Blue Star Hwy.). Regional arterials are typically used for high speed through traffic, and access to the roadway is usually

TABLE 6.4
EXISTING TRAFFIC COUNTS

DATE	LOCATION	VOLUME
4/3/78	Blue Star & 64th	5,319
1959 & 1968 (same count)	130th E & W of Blue Star	368
July 1987 (2 different days)	Blue Star & 129th	10,575 8,256
1969	Old Allegan, east of Blue Star	336
1982	130th & 70th, east of Lakeshore Dr.	285
July 1987	North 135th at Blue Star (northbound)	7,018
July 1987	129th at Blue Star (northbound)	6,192
October 1985	Center at Blue Star	10,861

limited (I-196). Locations of collectors, local arterials and regional arterials are shown in Map 6.4. Each class of street has an important function in maintaining the efficient flow of traffic and it is essential that adequate transportation facilities exist or can be efficiently provided.

Some up-to-date traffic counts for Blue Star Highway are available. A recent count for Blue Star Highway at two intersections in the Township only considers northbound traffic, missing traffic entering Saugatuck from exit 41 on I-196. Other existing traffic counts for area roads are inadequate for planning purposes. Accurate and up-to-date traffic counts are needed in order to make some decisions pertaining to priorities for road improvements, monitoring of flows, evaluating impacts of proposed new development, and projecting future traffic conditions. Table 6.4 shows what very limited information is presently available from the County Road Commission.

PA 51 of 1951 provides for the classification of all public roads, streets and highways for the purpose of managing the motor vehicle highway fund. The classifications which pertain to the tri-community area are "County-Wide Primary Road" and "County-Wide Local Road" in Saugatuck Township, and "Major Streets" and "Local Streets" in Saugatuck and Douglas. These roadways are shown in Map 6.5. Funding is provided to cities and villages for street maintenance and construction based on the number of miles of streets by class, within each community. Roads in the Township are managed by the Allegan County Road Commission, which also receives PA 51 funds based on the mileage of roads in each class under its jurisdiction.

Lakeshore Drive

Lakeshore Drive provides a scenic link between areas along the Lake Michigan coast. High water levels on the Great Lakes, combined with storms, resulted in powerful wave action which undermined sand and clay bluffs along the shore, causing them to collapse. Because of its close proximity to these bluffs, the road has washed out in two places, one in section 20 which is impassable, and one south of Douglas which has only one lane passable. School buses are not allowed to travel on some segments of the road because of poor and unsafe conditions. The Allegan County Road Commission allocated $260,000 to test the effects of concrete for accretion technology along the shoreline. The erosion barrier was installed in two locations and is having a minimal effect on the shoreline. Cost estimates for rebuilding Lakeshore Drive are at approximately $3.8 million (1988). This would involve relocation of portions of the road and implementation of erosion control measures.

Blue Star Highway

Blue Star Highway serves as a local arterial. Numerous problems inhibit it from performing that function effectively.

Access to commercial and industrial establishments along arterial roads should be controlled by curbing. At present, there is virtually no controlled access in these areas on Blue Star Highway, and wide driveways and open shoulders lead to an elevated risk of accidents. There are no designated pedestrian traffic areas or bike paths, causing pedestrians to use the shoulder, unsafely. Widely varying speed limits between the Kalamazoo River bridge and the exit from I-196 at the northern boundary of the Township make it difficult for motorists to travel the road without violating the speed limit. The roadway needs to have more than two lanes, especially if future development is to occur. The Township has paved the shoulders, and these are often mistaken for actual lanes, which poses a safety hazard. The possibility of creating a boulevard along Blue Star Highway was discussed at town meetings. Variations of this concept could improve appearance, safety and traffic control. There is no cooperative maintenance arrangement among the three jurisdic-

tions for Blue Star Highway and the County Road Commission, yet the roadway needs repairs and resurfacing.

Very little useable traffic count information is available, making it difficult to assess where needs are greatest so that improvements can be prioritized. Traffic may be higher in some segments than in others, indicating which speed limits and whether other traffic control measures are necessary. The intersection with Lake Street in Saugatuck is hazardous in poor weather conditions and visibility or signaling should be improved.

The entrances into the tri-community area from Blue Star Highway do not present visitors with positive first impressions. This is especially true if entering the area from the north, through section 3 of the Township. Over 60% of people responding to the public opinion survey noted that the appearance of the highway needed improvement.

Interurban

The Interurban is the area's public transportation system and is funded in part by a 1 mill assessment. The service was started in May 1980 as a two year experimental project and was initially funded at 100% by the State. Following the experimental period, some of the cost burden was borne by the tri-communities through a the 1 mill assessment. The system has four buses and in 1988 there were approximately 37,000 riders. A new maintenance facility in Douglas, to be completed in the spring of 1990, is being constructed at a cost of $211,000 entirely with state and federal funds. It is possible that the Interurban could be used to shuttle people to Saugatuck from remote parking facilitates and ease the parking burden there. The Interurban is governed by a board consisting of members from all three communities.

POLICE, FIRE AND EMERGENCY SERVICES

Police

Police protection for the tri-community area is provided by the Allegan County Sheriff Department and the Michigan State Police, and by local departments in Saugatuck and Douglas. The State Police maintains the Saugatuck Team post north of the Township on 138th. Avenue in Laketown Township. The facility has one lieutenant, one sergeant, seven troopers and eight patrol cars. The Allegan County Sheriff Department operates a satellite post in Fennville which serves the area. The State Police and the Sheriff respond upon request to calls in all three jurisdictions. The Township also has a constable who performs bar checks and serves zoning violations.

The Village of Douglas maintains its own police department, which is housed adjacent to the Saugatuck Township hall on Spring Street. The department has one patrol car and three full time police officers. There are also three officers on reserve. The police department plans to have two patrol cars by the summer of 1990.

The City of Saugatuck maintains its own police department, which is housed in the City Hall at 102 Butler Street. The department has two patrol cars and two full time police officers, including the Police Chief. There are also five part-time police officers. Extra demand for services occurs during the summer, particularly during festivals and holidays.

Fire

Saugatuck, Douglas and Saugatuck Township are included in the Saugatuck Fire District. This district is managed by a five member Fire Authority. Saugatuck, Douglas and Saugatuck Township each appoint one person to the board. These three then appoint two other people from the area at large, subject to approval by the three communities involved. The Saugatuck Fire District has 35 volunteer personnel, including the fire chief. There are two fire stations, one located in downtown Douglas (47 W. Center) and another in Saugatuck Township near the intersection of Blue Star Highway and 134th Avenue. The latter is a new building designed to house six vehicles, offices and a meeting room with 9,600 square feet. It is located adjacent to the existing Maple Street facility.

The Fire District maintains eight vehicles and one vessel:

- 1975 Chevy Pumper
- 1981 International Pumper
- 1968 International Pumper
- 1959 Ford Pumper
- 1949 Seagrave Aerial
- 1977 GMC Step Van
- 1985 FWD Tanker
- 1985 Karavan Trailer
- Boston Whaler boat with pump

Emergency Services

Ambulance services are provided by the Fennville Fire District and by Mercy Hospital in Grand Rapids, dispatched from Holland. The Saugatuck Fire District maintains a first re-

sponder unit with 11 volunteers because of the distance from ambulance services. The first responder unit appears to average about 10 calls per month.

SCHOOLS

Three school districts serve the tri-community area; Saugatuck, Fennville, and Hamilton school districts. (See Map 2.1). Approximately half of Saugatuck Township, and all of Douglas and Saugatuck, are served by the Saugatuck district, with the southern portion of the Township being served mostly by the Fennville district and the extreme northeast portion of the Township served by the Hamilton district. The Saugatuck school system operates two facilities. Douglas Elementary School accommodates grades K through 6, and Saugatuck High School accommodates grades 7 through 12. Enrollment is approximately 550 students and has declined by 34% since 1973. The Fennville system has an elementary school (K-6) and a high school (7-12), with an enrollment of approximately 1600 students. Enrollments in the Fennville system are stable and range from 1550 to 1650 students per year, with less than 25% of the students coming from Saugatuck Township. The Hamilton district operates four elementary schools (K-6) and one high school (7-12). Enrollment is near capacity, with 1900 students. The district has been experiencing a 4-5% annual increase in enrollments in recent years.

The school districts serving the area, especially the Saugatuck district, appear to have some capacity for accommodating increases in the school age population. Furthermore, the part of the tri-community area served by the Saugatuck school district is that which is most suitable for new growth.

TABLE 6.5
TONS GENERATED PER DAY BY LAND USE

SOURCE	QUANTITY (PER DAY)
Residential	**6.5**
Commercial	**2.8**
Industrial	**1.8**
Other	**0.7**
Not Collected	**-0.5**
NET TOTAL	**11.3**

Source: Allegan County Solid Waste Plan

SOLID WASTE DISPOSAL

PA 641 of 1978 requires that every county prepare both a short term (5 year) and long term (20 years) solid waste management plan. The plan must be approved by the County Planning Committee, the County Board of Commissioners and by at least 2/3 of the municipalities in the county. The Allegan County Solid Waste Plan dates from 1983 and covers a twenty year planning period. It is presently being updated.

The County generates about 220 tons per day of solid waste and has to rely on landfills outside of Allegan County. Solid waste removal in the tri-community area is handled entirely by private haulers. The waste stream from the County, and thus from the area, is expected to increase due to population and tourist increases brought about by the area's shoreline, natural attractions, and proximity to Grand Rapids.

The Saugatuck area is defined in the Solid Waste Plan and encompasses Saugatuck Township, Saugatuck and Douglas, as well as small portions of the adjoining communities. The Saugatuck area currently generates 11.3 tons of solid waste per day. In some outlying rural areas, 5-10% of the residential waste generated is disposed of or recycled on site. In urban areas, approximately 5% of residential waste is being recycled or scattered by individual efforts. The contributors to the solid waste stream by land use are shown in Table 6.5.

Table 6.6 shows the results of a study conducted by the Northeast Michigan Council of Governments (NEMCOG) in the early 1980's. The study involved counties with both urban and rural characteristics, much like the tri-community area. Solid waste generated has been broken down into specific categories. The numbers probably do not match the actual breakdown of solid waste components in the tri-community area, but give a rough estimate of the components.

Per capita waste generated from various land uses is shown in Table 6.7.

The Allegan County Solid Waste Plan projects that solid waste output for the Saugatuck area will increase by 32% by 2000 to 14.95 tons per day due to projected population increase.

The goals and objectives of the plan focus on reducing the waste stream through separation and recycling, using private haulers for waste collection, recovering energy from the solid waste stream and providing the public with opportunities to develop solutions for solid waste disposal problems. A recycling center is

TABLE 6.6
SOLID WASTE COMPOSITION

TYPE	POTSW *
Combustible Wastes	**Percentage (%)**
Paper	44.8
Plastics	9.2
Wood	3.5
Yard Wastes	4.1
Textiles	4.2
Food Wastes	11.5
Rubber	2.2
Misc. Organics	3.0
TOTALS	82.5
Noncombustible Wastes	
Glass	5.3
Ferrous	6.6
Aluminum	0.8
Other nonFerrous	0.5
Misc. Inorganics	4.3
TOTALS	17.5

* Proportion of Total Solid Waste
Source: Allegan County Solid Waste Plan

TABLE 6.7
PER CAPITA WASTE GENERATED

USE	QPE * (LBS. PER DAY)
Residential	2.9
Commercial	5.75
Industrial	10.6
Average Overall	4.7

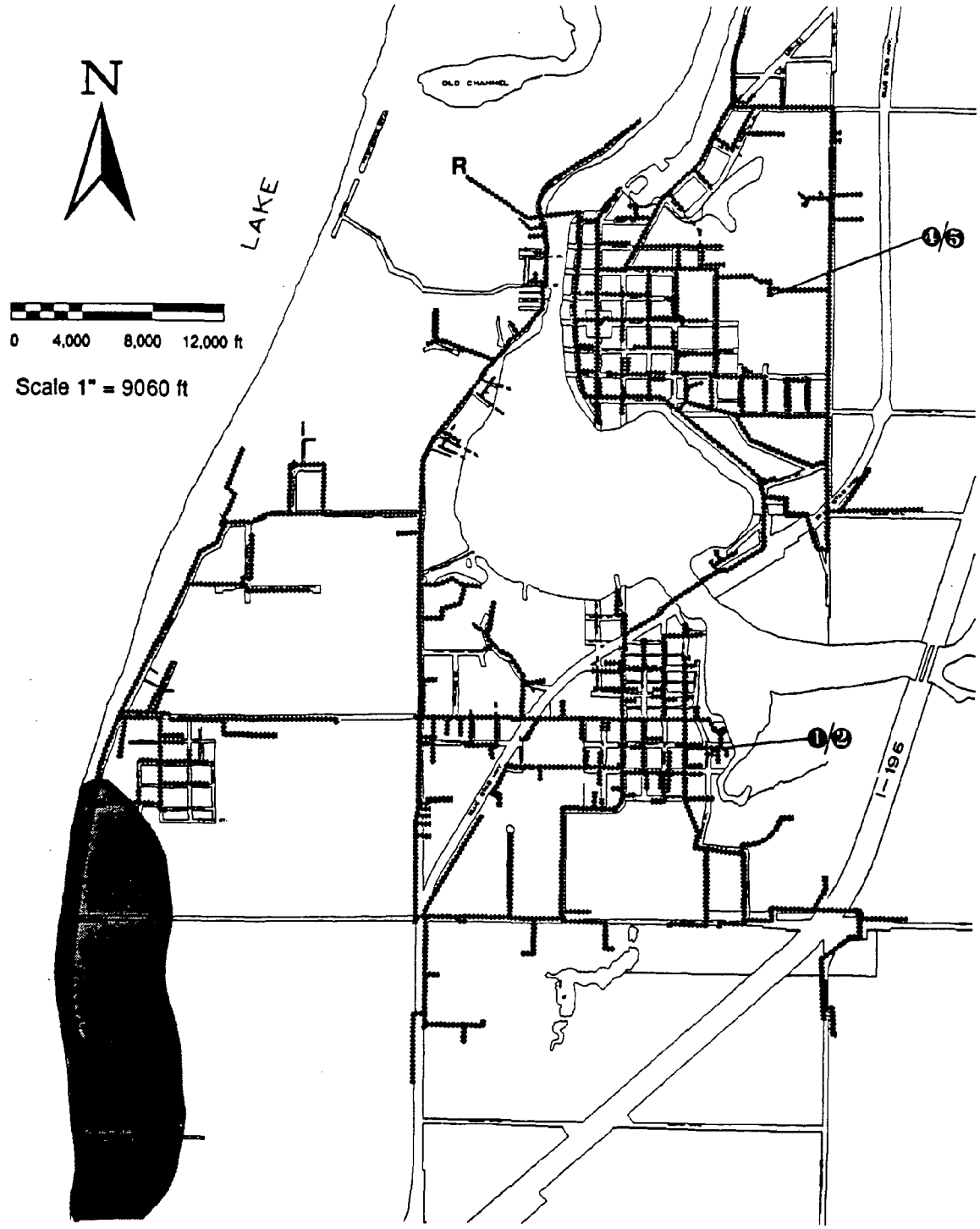
* Quantity Per Employee
Source: Allegan County Solid Waste Plan

currently in operation on Blue Star Highway adjacent to I-196 and exit 41. The center is partially funded by Saugatuck, Douglas and Saugatuck Township and is very well used. Allegan County Resource Recovery maintains the facility, which collects newspapers, plastics, glass, aluminum and brown paper bags. Pickup of metal appliances and tires is also possible by contacting the center. The recycling center was started in 1984.

The Saugatuck Township Landfill (public), located in Sections 10 and 11, was closed in 1984. As far as new landfills within the tri-community area are concerned, State regulations prohibit operation of a new landfill on:

- Land considered by the DNR to be a State recognized unique wildlife habitat.
- Land in the 100 year floodplain.
- Prime agricultural lands.
- A DNR designated and officially mapped wetland.
- So close to an historic or archaeological site that it can be reasonably expected to produce unduly disturbing or blighting influence with permanent negative effect.
- In a developed area where the density of adjacent houses or water wells could be reasonably expected to produce undue potential for groundwater contamination.

Due to the presence of many wetlands in the area (Map 4.4), many prime agricultural lands (Map 4.10), numerous archaeological sites, land in the 100 year floodplain (Map 4.3), critical dune areas (Map 4.13), and areas susceptible to groundwater contamination (Map 4.11), not much is left for potential landfill sites. Furthermore, most of those sites which may be environmentally suitable for landfills have already been developed. Thus it is not likely that a landfill will be located in the area.



MAP 6.1 WATER SYSTEM

Tri-Community

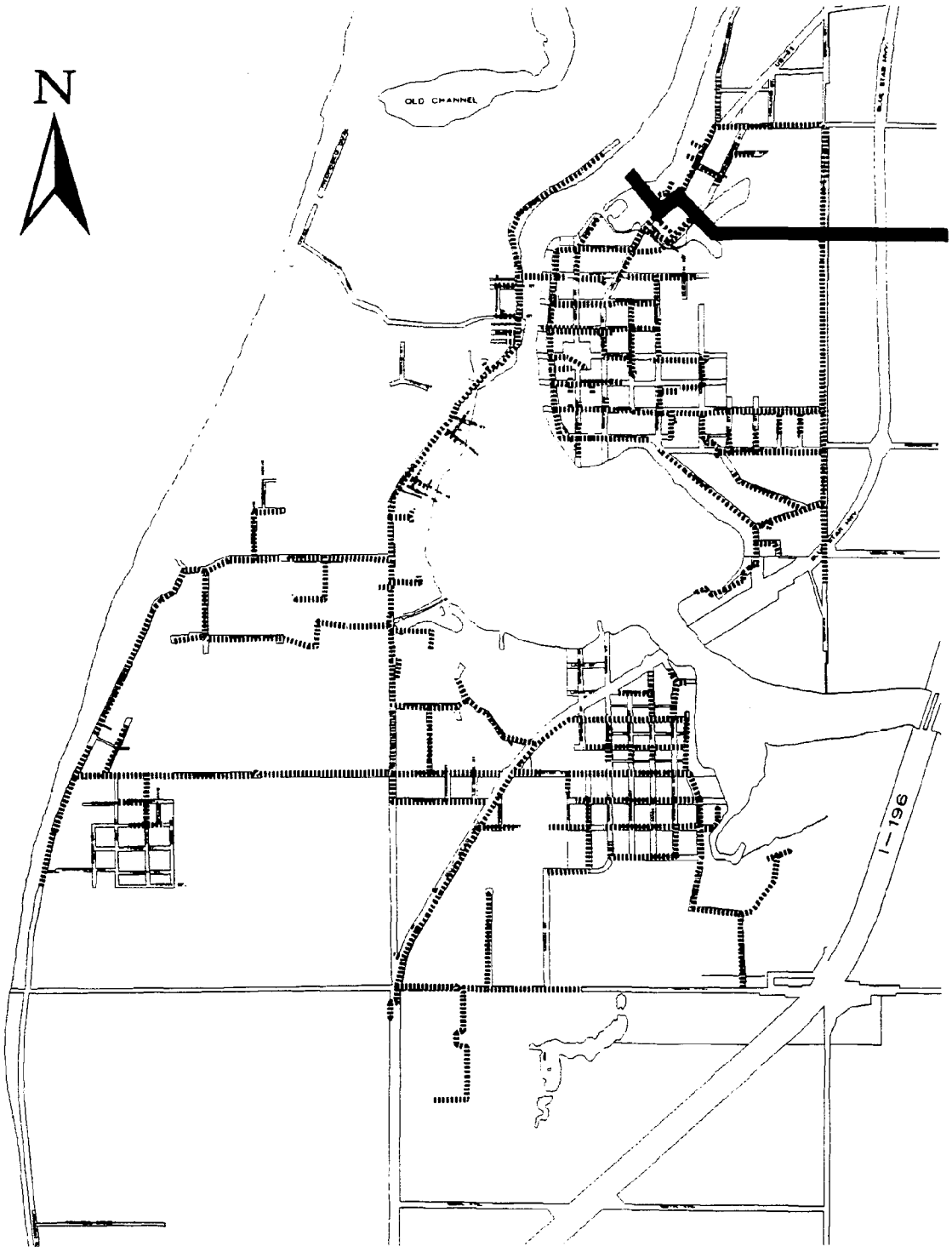
Water Mains

R Reservoir

Proposed Water Intake & Treatment area

1/2 4/5 Existing Well Locations

August 1989 DATA SOURCE: Williams & Works, Inc. Grand Rapids Planning & Zoning Center Inc, Lansing, MI



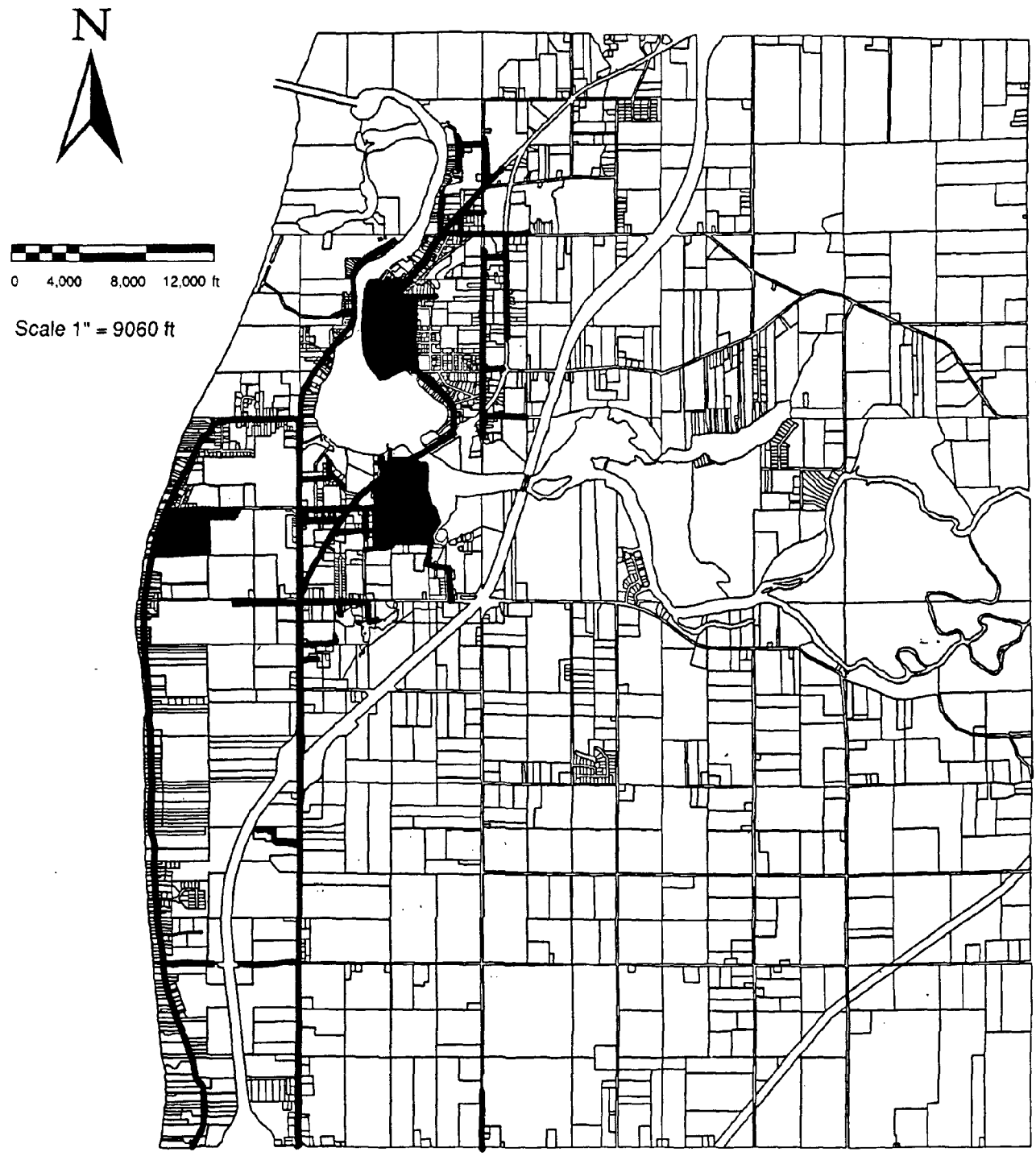
MAP 6.2 SEWER SYSTEM

Tri-Community

Sewer Lines

Discharge Line

August 1989 DATA SOURCE: Williams & Works, Inc. Grand Rapids Planning & Zoning Center Inc, Lansing, MI



MAP 6.3 GAS MAINS

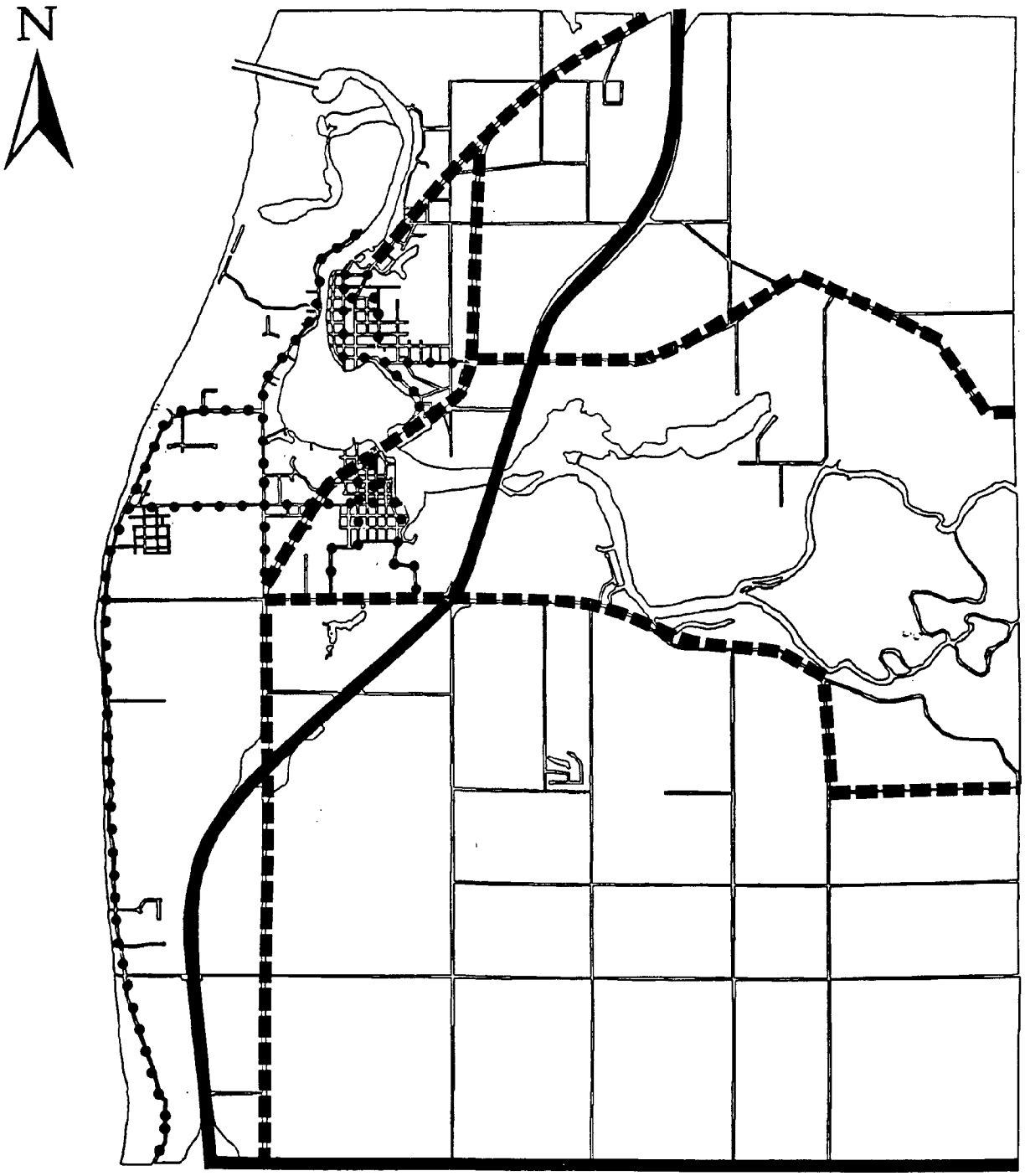
Tri-Community

Gas Mains

August 1989

SOURCE:Michigan Gas Utilities Company

Planning & Zoning Center Inc., Lansing,MI



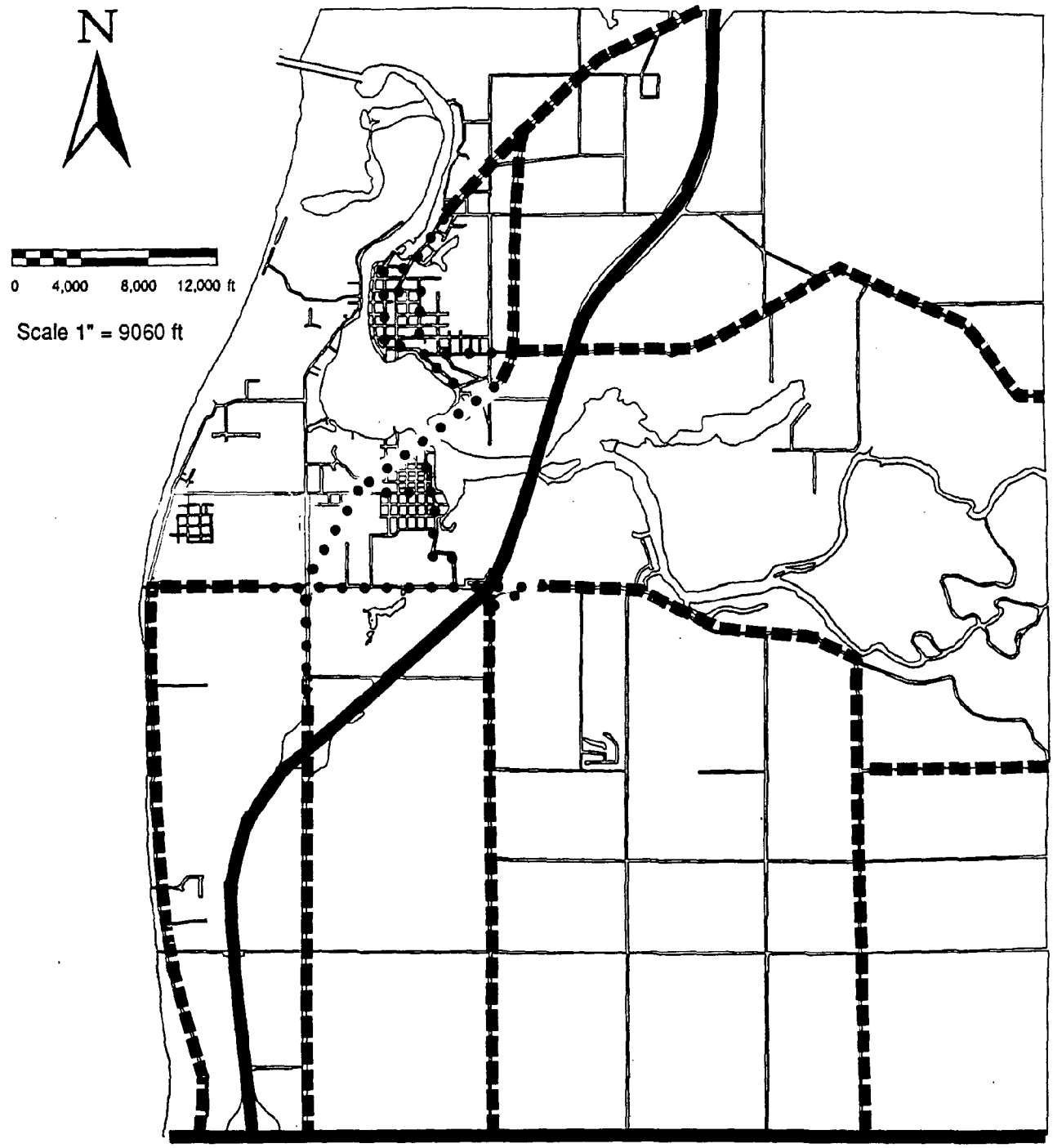
MAP 6.4 STREET CLASSIFICATIONS

Tri-Community

- Regional Arterials
- Local Arterials
- Collectors
- Local Streets

August 1989 DATA SOURCE: PZC

Planning & Zoning Center Inc, Lansing, MI

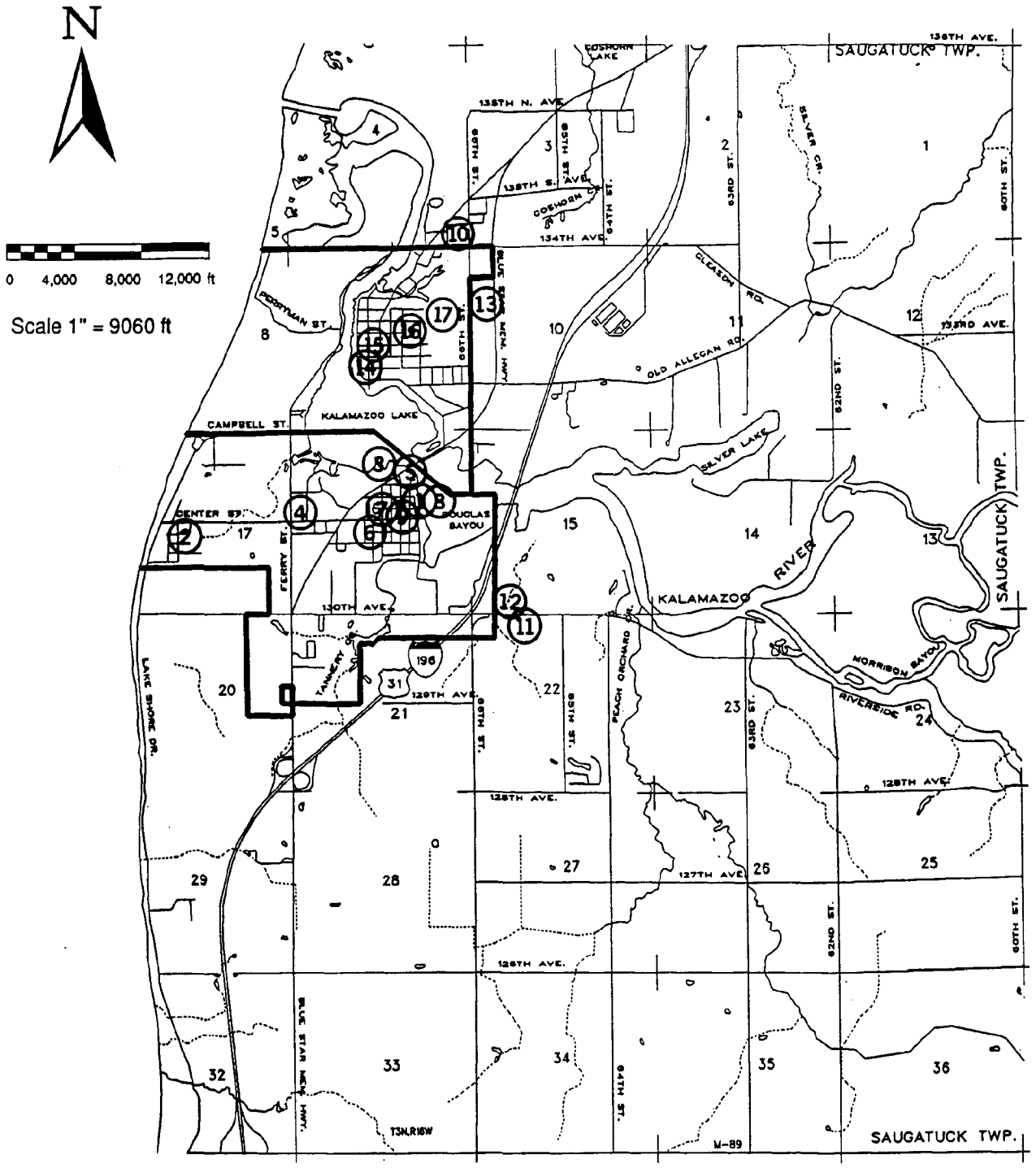


MAP 6.5 ACT 51 ROADS

Tri-Community

- County Local Road
- County Primary Road
- State Trunkline
- Major Streets
- Local Roads

August 1989 DATA SOURCE: Michigan Department Of Transportation Planning & Zoning Center Inc, Lansing, MI



MAP 6.6 PUBLIC FACILITIES

Tri-Community

1)2 Pumphouses 2)Vacant block 3)1/2 Vacant Street 4 & 5)Vacant Lot 6)Library 7)Fire Dist. 1 & Fire Barn 8)DPW Barn 9)Saugatuck Township Hall 10)Saug. Riverside Cemetry 11)Douglas Cemetry 12)Douglas North Cemetry 13)Saug. Town. Fire District No.2 14)Saugatuck City Hall 15)Public Restrooms 16)Saugatuck High School 17)Waterwell

August 1989

Planning & Zoning Center Inc, Lansing, MI

Chapter 7

RECREATION AND OPEN SPACE

Parks, recreation, and open space are essential to the quality of life of area residents, and are an important component of the local tourist economy. They enhance property values, as well as physical and psychological well-being. Parks and open space define the character of each area community, create the scenic atmosphere which stimulates tourism, and provide the basis for popular local leisure activities.

Recreation needs are regional in nature and plans must view local recreational offerings as part of a regional recreational system. Local governments, schools, private entrepreneurs, the County, and the State each have a central role in serving local and regional recreational needs.

ADMINISTRATIVE STRUCTURE

The City of Saugatuck's parks are maintained by the City through its Department of Public Works. Park planning is done by a committee of three City Council members, who are overseen by the City Manager and the full Council.

Douglas parks are maintained by the Village's Department of Public Works under the Village Council's Parks and Buildings Committee, which reports to the Village Council.

The Township formed a Township Park and Recreation Commission in November 1970, which is an independent governmental entity charged with provision of parks and recreational programs to area citizens. The Commission has six elected members, and is staffed by a part-time maintenance person. Representatives from both Douglas and the Township may be elected to sit on the Commission. The Commission completed the Saugatuck - Douglas Area Parks and Recreation Plan in February of 1985 and updates the plan periodically. Revision of the plan is currently underway.

Allegan County prepares and periodically updates a countywide parks and recreation plan. County parks are administered by a ten-member County Parks and Recreation Commission whose members include the Chairs of the County Road Commission, the County Planning Commission, the County Drain commissioner, two County Commissioners, and five members appointed by the County Board of Commissioners. The Commission meets on the first Monday of each month. It sometimes provides financial assistance for local recreational efforts which advance the County Recreation Plan.

AREAWIDE RECREATIONAL OPPORTUNITIES

Recreation can be separated into four main categories: physical, social, cognitive, and environmentally related recreation. The former category focuses on sports and various physical activities. Social recreation looks at social interaction. Cognitive recreation deals with cultural, educational, creative, and aesthetic activities. Environmentally related recreation requires the natural environment as the setting or focus for activity. Each of these categories in some way relates to the others.

Physical Recreation

Intramural athletics are popular for children and young adults in the area and are offered through the summer recreation program. Activities include softball, baseball, rocket football, volleyball, bowling and others (see Table 7.1). The elementary school has a newly expanded playground and Kid's Stuff Park. Playgrounds are also found at River Bluff,

TABLE 7.1
SUMMER RECREATION PROGRAMS

ACTIVITY	1989 PARTICIPANTS
T-ball for kids	40
Little League	46
Pony League	19
Slow-pitch softball	10-18
Fast pitch softball (girls)	27
Semi-competitive softball (boys)	15-20
Rocket football	57
Swimming: beginner, advanced beginner, intermediate, swimmer, basic rescue & advanced lifesaving	66

TABLE 7.2
INVENTORY OF OUTDOOR RECREATION

Location	Size (acres)	Ball Diamonds	Tennis Courts	Picnic Tables & Grills	Playground	Parking Area	Trails	Boat Launching	Swimming	Rest Room	Shelter Buildings	Natural Areas	Water Access	Changing Rooms	Concession Stand	Skating	Other
1. River Bluff	27			X	X	X	X			X		X	X				
2. Sundown	.4			X	X												
3. Amalanchier	4						X					X	X				
4. Douglas Beach	1.4					X			X	X			X				
5. H. Beery Field	1.2	X	X		X					X						X	
6. Schultz Park	20	X	X	X	X	X	X	X		X	X		X				
7. Union St. Launch	-							X							X		
8. Center St. Launch	-							X									
10. Village Square	2.5		X		X					X						X	
11. Wicks Park	.5									X			X				X
12. Willow Park	-			X													
13. Cook Park	.5			X													X
14. Spear St. Launch	-							X									
15. Mt. Baldhead	51			X		X	X			X	X	X					X
16. Oval Beach	36			X		X	X		X	X		X			X		
17. Tallmage Woods	60*						X					X					
18. Old "Airport"	154																X
19. Elementary Sch.	8.6	X			X												
20. High School			X			X											X
21. St. Peter's																	X
22. 63rd St. Launch	-							X									
23. West Wind KOA	12	X	X	X	X	X			X				X				X
24. Blue Star Hiway Roadside Park				X													
25. Riverside Park																	

Sundown, Schultz, and Beery Parks and the Douglas Village Square. Aerobic fitness classes are offered at the High school. Walking, hiking, biking, boating, golfing, swimming, and cross country skiing are also popular, and enjoyed by a wide range of age groups.

Social Recreation

A variety of local clubs and activities provide social recreation for people of all ages. Festivals, community education programs, and intramural sports provide an opportunity to socialize. Senior citizens activities are organized through the New Day Senior Citizens Club of Douglas, the High School, the Masonic Hall, and various area clubs.

Cognitive Recreation

The tri-community area is rich in cognitive recreational pursuits. Festivals, art workshops, local theater, historic districts, an archaeological site, summer day camp, and community education programs provide cultural, educational, and aesthetic enjoyment. The Saugatuck Women's Club, Rubenstein Music Club, the Oxbow, Douglas Garden Club, and the Douglas Art Club are among the local clubs which organize cultural activities.

Environmentally Related Recreation

Area lakes, the Kalamazoo River, and state and local parks provide area citizens with unique outdoor recreation opportunities. They provide a location for a variety of outdoor activities including boating, fishing, swimming, nature study, camping, hiking, cross country skiing, and nature walks. These areas also serve the cognitive needs of area citizens and tourists by their scenic beauty and relaxing affect. In fact, the most valued attribute of area water bodies and open space to area citizens, as identified in the 1988 Public Opinion Survey, is not physical recreation, but the scenic view they provide.

RECREATION INVENTORY

Map 7.1 identifies parks and recreational facilities in the tri-community area. Table 7.2 contains an inventory of outdoor recreation facilities in the tri-community area. There are also two eighteen hole and one nine hole golf courses in the area. This is much higher than typical for such a small population (the standard is 1 golf course per 50,000 people), and reflects the impact of tourism on local recreational facilities. A discussion of the size, condition, and planned improvements for selected area parks is shown in Table 7.3. Table 7.4 includes a schedule of planned park and open space acquisitions and improvements. Proposed recreation projects contained in the Saugatuck - Douglas Recreation Plan are listed in Table 7.5.

RECREATIONAL NEEDS AND USAGE

The 1988 Public Opinion Survey highlighted those recreational facilities which residents feel are inadequate in the tri-community area. Table 7.6 lists these by jurisdiction.

Non-Motorized Trails and Bike Paths

Residents placed highest priority on additional bike paths, cross country skiing routes, and hiking trails. These needs are currently served by non-motorized trails in the Oval Beach/Mt. Baldhead area. The 1985 Saugatuck - Douglas Parks and Recreation Plan, identified bicycle trails as a high priority and prepared a schedule of capital improvements to achieve this objective. These improvements have not been implemented to date.

In 1984, the Saugatuck Township Park and Recreation Commission developed a list of recommended bike paths in the tri-community area. Those recommended for Saugatuck are shown below in order of priority:

- Park Streets from Campbell to Perryman.
- Oval Beach road.

Those recommended for Douglas are shown below in order of priority:

- Center Street from Tara to Lake Shore Drive.
- Ferry Street from Center to Campbell Road.
- Lake Shore Drive from Campbell Road to the Village limits.

A path on Blue Star Highway from the bridge to Center Street, which was the Village's first priority, has already been completed.

Those bike paths recommended in order of priority for Saugatuck Township are:

- Lake Shore Drive from 130th Avenue to M-89.
- Holland Streets from Saugatuck to the Y.
- Old Allegan Road from Blue Star Highway to 60th St.
- Blue Star Highway from 129th Ave. to M-89.

The regional bike path system would connect with Saugatuck's chain link ferry to afford bicyclists east/west access. This connection runs down Holland Street and across Francis Street to the waterfront and will be served by inner city streets, without the need for additional right of way. At this juncture, bicyclists may ride the chain link ferry to Saugatuck's eastern border. Once on Saugatuck's eastern side, bicyclists could follow Saugatuck's proposed bike path system down through Douglas and south out of the Township. Bike path right of way would also extend north to Goshorn Lake along Washington Road, thereby connecting with Laketown Township. Another future extension could extend the system east along Old Allegan Road into Manlius Township. This is a scenic route, although somewhat hilly.

Bicyclists wishing to pass through Saugatuck and on south through Douglas would need additional right of way from Lake Street to the bridge, thereby connecting with the Douglas bike path network. Douglas in turn would extend its bike path south on Blue Star Highway to connect with the Township system.

Map 7.2 shows this proposed regional bike path network.

Waterfront Open Space

A survey of waterfront usage revealed that the most popular waterfront activity is viewing. The second most popular use varied by waterbody. Swimming was the primary use of Lake

TABLE 7.3
PARKLAND INVENTORY

NAME OF PARK	LOCATION	USES	SIZE	CONDITION	PLANNED IMPROVEMENTS TYPE/YEAR
Douglas					
Beery Field	Center & Main Sts.	baseball, playground, picnic	pressbox-220 sq.ft., dugouts-350 sq.ft., land-52,000 sq.ft, 1 acre	pressbox & washroom poor; otherwise good	None
Douglas Beach	Lakeshore Dr.	public beach & picnic	beach-36,400 sq.ft. nearly 1 acre, bathhouse-280 sq.ft.	Fair	None
Schultz	130th & Kalamazoo River	softball, picnic, playground, launch ramp	pavillion-1326 sq.ft., land- 20 acres	Good	Acquisition/'89
Union St. Launch Ramp	Union St. at Kal. River	launch ramp, picnic area	66'x120'	Good	None
Saug. Twp.					
River Bluff	Kal. River above I-196 bridge; access from Old Allegan Rd.	hiking, picnic, boaters stop, nature study, swinging & sandbox	27 acres	newly installed entry road & picnic area. New dock & picnic shelter	pad for dumpster/'89, more flowers/'89, toilet improvements/1990-92
Sundown	Lake MI Bluff at 126th Ave.	picnics, watching lakes & sunsets, scenic turnout	66'x150'	Very poor	new fence; needs landscaping/1989-1992
Blue Star	Blue Star Hwy. south of Skyline Restaurant	picnics, resting for travelers	30'x200'	new flowers; needs new bollards & fence repairs	fence work/1989, bollards/1989-90
Center St. Park	Eastern end of Center at Kalamazoo River	canoe launching, picnics, scenic viewing	3 acres	Poor	additional docking, public restrooms, gazebo
Saugatuck					
Village Square	Butler & Main Streets	tennis courts, drinking fountain, playground, benches, restrooms	2.5 acres	Good	
Wicks Park	Waterfront between Main & Mary Streets	bandstand, boardwalk, benches, fishing, restrooms	1/2 acre approx.	Good	
Willow Park	Waterfront at Butler & Lucy	viewing area, benches	132 ft	Good	
Cook Park	Waterfront on Water Street	picnic tables	132 ft.	Good	
Boat Ramp	Spear Street streetend	boat launch	66 ft.	Good	

TABLE 7.3 (continued)
PARKLAND INVENTORY

NAME OF PARK	LOCATION	USES	SIZE	CONDITION	PLANNED IMPROVEMENTS TYPE/YEAR
Mt. Baldhead Park	Park Street	picnic shelter, tables, restrooms, hiking trails, parking, stairway to observation deck on top of dune, two observation decks on river	51 acres	Good	
Oval Beach Park	Lake Michigan	beach house, concession stand, parking, picnic area, BBQ grills, viewing deck, stairs to beach, observation deck, nature trails	36 acres	Good	new concession stand & restrooms/1990
Tallmadge Woods		current use restricted	100 acres	Good	

Michigan, powerboating for Lake Kalamazoo and Silver Lake (which also is popular for fishing), and nature study was the most popular for Kalamazoo River due to its large connecting wetlands and wide array of wildlife– including a large population of Great Blue Herons which have established a rookery in the area.

In accordance with usage, the overwhelming majority of residents in each jurisdiction cited preservation of existing waterfront open space and increased access to the waterfront as their highest waterfront need. Acquisition of land and provision of access to Lake Michigan was given highest priority for the waterfront. Open space along Lake Kalamazoo and the Kalamazoo River were also given high priority by the majority of respondents, although the response was higher in the Village (64-69%) and Township (62%) than in the City of Saugatuck (48-50%). A large number of respondents also called for additional boat launching facilities.

Parks

Respondents were asked how frequently they used various local parks and the overwhelming majority responded "never". Oval Beach is used most frequently of the area parks by residents of each jurisdiction, and is used most heavily by City residents. Douglas Beach is also frequently used. Wicks, Schultz, and Beery park are more frequently used by City and Village residents, than those in the Township.

It is important to note that survey responses reflect the usage characteristics of older adults. The average age of survey respondents was 54 to 56 years old. As the age of respondents increases, park usage tends to decrease– especially for parks which specialize in active sports. This reveals the need to orient recreation plans to the recreational needs of older adults. Thus, bike paths, waterfront open space/access, hiking trails, and cross country ski trails should probably receive precedence in future recreation enhancement projects, over more active park facilities like ball diamonds.

Senior Citizens Center

Senior citizens in the area have been lobbying for a senior citizens center to serve the social and recreational needs of the area's elderly population. The survey results reflect some support for a senior center. Fifty-three percent of Township respondents and 45% of Village respondents felt that a senior center deserved high priority. However, only 25% of City residents called for a senior center– surprising, given the high proportion of seniors in the City's resident population.

TABLE 7.4

PROPOSED RECREATION PROJECTS
TRI-COMMUNITY AREA

PROPOSED PROJECT	LOCATION
VERY HIGH PRIORITY	
Willow Park preservation and improvement	Downtown Saugatuck on the river
Acquire extensive land areas	Lake Michigan Shoreline
New dug outs - football field	Saugatuck High School
Renovation of playground equipment	Douglas Elementary School
Convert weight room to storage & coach's offices	Saugatuck High School
Remodel Wicks Park restrooms	On river in Saugatuck
Acquire land to access to Oxbow Lagoon	North of Oval Beach Park
HIGH PRIORITY	
Acquire and improve land for marina and park	Douglas riverfront near bridge
Boat launching facility	City of Saugatuck
Develop bicycle trails	Entire area
Purchase park parcel on hill	In Saugatuck
Acquire additional land for River Bluff Park	Adjacent to River Bluff in Township
Construct additional public restrooms	Downtown Saugatuck
Clear and develop Moore's Creek	Near Amalanchier Park in Saugatuck Township
Rehabilitate tennis courts	Village Square Park - Saugatuck
Update Village Square Park	Village Square Park - Saugatuck
Expand and improve Howard Schultz Park	Village of Douglas
Riverside Park equipment & improvements	Village of Douglas
MEDIUM	
Expand underground sprinkling system	Village Square Park - Saugatuck
Acquire land and develop tot lots	All areas
Develop archery range	River Bluff Park - Township
Beach House rehabilitation	Saugatuck Oval Beach
Acquire land for neighborhood park	Campbell Road area - Saugatuck & Douglas
Construct concession stand	Saugatuck High School Athletic Field
LOW	
Teen Recreation Center	Downtown Saugatuck
Install lighting for tennis courts	Schultz Park
Develop non-motorized trail	Schultz Park
Lighting for tennis courts	Village Square Park - Saugatuck
Construct additional locker rooms	Saugatuck High School

Source: Saugatuck - Douglas Area Parks and Recreation Plan, Feb. 1985.

RECREATION AND LOCAL SPENDING

In terms of priorities for spending current tax dollars, 42-48% of respondents in the tri-community area felt that parks and recreation are a high priority. Waterfront improvement was rated high by City and Village respondents. Senior programs were given low local spending priority in all three communities, despite the high average age of respondents.

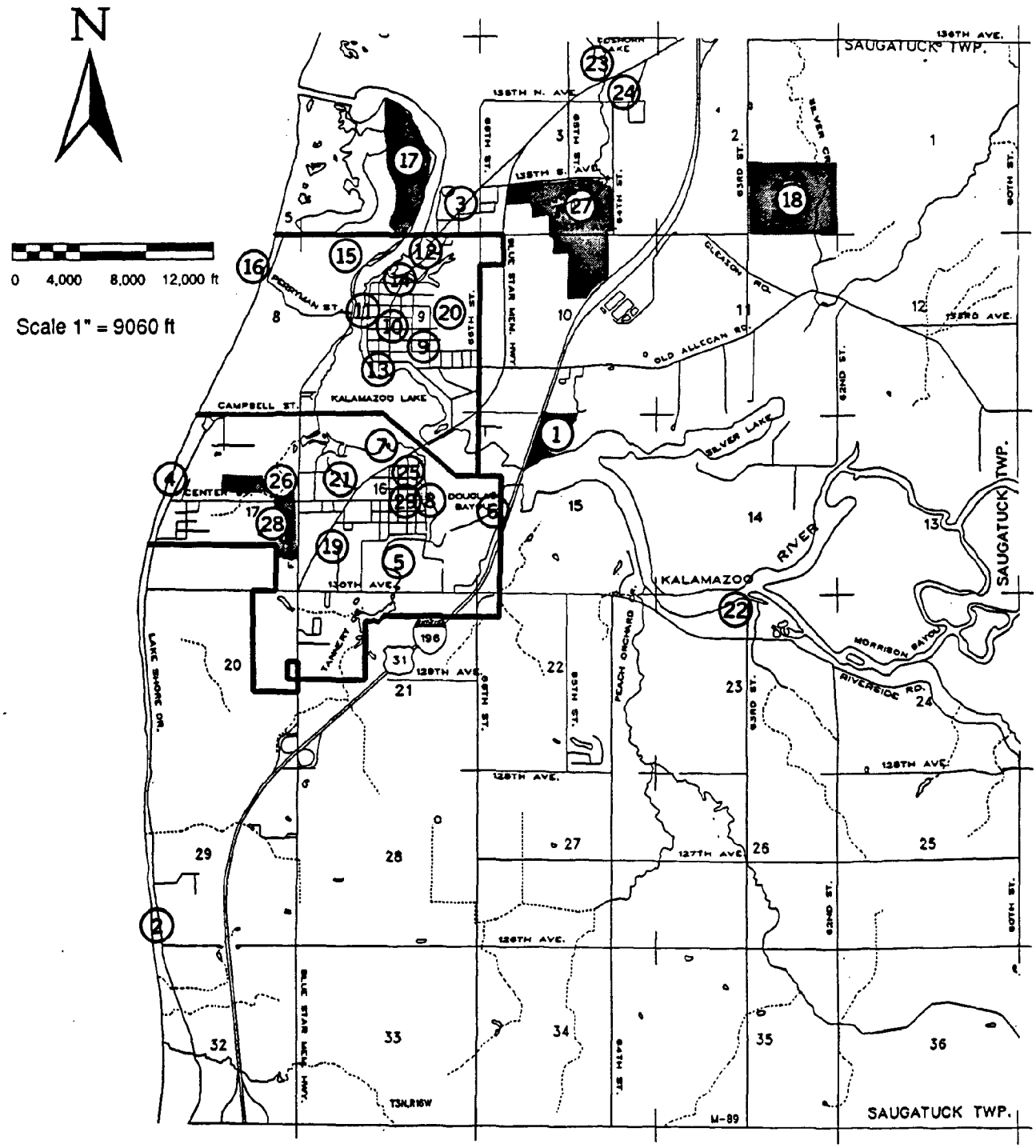
Although they would like to have them, most respondents would not support a community recreation center, a senior center, or a community pool if it meant an increase in general property taxes.

TABLE 7.5
PLANNED ACQUISITIONS/IMPROVEMENTS TO PARKS AND OPEN SPACES

NAME	LOCATION	USE	SIZE	CONDITION	ACQUISITION COST ($)	IMPROVEMENT FINANCING
Esther McSic property	East side Union St. - Kal. Lake, North of Blue Star (Douglas)	Public open space	124,000 sq.ft. (portion under water) vacant	Marshy	185,000	DNR Land Trust
Ruth McNamara property	Land locked end of Schultz Park (Douglas)	Park	132,000 sq.ft. (vacant)	Dry	NA	NA
Vacant Lot	Blue Star & Main St. (Douglas)	Future park	land 18,000 sq.ft.; nearly 1/2 acres	Dry	65,000	NA
Old Saugatuck Airport	SE 1/4 Section 2 (Saugatuck)	Currently forestry management, possible future recreation	154 acres			

TABLE 7.6
RECREATION NEEDS IN THE TRI-COMMUNITY AREA
1988 PUBLIC OPINION SURVEY

CITY	VILLAGE	TOWNSHIP
Bike paths (68%)	Lake MI open space (70%)	Lake MI open space (67%)
Hiking trails (62%)	Lake Kal. open space (69%)	Bike paths (64%)
Cross-country ski trails (62%)	Bike paths (67%)	Lake Kal. open space (62%)
Lake MI open space (61%)	Kal. River open space (64%)	Kal. River open space (62%)
Lake Kal. open space (50%)	Parks (50%)	Cross-country ski trails (60%)
Kal. River open space (49%)	Boat launching ramps (46%)	Boat launching ramps (59%)
Boat launching ramps (45%)	Senior Center (45%)	Senior Center (53%)

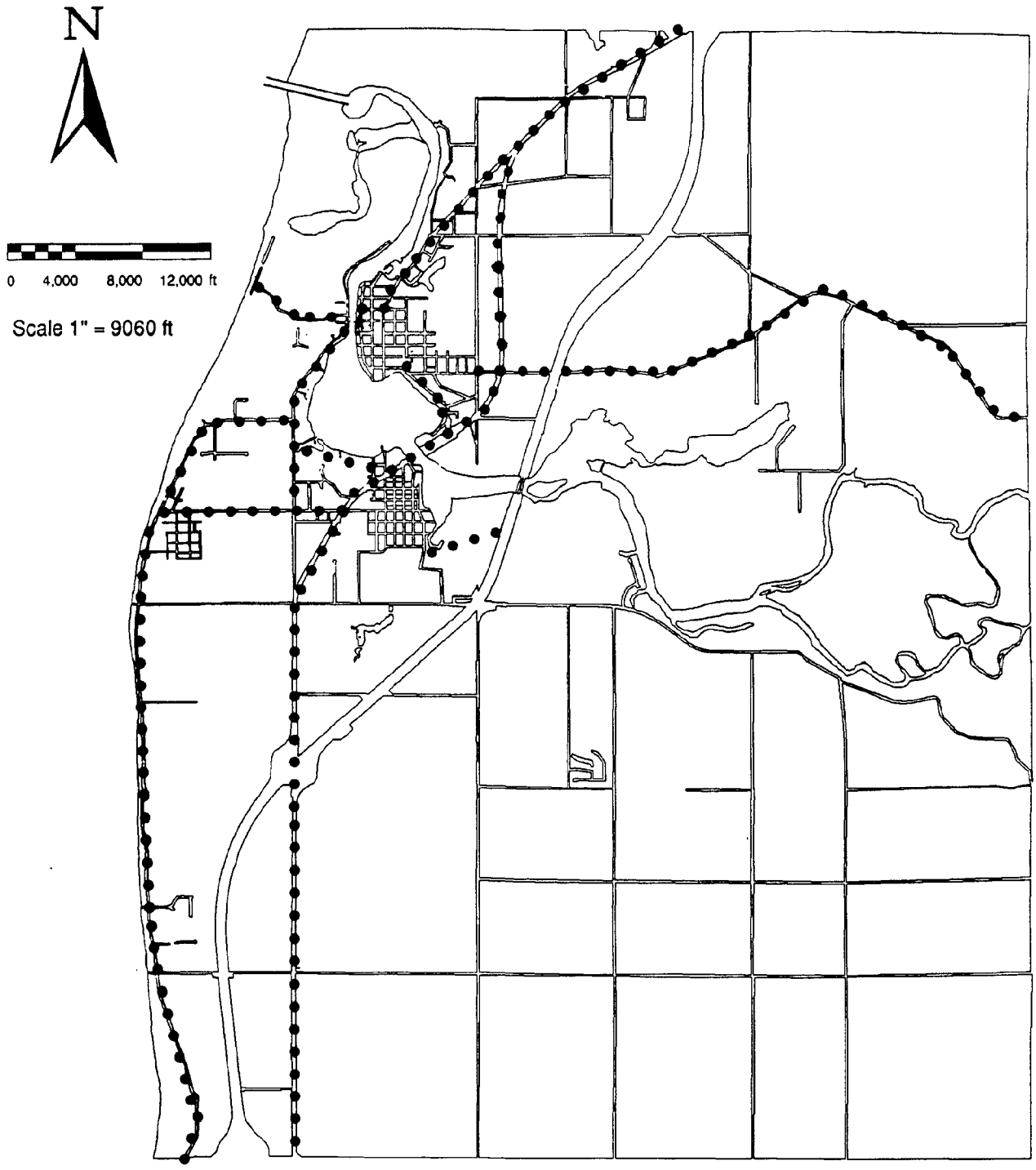


MAP 7.1 OUTDOOR RECREATION SITES Tri-Community

1) - 25) See Chapter 7, Table 7.2

26) West Shore Golf Course 27) Clearbook Golf Course 28) Mi-Ro Golfcourse 29) Center Street

August 1989 DATA SOURCE:Saug. - Doug. Parks & Rec. Plan, 1985 Planning & Zoning Center Inc, Lansing, MI



MAP 7.2 PROPOSED BIKE PATHS

Tri-Community

Bike Paths

Chain Link Ferry

August 1989 DATA SOURCE: Saugatuck Township Park and Recreation Commission Planning & Zoning Center Inc, Lansing, MI

Chapter 8

WATERFRONT

Saugatuck was the first settlement in Allegan County. Its natural protected harbor along the Kalamazoo River and proximity to Lake Michigan gave it a ready means of water transport– essential to the commerce of the day. Throughout its history, land use activities along the Lake Michigan shoreline and the riverfront have continued to dominate the economic life of the tri-community area. Lumbering, boat building, basket making, fruit transport, and even large Great Lakes passenger boats have, at different times, relied upon the River connection. Tourists have always been attracted to the area, but tourism is now the number one economic activity. Today's waterfront activities are dominated by tourist and pleasure craft needs, especially sailboats, powerboats, charter fishing boats and other tourist boats. Consequently, how the waterfront is used will be of crucial importance to the future of the tri-community area.

The primary issues concerning proper future use of the waterfront involve competition between economic development and environmental protection. Waterfront lands represent the highest value lands in the tri-community area, and local officials are therefore concerned about the potential tax base associated with use of waterfront lands. In order to finance the service needs of local residents, the tri-communities must balance taxable and nontaxable land uses. This presents a dilemma. Although waterfront lands have high revenue generating potential, a major attraction of both the Lake Michigan and Kalamazoo River waterfronts is their scenic, natural shorelines composed of forested sand dunes and large wetland areas. Should these natural areas be greatly damaged or destroyed through inappropriate development, then the *"goose that laid the golden egg"* will be dead.

It is essential that the natural beauty of the waterfront be maintained along the Lake Michigan shoreline, the Kalamazoo River from the channel to Saugatuck, and from the Blue Star Highway bridge inland. Limited additional development along the waterfront on Lake Kalamazoo and the Douglas side of the bayou east of Blue Star Highway may be both desirable and necessary. However, such development must be undertaken carefully to maintain the delicate balance between economic development and environmental protection.

It is both necessary and possible to manage the waterfront for a variety of purposes. Yet it is always difficult to manage for multiple uses. Some individuals value land management to retain the necessary habitat for birds, fish and wildlife. Others feel it should be managed to maximize surface water use, or for intensive waterfront dependent activities like ship building or power generation. Based on some of the technical data presented below, existing use information, citizen opinions, and the goals and objectives presented at the beginning of this Plan, the waterfront in the tri-community area can, and should, be managed to accommodate a wide range of land uses and activities.

This Plan seeks to define a balance between competing uses. It places protection of the natural environment as first and foremost in making future land use decisions along the Lake Michigan and Kalamazoo River waterfronts. The ultimate goal is to minimize disruption of the natural environment so that new development is in harmony with the environment, rather than in conflict with it. Some destruction of the limited remaining wetland areas along Lake Kalamazoo is only justified where the public benefits of particular projects are very great (e.g. a public marina or additional public access to the waterfront).

Watersheds of the Kalamazoo River Basin

The Kalamazoo River extends from south of Homer in Hillsdale and Jackson Counties to its outlet at Lake Michigan in Saugatuck Township (see Figure 4.1). With the exception of lands adjoining Lake Michigan (which drain directly into the Lake) and a small area in the southeast corner of Saugatuck Township, all land in the tri-community area is part of the Kalamazoo River Basin.

Eight small watershed areas lie within the tri-community area and discharge into Lake Michigan via the Kalamazoo River (see Map 8.1). These include Goshorn, Peach Orchard, Tan-

nery, Silver and "Cemetery" Creeks, as well as the Morrison Bayou at the eastern end of the Kalamazoo River as it enters the Township. Most of Douglas and Saugatuck also drain separately into the Kalamazoo River and Lake Kalamazoo. Slopes in the area are generally less than 10 percent though locally they may be in excess of 20 percent. Runoff erosion is taking place in the highlands, contributing sediment to backswamp areas and Lake Michigan.

Monthly (exceedance) flows for the Kalamazoo River, based on a 1649 square mile drainage area near Fennville (#0410B500, T2n, R14W, NE 1/4 Sec 5), were averaged from measurements taken between 1929 to 1985 by the Hydrologic Engineering Section, Land and Water Management Division, MDNR. Estimates based on these measurements were then prepared for the larger drainage area of 2060 square miles at the mouth of the Kalamazoo River (T3N, R16W, Sec 4, Saugatuck Township).

Ninety-five percent and fifty percent exceedance flows are shown in Table 8.1. These are flows exceeded 95% or 50% of the time. The lowest 95% exceedance flow in Fennville (nearly drought level) was measured during August at 410 cfs, and is estimated to be 520 cfs at the mouth of the Kalamazoo River. The 50% exceedance flow in Fennville ranged from a low of 860 cfs during the summer months to 2010 cfs during April. Corresponding estimates for the mouth of the Kalamazoo River ranged from 1070 cfs during the summer months to 2510 cfs during April.

The 100 year discharge is estimated at 15,400 cfs at the mouth of the Kalamazoo River, and 12,500 cfs at the Fennville gage.

TABLE 8.1
KALAMAZOO RIVER
EXCEEDANCE FLOWS (1929-85)
MONTHLY AVERAGE
CUBIC FT/SECOND

	FENNVILLE		RIVER MOUTH	
	50%	95%	50%	95%
January	1350	710	1690	890
February	1400	790	1750	990
March	1950	1010	2430	1260
April	2010	1040	2510	1300
May	1600	830	2000	1040
June	1250	630	1560	790
July	970	480	1210	600
August	860	410	1070	520
September	860	480	1070	600
October	980	520	1220	650
November	1210	650	1510	810
December	1300	750	1620	940

Source: Hydrologic Engineering Section, Land and Water Resources Division, Michigan Department of Natural Resources.

PRIMARY ECOSYSTEMS

The tri-community area has three basic ecosystems, two of which parallel the waterfront. The first ecosystem is comprised of hardwoods holding the sand dunes in place along the Lake Michigan shoreline. These woodlots are inhabited by small game such as fox squirrels, rabbits, raccoons, deer, wild turkey, and opossums. This ecosystem is comprised of fauna common to most of Michigan, but its balance is easily upset by the disruption of its shallow organic soils. Any ground cover that is damaged or removed should be quickly replaced with cover that will hold and prevent sand from blowing or rapid wind erosion may occur. Michigan's most famous ghost town, Singapore, once a thriving lumber town, lies beneath these shifting sands near the mouth of the channel.

The second ecosystem is the marsh-wetland ecosystem that covers the area along the Kalamazoo River, Silver Lake and Goshorn Lake, and the connecting tributaries. This area is covered with marsh grasses, low shrubs, poplar trees, spruces, some white pine, and other softwoods. The cover is inhabited by common Michigan marsh dwellers such as frogs, turtles, ducks, blackbirds, and snakes. The marsh ecosystem is also populated by muskrat, mink, mallard duck, black duck, teal, wood duck, blue heron, Canadian geese, and mute swans. Golden eagle and osprey used to frequent the area. The marsh ecosystem is very sensitive to changes in water quality and disruption of vegetation. Great care must be taken to limit siltation and disruption to vegetation when working in this ecosystem.

The third ecosystem covers the rest of the Township and is predominantly agricultural/forest with birds and wildlife common to this dominant ecosystem in Michigan.

The entire Saugatuck/Douglas area is designated as an area of particular concern by the DNR. Areas of particular concern are those having scarce resources, unusual scenic beauty, unusual economic value, recreational attractions, or some combination of the above. They are only located in coastal areas. Altering the

environment in an area of "particular concern" could have a significant impact on the quality of coastal and Great Lakes waters.

WATER QUALITY

The Kalamazoo River watershed includes many types of land uses and the River flows through several large developed urban areas including Kalamazoo and Battle Creek. When it reaches the tri-community area, the quality of this water is not good. Despite the water quality problem, the River from about one-half mile downstream from the Hacklander Public Access Site (in Section 23), has been designated as a "wild-scenic river" under Michigan's Natural River Act, Public Act 231 of 1970. Land use restrictions have been imposed to retain its natural character within 300 feet of the River's edge.

The basic water management goal is the elimination of the pollution threat to surface and groundwater resources. The Kalamazoo River is designated by the DNR to be protected for recreation (partial body contact), intolerant fish (warm water species), industrial water supply, agricultural and commercial uses. Downstream from the Kalamazoo Lake, the river is protected for cold water anadromus fish species (trout and salmon). Kalamazoo Lake and Goshorn Lake are designated to be protected for recreation (total body contact), and intolerant fish (warm water species). These water management objectives are nearly ten years old, but there have been no concerted efforts to update them and carry them out. A push to revise the objectives is underway statewide, but it could be years before any action plans are carried out for the Kalamazoo River.

1988 Public Opinion Survey results reveal that citizens in the tri-community area feel that the water quality of the Kalamazoo River and Lake is poor to very poor (58%-70%), Lake Michigan is rated fair to good (31-50%), and most respondents familiar with the water quality of Silver Lake felt that it was fair. The majority of respondents who are familiar with these water bodies, feel that the water quality of Lake Michigan and Silver Lake has deteriorated slightly in recent years, and Kalamazoo River and Kalamazoo Lake has deteriorated slightly to greatly. Most respondents who reside in Saugatuck, however, felt that the water quality has stayed about the same.

Basic water quality data on the River appears in Table 8.2 for selected months in 1978,

TABLE 8.2
KALAMAZOO RIVER WATER QUALITY

	FECAL	PHOSPHOROUS		NITROGEN	SEDIMENTS		HEAVY METALS	
	COLIFORM	TOTAL	ORTHO	NO2 NO3			LEAD	MERCURY
	PER 100 ML	MG/L	MG/L	MG/L	MG/L	TONS/DAY	MG/L	MG/L
Fennville								
1/27/88	–	.05	.01	1.4	5	29	–	–
5/18/88	–	.04	<.01	0.5	26	102	<5	<.1
7/28/88	28	.08	<.01	0.67	17	30	–	–
9/21/88	96	.07	.02	0.64	39	202	<5	<.1
Saugatuck								
3/19/86	–	.08	.02	1.6	21	161	<5	<.1
6/25/86	200	.11	.02	0.88	13	102	–	–
9/11/86	200	.14	.01	0.39	21	103	<5	<.1
Saugatuck								
1/10/78	120	.07	NR	1.7	9	27	–	<.5
5/1/78	–	.12	NR	0.34	20	123	20	<.5
7/20/78	69	.12	NR	0.54	15	26	10	.5
9/11/78	–	.15	NR	0.00	28	72	–	–

NR = Not Reported
Source: USGS Water Resource Data For Michigan, Water Resources Division, U.S. Geologic Survey.

1986, and 1988. The sampling point was moved from Saugatuck to Fennville in 1987. This data reveals an increase in sedimentation and a decline in heavy metals. It also shows an increase in fecal coliform (intestinal bacteria) levels to 200/100 ml at the former testing site in Saugatuck—the maximum level permitted under rule 62 of the MDNR Water Resources Commission General Rules of 1986. Phosphorous and certain nitrogen levels have not changed appreciably in the past ten years.

The Kalamazoo River between Calkins Dam and Lake Michigan has been designated an Area of Concern in the 1988 Michigan Nonpoint Source Management Plan (MNSMP), due to contamination of fish from PCB's. The primary source of contamination was identified as PCB contaminated sediments upstream in the Kalamazoo River and Portage Creek. These sediments continue to erode, resuspend, and dissolve PCB's into the water column where they are transported downstream.

Due to the presence of PCB's, advisories are in effect for consumption of fish caught in the Kalamazoo River or Lake Michigan. The advisory warns against any consumption of carp, suckers, catfish, and largemouth bass taken from the Kalamazoo River downstream from the Morrow Pond Dam to Lake Michigan and Portage Creek downstream from Monarch Millpond. Limited consumption of other species (no more than one meal per week) is considered safe for all except nursing mothers, pregnant women, women who intend to have children, and children age 15 and under.

In Lake Michigan limited consumption of Lake Trout 20-23", Coho Salmon over 26", Chinook Salmon 21-32", and Brown Trout up to 23" is considered safe for all except nursing mothers, pregnant women, women who intend to have children, and children age 15 and under. Individuals should not consume carp, catfish, or Lake Trout, Brown Trout, or Chinook which fall outside of the acceptable size for limited consumption.

To address the PCB problem, the MNSMP has devised a Remedial Action Plan with the goal of reducing human exposure to acceptable levels (1:100,000) and thus reducing fish tissue concentration to a maximum .05 mg/kg and reducing water column levels to .02 ng/l. Actions taken to address the problem include: strict controls on direct discharges of PCB's; a feasibility study of remedial alternatives; funding through State Act 307 to take remedial action at three sites; and legal action and negotiations with private parties at two other sites (see MNSMP, November 7, 1988, p. 328).

Efforts initiated in the '70's to identify and require extensive treatment of pollutants prior to their dumping into the River will continue to slowly improve the quality of the water. As the nutrients like phosphorus and nitrogen are removed from wastewater entering the River, less new plant life will be stimulated and more oxygen will be available for fish.

One of these efforts is the Michigan Water Resources Commission Act, which requires all discharges into the water to have discharge permits. In addition, the Federal Water Pollution Control Act established the National Pollutant Discharge Elimination System (NPDES) permit program. Under these laws, any public or private facility which will emit any point-source discharge into the water must first receive a NPDES discharge permit. The permit program sets forth limitations and monitoring requirements to protect water quality and meet treatment standards, and establishes strong enforcement actions for violations. The Surface Water Quality Division, MDNR, administers NPDES permits. NPDES permits issued in the tri-community area are shown on Table 8.3.

However, sedimentation and nonpoint sources of pollution will remain a problem. In contrast to pipes that discharge directly into a waterbody, nonpoint sources of pollution include those pollutants that do not originate from a single point—such as fertilizer and pesticide runoff from farmers fields and petroleum based pollutants that wash off parking lots and roadways. The most obvious pollutants are the physical litter and debris that are carelessly dumped into the River or Lake and which typically wash up along the shore.

Michigan's 1988 Nonpoint Pollution Assessment Report concluded that 99% of Michigan's watersheds have at least one waterbody with a non-point source pollution problem. In-place contamination and atmospheric deposition were listed as the primary non-point sources of pollution for the Kalamazoo River.

Stronger efforts to improve water quality will have a positive affect on tourism, recreation, and future growth and development of the tri-community area. All sources of pollution affect water quality, and hence the utility of the water resource. While the tri-community area must rely on outside agencies to enforce pollution control laws upstream, some efforts can be undertaken by Saugatuck, Douglas and Saugatuck Township to improve water quality

TABLE 8.3
NPDES PERMITS ISSUED IN THE TRI-COMMUNITY AREA

PERMIT RECIPIENT	ADDRESS	DISCHARGE	LOCATION	EXPIRATION DATE
Culligan	201 Culver St., Saugatuck	processed wastewater	Kalamazoo Lake via storm sewers	1991
Kal. Lake Water & Sewer Authority	340 Culver St., Saugatuck	treated municipal waste	Kalamazoo River outfall 001	1990
Kalamazoo Lake Groundwater Purge	6449 Old Allegan Rd., Saugatuck Twp.	900,000 gal/day purged groundwater, purgable halocarbons	Kalamazoo River outfall 001	1993
Rich Products	350 Culver St., Saugatuck	12,000 gal/day non-contact cooling water & cooling tower blowdown	Kalamazoo River via storm sewer	1990

Source: MDNR Surface Water Quality Division

TABLE 8.4
LAKE MICHIGAN LAKE LEVELS

YEAR	LOWEST EL FEET A.S.L.	MONTH	HIGHEST EL FEET A.S.L.	MONTH	DIFFERENCE IN FEET	DIFFERENCE IN INCHES
1977	578.00	February	578.57	July	.57	6.84
1978	578.12	March	579.01	October	.89	10.68
1979	578.31	February	580.02	April	1.75	20.52
1980	578.92	December	579.77	July	.85	10.20
1981	578.51	February	579.43	July	.92	11.04
1982	578.17	March	579.02	April	.85	10.20
1983	578.85	February	580.08	July	1.25	15.00
1984	579.02	February	580.23	July	1.21	14.52
1985	579.57	February	580.84	June	1.27	15.24
1986	580.36	February	581.62	October	1.26	15.12
1987	578.96	December	580.65	January	1.69	20.28
1988	578.10	December	579.04	May	.94	11.28

Source: **The Michigan Riparian**, May 1989

and prevent further pollution within the tri-community area. These will be discussed further later in this Chapter.

LAKE LEVELS

The natural level of the Great Lakes goes through periodic changes that are based predominantly on rainfall and evaporation within the entire Great Lakes Basin. Since a century peak in 1986, Lake Michigan has steadily fallen to its current level of around 578 feet (see Table 8.4).

The Kalamazoo River, Kalamazoo Lake and Lake Michigan are interconnected. Thus, water levels on the River and Lake Kalamazoo are largely dependent on Lake Michigan water levels. Consequently, land uses adjoining the waterfront should be based on the vagaries of fluctuating Lake Michigan water levels. This has not always been done as was evident by extensive shore erosion and flooding during the last high water period.

When water levels are high "no-wake" zones, which are always in effect from the channel to Mason Street in Saugatuck, are extended

to cover all of the Kalamazoo Lake shoreline and parts of the River east of Blue Star Highway (see Map 8.2). When a "no-wake" speed is in effect, then all motor boats and vessels must limit speed to a slow no-wake speed when within 100 feet of:

- rafts, except for ski jumps and ski landing floats;
- docks;
- launching ramps;
- swimmers;
- anchored, moored or drifting boats; and
- designated no-wake zones.

This means a speed slow enough that the wake or wash of the boat creates a minimum disturbance. Owners and operators are responsible for damage caused by wakes.

HARBOR

Map 8.3 is the existing harbor map (June 1987) distributed by the National Oceanic and Atmospheric Administration. It depicts water depth for the shoreline along Lake Michigan, and the River through Kalamazoo Lake. Channel depth is maintained by periodic dredging to a depth of 13 feet to Main Street in Saugatuck. (Dredging at the mouth of the channel is to begin in July 1990 and be completed in the Fall of 1990.) The depth then drops to 20-27 feet for the next 500 feet. Between that point and Tower Marine, the water depth is about 7 feet. Most of the rest of Lake Kalamazoo varies between 1 and 4 feet in depth with not more than 2 feet being the most common. The Douglas shoreline, east of Blue Star Highway is only 1-2 feet in depth except for a small area running NW-SE from the center of the bridge and connecting to the Point Pleasant Yacht Club.

This natural harbor is the principal attraction for nautical tourists which flock to the area during summer months when the marinas are used to capacity. Hundreds rent dockage by the season. Many live on their boats for weeks on end. The demand for dockage appears to be greater than the supply, despite the huge number of slips available (see Map 8.4). In 1976 there were 8 marinas with approximately 800 slips. In 1989, there are 26 legally operating marinas with 966 slips. There are about half dozen marinas without current permits and these contain over 30 more slips. There are also a number of slips maintained by private residences for their own personal use.

Marina permits are required for any commercial activity, so as few as two slips could require a marina permit if they are rented. Permits are issued for a three year period by the DNR. On peak summer weekends the number of boats on the lake could be twice to thrice the normal level. This presents one of the most serious problems jointly facing the tri-community area—how to deal with surface water use conflicts.

The Lake has a total surface water area of 184 acres. Acreage available for recreational boating is dramatically reduced by the dockage which extends into the Lake hundreds of feet and by the shallow water at the edge to about 133 acres. Yet, on summer weekends the River is a constant highway of boats moving in and out of the Lake. Recreational sailing, fishing, swimming, sailboarding and water skiing are limited by all of the motorboat traffic. However, during the week, other water surface activities can go on without much interference.

MARINE SAFETY

The Allegan County Sheriff's Department, Marine Safety Division, maintains strict control of the waterways. The Department has 8 marine officers. Normally, two officers patrol by boat, but three to four officers patrol during holidays and special events. Officers patrol in a 27 foot Boston Whaler with two 150 horsepower outboard motors. This boat is equipped for Lake Michigan rescue, and has a noise meter which monitors the 86 decibel noise limit.

From Memorial Day to Labor Day officers put in 635 hours of patrol duty on Kalamazoo River and Kalamazoo Lake. One hundred and ten hours were spent patrolling Lake Michigan. Most patrols occur between Friday and Sunday, and about half of the Department's budget goes to patrolling the Saugatuck area.

In the summer of 1989, 189 tickets were issued on Kalamazoo River and Kalamazoo Lake, 11 were issued on Lake Michigan, 276 warnings were issued, 10 complaints were received, and 6 boating accidents occurred. The Department also conducted 378 safety inspections. The most common violations are inadequate life preservers on board and lack of current registration.

The Department notes that slow/no wake, and hazardous violations were down in the summer of 1989. The most common surface water use conflicts identified by the Sheriff's Department include sailboat and motorboat conflicts and complaints over the noise and attitude of jet

skiers. Conflicts between sailboats and motorboats are most common on Saturday.

EXISTING LAND USE

Existing land use is described in detail in Chapter 5. All land uses along the waterfront are oriented to the water. The bulk of the waterfront in the Township from the channel to the City is developed as single family residential. The City and Village waterfronts are predominantly residential and marina. The balance of the waterfront, which lies in the Township, is in a natural state with some areas of residential development (such as along Silver Lake). Many commercial establishments (mostly motels and restaurants) are also located here. Except for the Broward Boat Company near the channel, there are no industrial activities along the waterfront. A number of small parks are located along the waterfront, but there are few public access sites and, except for Shultz Park, these provide little space for transient parking.

CONFLICTS/PROBLEMS

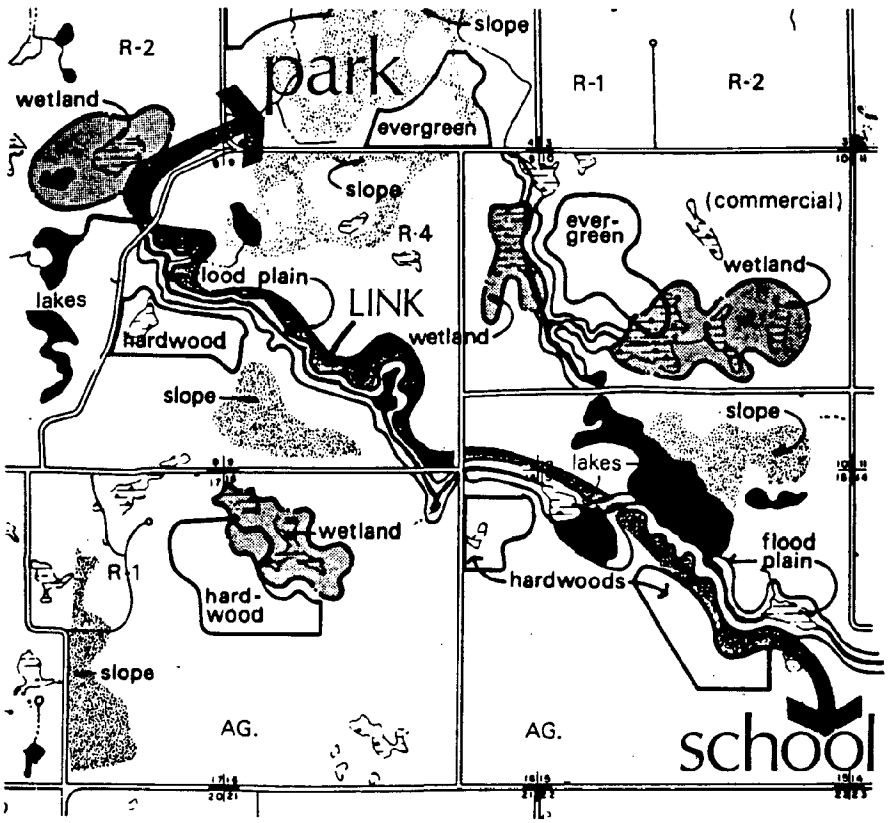
At an interjurisdictional meeting on water front issues on November 1986, five key issues were identified:

- high water and its impacts
- development and acquisition of public lands along the waterfront;
- limiting the intensity of shoreline development;
- preserving the scenic character of the shoreline environment retaining visual access to, of the
- surface water use conflicts.

Each of these remain important issues as shown in the 1988 Public Opinion Survey.

FIGURE 8.1

LINKAGE PLAN



Source: **Conserve Oakland County's Natural Resources: A Manual for Planning & Implementation,** Department of Public Works, Oakland County, MI, September 1980.

High Water

When Great Lakes water levels are high, erosion along the Lake Michigan shoreline increases. The impacts of erosion are clear along Lakeshore Drive, where part of the road has been washed away. Many high value homes will be threatened by additional erosion in this area.

Erosion along the River and Lake Kalamazoo also increases with higher Lake Michigan water levels. Many bulkheads and similar shore protection devices were installed to minimize the effects of the most recent high water level. Raising some of the land and structures would be necessary if lake levels remained high for lengthy periods. On the positive side, the south shore of Lake Kalamazoo becomes more attractive to marina development when water levels are high since it is very shallow in this area. Likewise, when water levels are below average, some existing dockage is unusable.

Fluctuating lake levels are part of a natural system. The costs and implications of trying to artificially manage the entire Great Lakes Basin to maintain even Lake levels is not known, but waterfront land use decisions in the tri-community area should be made based on the assumption that Lake Michigan water levels cannot be artificially maintained.

Acquisition and Development of Public Lands Along the Waterfront

Two types of public lands are needed along the waterfront. One is parkland/open space and the other is a public marina. Existing open space along the waterfront should be preserved (see Map 8.5). Several street ends provide needed relief from structures along the shoreline. These public open spaces are generally well managed, and efforts should be initiated to ensure that they are not lost. Existing parks along the shoreline should also be linked together, and with other inland parks, by pedestrian and bicycle paths whenever the opportunity arises (see Figure 8.1).

The lack of parkland along the Lake Michigan shoreline is most acute for Township residents, and somewhat less severe for Village residents. Outside of purchasing and developing new land for parks, the tri-communities should consider establishing a separate park and recreation authority responsible for maintaining all parks presently owned by the three communities. The benefit would be providing access to Oval Beach by Village and Township residents and spreading the fiscal responsibility for maintenance across more taxpayers. This would also make it more feasible to acquire additional park space as needed. Because residents of three jurisdictions would benefit, grant requests would probably be more favorably reviewed.

Public marina space is also needed as there are only three public access sites along Lake Kalamazoo and the River presently, and two are too far inland for most daily boaters. The third is a street end in Saugatuck and has no adjacent parking. Private marinas provide transient berthing opportunities, but there is considerable demand for more. By having a facility to attract more transient boaters, the three communities would be gaining additional tourist income.

The three most logical places for such a facility are: 1) immediately adjacent to the Blue Star Highway bridge in Douglas and extending to the existing launch facility adjacent to the Kewatin; 2) converting the Center Street maintenance facility in Douglas to a public marina; 3) at some distant time (or if the opportunity arose) by replacing the Rich Products office building in Saugatuck with a public marina and accompanying parking. Alternatively, if adjacent parking could be secured, the street end next to Gleason's in Saugatuck could be a good public access point.

While the public opinion survey did not reflect overwhelming support for a public marina, there appears to be demand for such a facility from persons outside the tri-community area. Its long term economic benefits may well justify its cost, especially if state or federal funds could be secured to help pay for it.

Limiting the Intensity of Development

The primary future development of waterfront lands in the City will be redevelopment of existing parcels. In the Village it will focus on further development along the South Shore of Lake Kalamazoo. In both areas it will be critical that new development is neither so dense, nor so high as to block existing public views of the waterfront or further "wall" the Lake with structures. Recommendations to prevent this are included in Chapter 10. It will be critical that all three communities agree to a common approach to waterfront development, embody that in land use plans, and then implement those plans. To some extent, uniform densities, setbacks, and height regulations will be valuable, especially around Lake Kalamazoo.

Additional development around Silver Lake needs to remain at a very low density in keeping

with the septic limitations of the land and the limited recreational value of this shallow waterbody. The eastern end of the Kalamazoo River should likewise receive little new development in keeping with its Natural River designation.

Retaining Visual Access, Aesthetics and the Character of the Area

As has been emphasized throughout this Plan, the natural beauty of the waterfront has much to do with the attraction of the tri-community area. Local development regulations should be reviewed and revised if necessary, to insure that new development complements, rather than detracts from this natural beauty. Old vessels should not be permitted to lie beached along the shoreline, because this also detracts from the beauty and character of the waterfront.

Several vistas have public values that deserve protection. These include the entry into and exit from Lake Michigan on the Kalamazoo River, the view from Mount Baldhead, the view of Kalamazoo Lake from both ends, and approaches to the Kalamazoo River Bridge. The public opinion survey strongly supports the provision of additional open space along Lake Kalamazoo and the Kalamazoo River and demonstrates that the primary use of the area's water bodies is viewing. Yet, recent development pressures have led to overbuilding of condominiums along the waterfront, shutting off all public viewing of the lake from existing rights-of-way.

Any future development along the channel should be set back sufficiently to maintain the broad open views that are presented to boat travelers entering or leaving the Kalamazoo River. The view from the top of Mount Baldhead should be improved by careful selective pruning of dead or dying trees blocking good views of Saugatuck and Lake Kalamazoo. The curve going northbound on Blue Star Highway in Douglas just before crossing the bridge is the only good panorama of Kalamazoo Lake. A public turnoff, the acquisition of a scenic easement, or the concentration of new development on the western portion of those undeveloped lands should be initiated to protect that important view. In addition, the land adjacent to the west side of the bridge in Douglas should be selectively pruned to improve the view to travelers crossing the bridge (northbound) until a public marina could be established there.

Surface Water Use Conflicts

Resolution of surface water use conflicts will require more planning and a uniform approach to regulation. Most important is establishing the carrying capacity of Lake Kalamazoo and the River to the channel mouth. Carrying capacity refers to the physical capacity and intrinsic suitability of lands (and water) to absorb and support various types of development (or use). Such an analysis is typically performed by an inventory of existing surface water use during weekdays and peak weekends. Data is then examined in terms of the size of the waterbody and its capacity to assimilate various mixes of use. Such an analysis would probably reveal some, but not much excess capacity for new boat slips, because any number of boaters can access Kalamazoo Lake from Lake Michigan.

Without an analysis of carrying capacity, the amount of new boat slip development and related surface water use conflicts are difficult to evaluate. Some time or surface zoning could be established in conjunction with the DNR if desired. For example, water skiing, jet skiing, fishing, sailing, etc, could be limited to particular parts of Lake Kalamazoo or Silver Lake or to particular times of the day. Another option could be a harbor patrol paid for by all three governmental units. More information is necessary to establish the need for regulation. If surface water use is regulated, each unit of government would need to agree to a common regulatory approach.

Surface water use conflicts will grow more acute on Lake Kalamazoo if existing dockage is extended much further into the Lake. Such extensions should not be permitted as the surface area available for various recreational uses will be too drastically reduced. Existing no-wake zones should also be more rigorously enforced.

RECOMMENDATIONS TO GUIDE FUTURE USE

In seeking to balance economic development with environmental protection, the concept of carrying capacity should be a major consideration. If the carrying capacity of land or water is exceeded, then activities cannot be undertaken without unacceptable impacts on users, the environment, or both. Impacts can include increased trip times, decreased safety, pollution, loss of open space, and many other considerations. The key is prevention of overuse by limiting intensity of use on adjoining lands and regulating surface water use.

Environmental protection must be a leading principle in making future land use decisions along the waterfront. Environmentally sensitive areas such as sand dunes, wetlands, high risk erosion areas, floodplains, and key woodlands should be protected from unnecessary destruction. Development should complement rather than destroy these areas and their values. By doing so the environmental quality of the air and water will be improved, wildlife habitat will be preserved, scenic values will be protected, and the character of the area will be maintained. Some new intensive shoreline development will be desirable and necessary, but the balance should not be disproportionately on the side of new tax base as it has been for the past decade.

Opportunities to enhance the waterfront should be seized. Parks and open spaces should eventually be linked with other public places. Additional access to the waterfront should be acquired when available, and existing access via street ends and parks should not be lost through neglect or inaction. A new public marina should be constructed if resources are available and the cost could be spread among local citizens and other users (such as through grants or user fees). Visual access from public thoroughfares and walkways should be maintained in all new waterfront development.

Protection mechanisms, like the Natural River designation, should be recognized for the ancillary benefits they bring to the community. A local "Friends of the River" organization could be instituted to annually adopt and clean up the shoreline to remove floating debris, other waste, and downed timber that become lodged there. A special effort to maintain the character of Lakeshore Drive along the Lake Michigan shoreline should also be initiated.

A comprehensive stormwater management plan and wetlands protection plan should be instituted as part of a broad water quality protection program that is based on the small watersheds that feed the Kalamazoo River Basin. The Soil Conservation Service should be asked to assist in preparing nonpoint pollution guidelines to help guide farmers in land management practices that help keep the River clean.

NEED FOR INTERGOVERNMENTAL COOPERATION

Each of these recommendations requires a strong degree of intergovernmental cooperation. Watercourses, like the environment, do not respect jurisdiction boundaries. Their future quality and desirability depends on all governmental units through which they flow playing an active and supportive role in protecting and improving water quality. To advance this goal, the jointly appointed waterfront committee should be reinstituted or its responsibilities shifted to the Joint Planning Committee which helped fashion this Plan.

MAP 8.1 WATERSHEDS

Tri-Community

Kalamazoo River Basin Boundary

Creeks & Drains

Small Watershed Areas:

1) Douglas 2) Tannery Creek 3) Peach Orchard Creek 4) Kalamazoo/Morrison Bayou 5) Ash Drain 6) Silver Lake Creek 7) Goshorn Creek 8) "Cemetery" Creek 9) River Bluff-Indian Creek 10)Saugatuck

August 1989 DATA SOURCE:Allegan County Drain Commission Planning & Zoning Center Inc, Lansing, MI

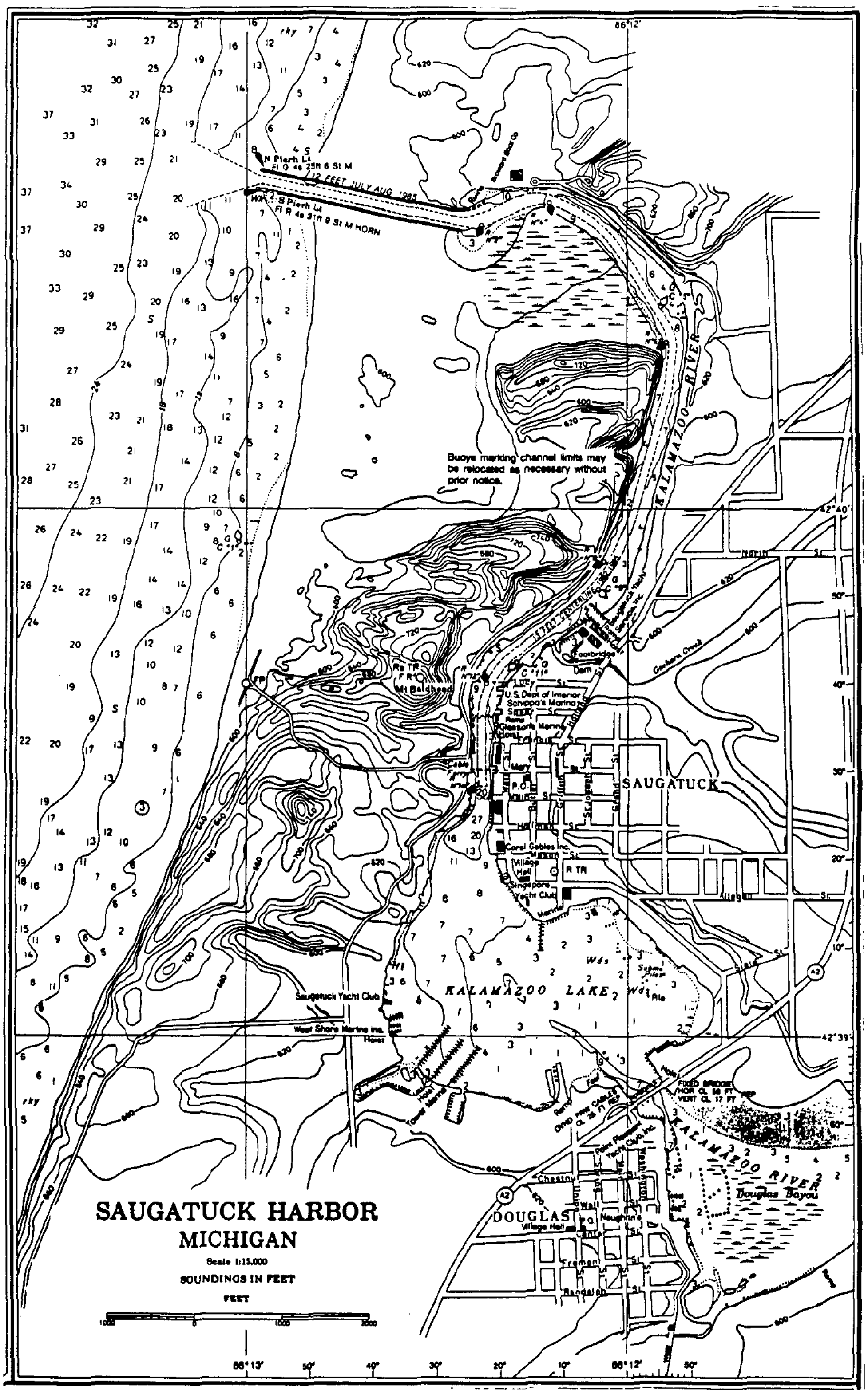
MAP 8.2 NO-WAKE

Tri-Community

No-Wake Area

Additional No-wake Area During Periods Of High Water

August 1989 DATA SOURCE: Tri-Community Waterfront Committee Planning & Zoning Center Inc, Lansing, MI



MAP 8.3 SAUGATUCK HARBOR

MAP 8.4 MARINAS

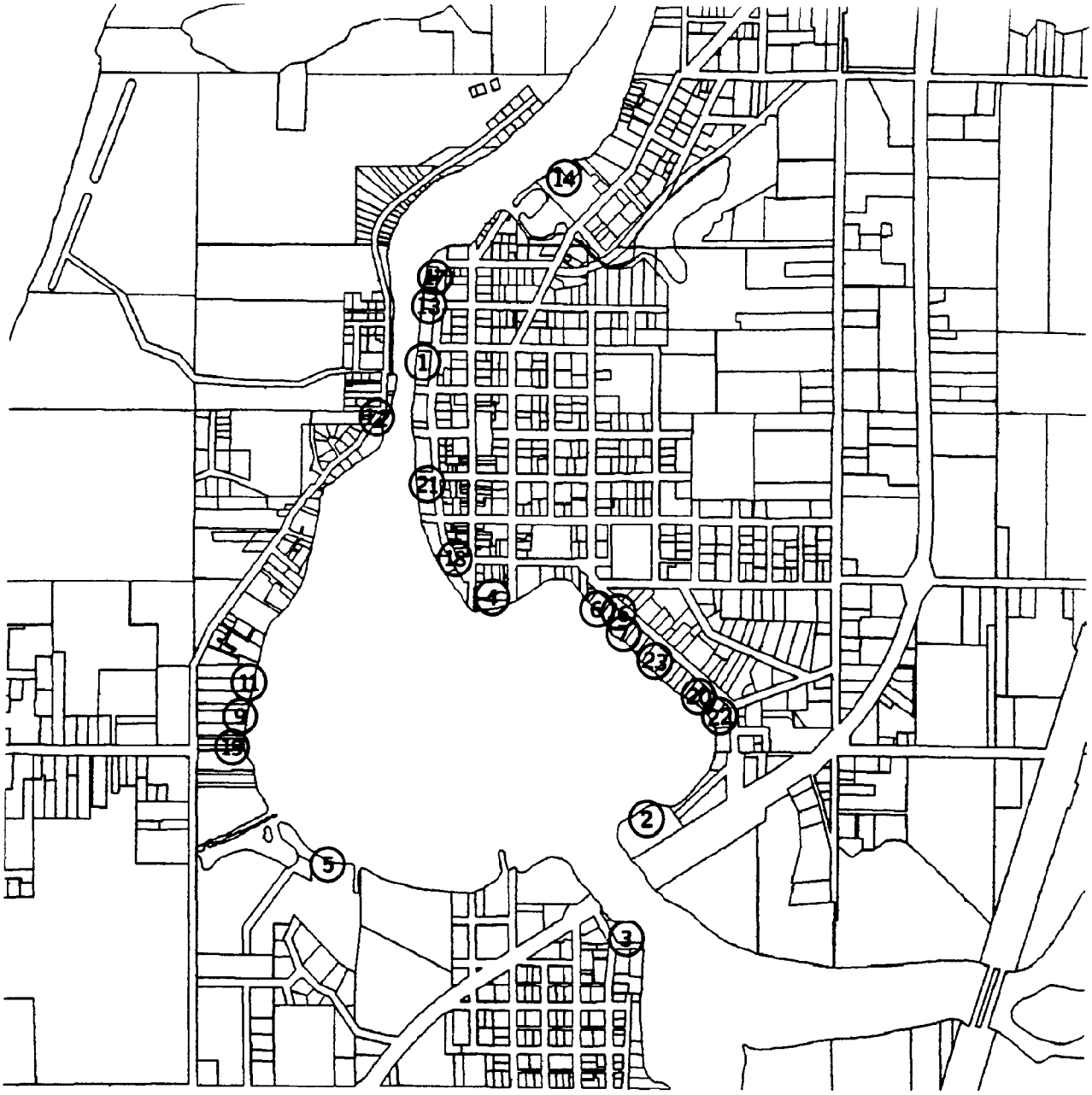
Tri-Community

1. Ship & Shore Motel/Boatel (0)
2. East Shore Harbor Club (64)
3. Pointe Pleasant Yacht Club (14)
4. Sergeant Marina (63)
5. Tower Marina (322)
6. Skippers Cove (12)
7. Water Side Condo (12)
8. Naughtins Marina (37)
9. Saugatuck Yacht Club (16)
10. Deep Harbor Deve, Inc. (46)
11. South Side Marina (24)
12. Casa Loma (11)
13. Gleasons Marina (9)
14. Saugatuck Yacht Co. (81)
15. Walkers Landing (22)
16. Windjammer Condo Association (12)
17. Schippas Marina (10)
18. Singapore Yacht Club (50)
19. West Shore Marine Inc. (57)
20. Bridges Of Saugatuck (8)
21. Coral Gables (50))
22. V & L Properties (10)
23. Back Bay Marina (12)
24. Southside Marina (24)

Total Number Of Permitted Marina Boat Slips In Area.....966

August 1989 DATA SOURCE:DNR

Planning & Zoning Center, Inc, Lansing, MI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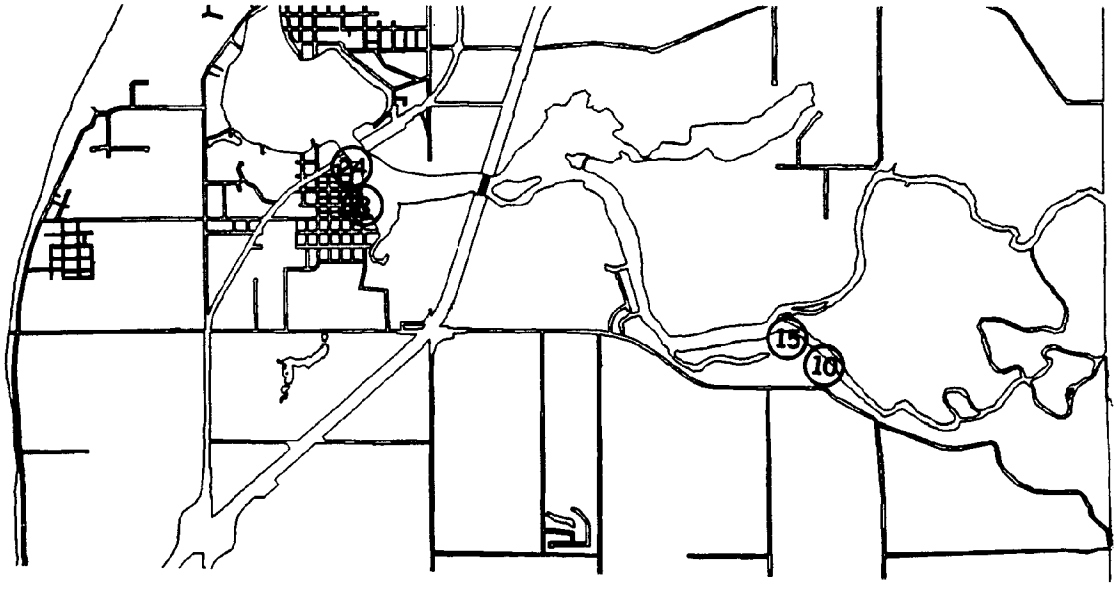
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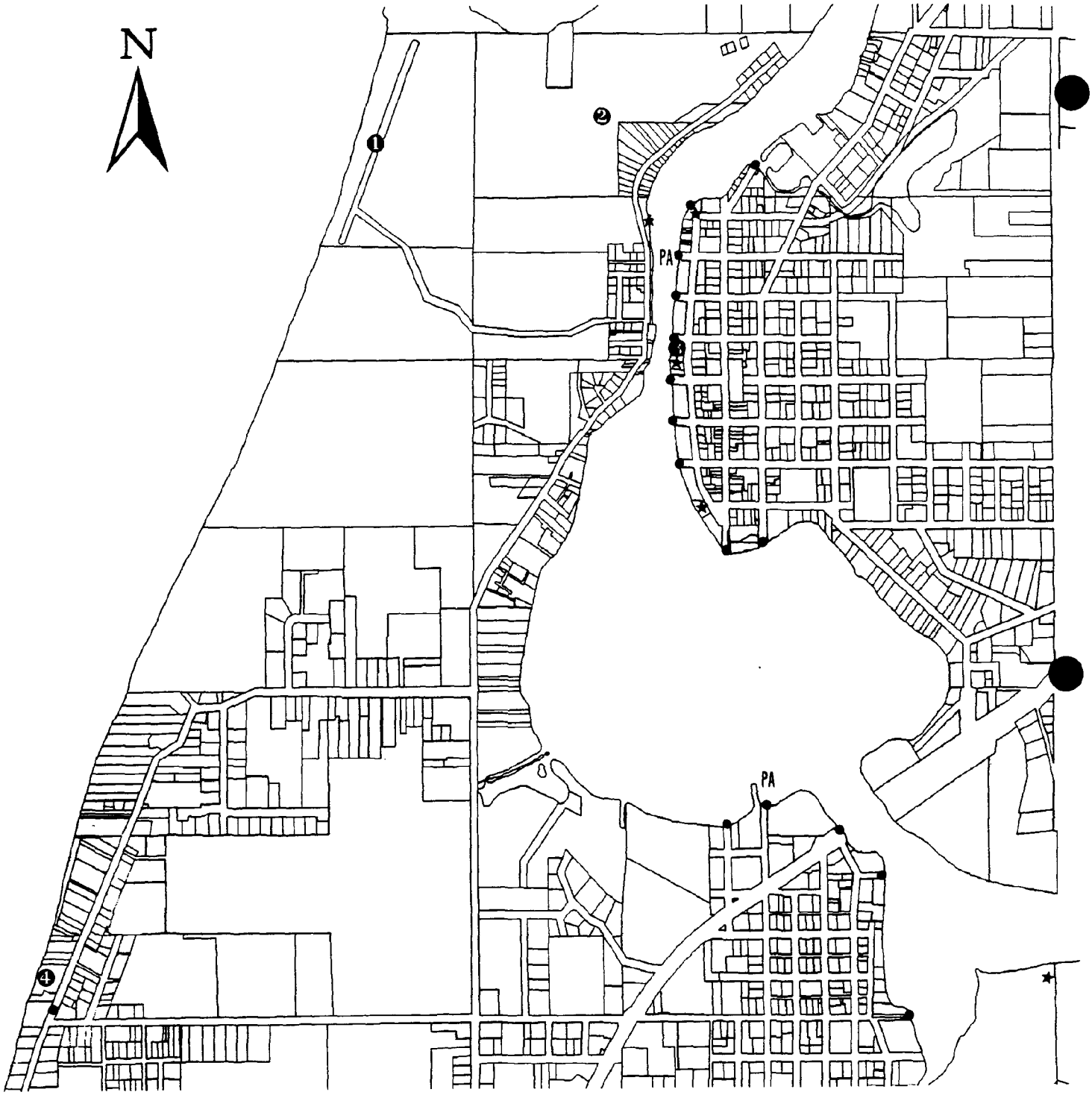


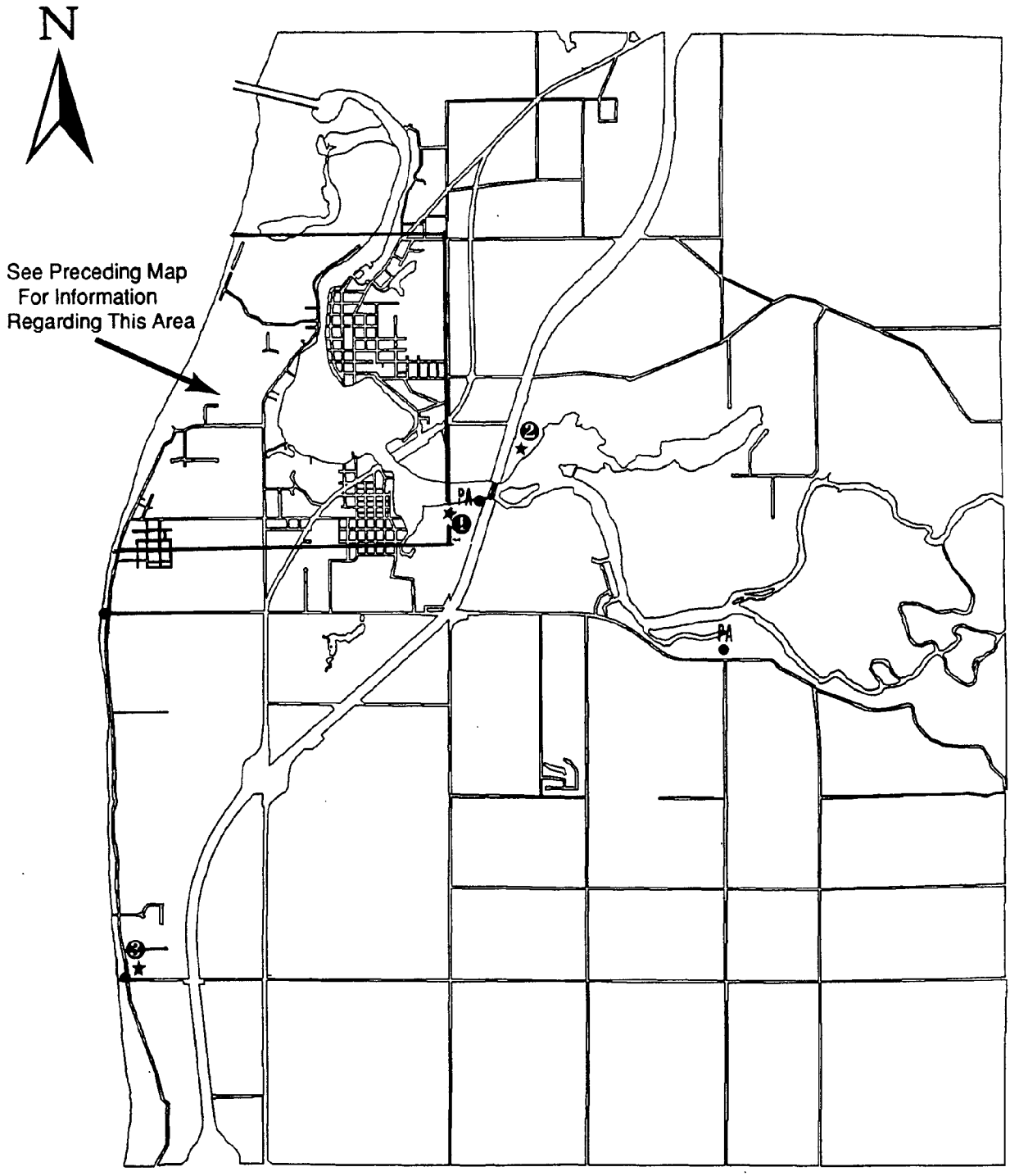
MAP 8.5 STREET ENDS/ PARKS

Tri-Community

- Street/Road Ends
- Parks
- PA Public Access

1) Oval Beach 2) Mount Baldhead 3) Chain Link Ferry 4) Douglas Beach

August 1989 DATA SOURCE: Planning & Zoning Center Inc, Lansing, MI



MAP 8.5 A STREET ENDS/ PARKS

Tri-Community

- Street/Road Ends
- PA Public Access
- Parks
  1) Shultz Park 2) River Bluff Park
  3) Sundown Park

August 1989 DATA SOURCE: Planning & Zoning Center Inc, Lansing, MI

Chapter 9

GROWTH AND DEVELOPMENT TRENDS

Growth and development trends reflect past settlement patterns in a community and provide a basis for estimating future development patterns. Growth rates are one aspect of change. These show which areas are growing at a faster rate. Residential construction permits show where most of this residential development is taking place and provide insight into residential preferences.

Land subdivision trends show the rate at which small lots are created. Rapid land subdivision carves up agricultural land and other open spaces for residential use and thus permanently transforms the rural character of an area. Inefficient land subdivision takes large amounts of potentially developable land out of use as long "bowling alley" lots or "flag" lots are created.

Population trends may be used to project future population, which is used to estimate future land use needs and settlement patterns in a community. And finally, a "build out" scenario may be created based upon the vacant or buildable sites in an area to get an idea what the area might look like if it were developed according to current zoning and use requirements. A more complete discussion of these issues is included below.

GROWTH RATES

During the past decade, the Township's population growth rate hit 40%, up from only 11% between 1960 and 1970. The growth rate in the Village declined from 35% to 17% over the same period, and the City went from a 19% growth rate in the 60's to only 6% in the 70's (see Table 9.1).

TABLE 9.1
RATE OF POPULATION CHANGE

COMMUNITY	1950-60	1960-70	1970-80
Saugatuck	20%	10%	6%
Saugatuck Twp.	34%	11%	40%
Douglas	35%	35%	17%
AREAWIDE	29%	16%	22%

The City's slower growth rate is due in part to a shrinking supply of vacant or developable land and in part to a higher proportion of seasonal residents and elderly in small households. The Township's large supply of land has translated into high growth rates. The Village continues to have a high rate of growth, and while this has declined from the higher growth rates experienced during the past two decades, it is increasing again in this decade. In terms of actual numbers, the areawide population nearly doubled between 1950 and 1980, when it reached a total of 3,780 people. The Township gained over half of these new residents.

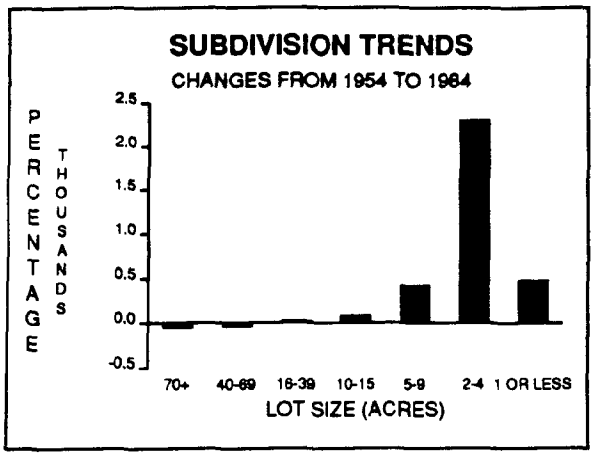
RESIDENTIAL CONSTRUCTION

Building permit data reveal development trends in each community since 1980. Most of Saugatuck's growth has taken place along the lakeshore in the form of multiple family condominiums. The City has seen the development of eight condominium projects containing 127 individual units since 1980. Single family residential building permits show that only 65 single family units were built in the City between 1970 and 1984 (after 1984 the census quit recording local construction data for Saugatuck).

Development in the Township has followed an opposite path. Since 1970 about 280 single family homes have been constructed in the Township and only 8 multiple family units. This residential development has been focused in three areas: along Lakeshore Drive; in the area west of I-96, north of 134th Street, and east of 64th Street; and around Silver Lake. The Village has also attracted multiple family housing development. Approximately 46 single family homes and 73 units of multiple family housing have been constructed in the Village since 1980, with most construction occurring south of Center Street along Lakeshore Drive; in the northwest corner of the Township; and north of Westshore St. and east of Ferry St.

Aside from new construction, the number of additions, extensions, and other improvements was high in each community.

FIGURE 9.1



LAND SUBDIVISION TRENDS

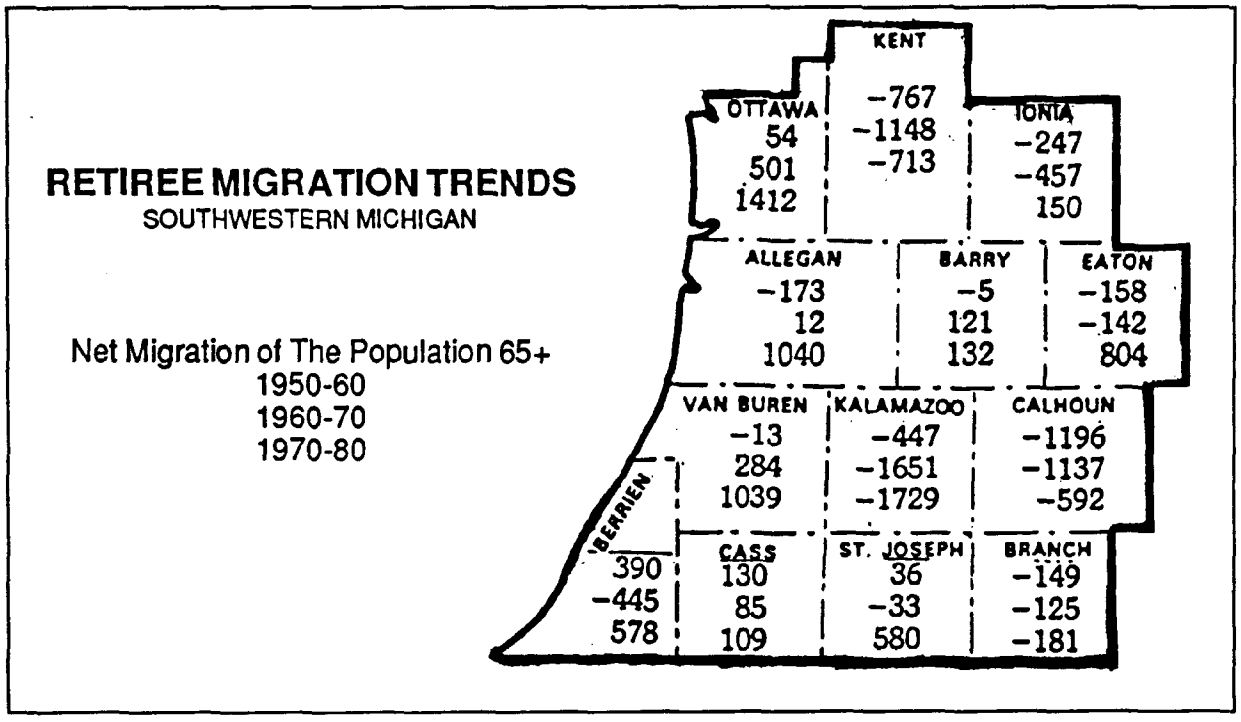
Land subdivision trends in the area are startling. Between 1954 and 1984, the number of lots in Saugatuck Township increased by nearly 60%, as large rural or agricultural parcels were carved into smaller lots. In 1954 the majority of lots were 20 acres or more, while in 1984 most lots fell into the 1-4 acre category (see Figure 9.1). Rapid subdivision of the Township's large rural parcels was stimulated by increasing demand for scenic rural living, along with the decreasing supply of land in the City which created an "overflow" effect. If the rapid subdivision of rural land continues unchecked, it will threaten the viability of the Township's agricultural base and increases demand for public services, especially sewer and water. Unfortunately, the areas involved and the lots created are so large that it will not be cost effective to provide any new public services in these areas for many years.

MIGRATION

Migration is a strong component of population growth throughout the County. Allegan County experienced net in-migration of 3.03% between 1983 and 1987– the eighteenth highest rate of in-migration in the state. Many of these immigrants are retirees. Figure 9.2 reveals migration patterns of senior citizens in the region over the past three decades. It reveals an explosion of retiree migration into Allegan County since 1970.

Between 1980 and 1985, the rate of retiree migration into the County continued to climb, reaching 2.17 compared to -0.26 for the state as a whole.

FIGURE 9.2

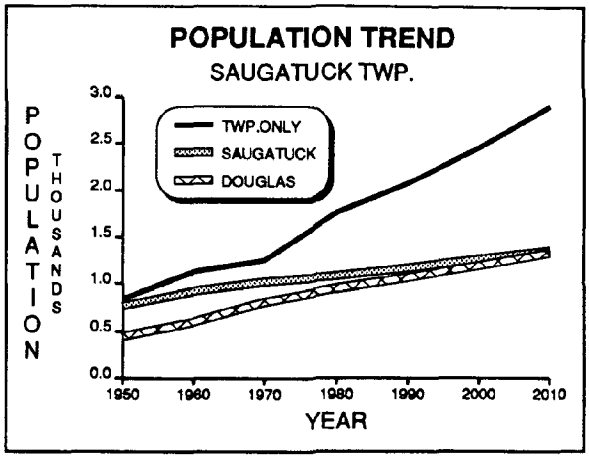


POPULATION PROJECTIONS

Future population for the tri-community area was projected based on the 1970 to 1980 population trend, rather than long term trends, due to the recent changes in the rate of population growth described above. A composite straight-line trend can be projected by applying logarithms to determine the ratio of change based on the 1970 to 1980 trend. Table 9.2 below illustrates these results:

Thus if current trends continue, the area can expect about 1800 more people in 2010 than in 1980. Sixty-four percent of this growth is expected to occur in the Township, with 21% in the Village, and 15% in the City. Due to the greater availability of land in the Village, it will eventually overtake the City in terms of overall population growth, as seen in Figure 9.3.

FIGURE 9.3



PROJECTED LAND USE NEEDS: 2010

To determine the impact of this population growth on residential land use, future population is translated into new households. This is done by applying the average household size for each community to the projected population in 2010 and then subtracting 1980 households. The result is an estimated 739 new households in the tri-community area by 2010. These results are shown in Table 9.3.

Future demand for land by these new households may be estimated by looking at land subdivision trends and current settlement patterns or zoned densities.

While most residential development in the Township will fall into the low density category (2 units per acre), residential land in the Village is zoned predominantly for medium density residential development (4 to 5 units per acre). The City's development patterns are dense due to land scarcity, although zoned densities are roughly equivalent to those of the Village.

If present trends continue, over half of the 739 new households will settle in low density

TABLE 9.2
PROJECTED POPULATION
1970-1980 TREND

COMMUNITY	1970	1980	1990	2000	2010
Saugatuck	1,022	1,079	1,163	1,254	1,352
Saugatuck Township	1,254	1,753	2,074	2,454	2,904
Douglas	813	948	1,061	1,187	1,328
AREAWIDE	3,089	3,780	4,298	4,895	5,584

TABLE 9.3
PROJECTED NUMBER OF HOUSEHOLDS

COMMUNITY	POP. 2010	HH SIZE	# HHs	1980 HHs	NEW HHs
Saugatuck	1,352	2.00	676	537	139
Saugatuck Township	2,904	2.69	1,080	633	447
Douglas	1,328	2.44	544	391	153
AREAWIDE	5,584		2,300	1,561	739

TABLE 9.4
PERCENTAGE OF POPULATION BY DENSITY TYPE

COMMUNITY	LOW	MEDIUM	HIGH
Saugatuck Twp.	80%	10%	10%
Saugatuck	40%	40%	20%
Douglas	5%	70%	25%

TABLE 9.5
NEW HOUSEHOLDS BY DENSITY TYPE

	HOUSEHOLDS			
COMMUNITY	LOW	MED.	HIGH	TOTAL
Saugatuck	56	56	28	139
Douglas	8	107	38	153
Saugatuck Twp.	358	45	45	447
AREAWIDE	421	207	111	739

Totals are based on unrounded figures.

TABLE 9.6
FUTURE RESIDENTIAL LAND NEEDS

	ACREAGE*			
COMMUNITY	LOW	MED.	HIGH	TOTAL
Saugatuck	24	14	3	41
Douglas	4	26	4	34
Saugatuck Twp.	205	13	10	228
AREAWIDE	234	53	17	303

*times 1.25 (20% allowance for rights-of-way)
Totals are based on unrounded figures.

TABLE 9.7
AVAILABLE ACREAGE BY LAND USE TYPE

	ACREAGE		
COMMUNITY	COMM.	IND.	RES.
Saugatuck	3	0	135
Douglas	33	49	197
Saugatuck Twp.	155	22	5,950
TOTAL ACRES	191	71	6,282

TABLE 9.8
POPULATION 2010: BUILD OUT SCENARIO UNDER ZONING IN EFFECT

COMMUNITY	ADDITIONAL HOUSEHOLDS	AVERAGE HH SIZE	ADDITIONAL POPULATION	PRESENT POPULATION	TOTAL POPULATION
Saugatuck	330	2.00	660	1,079	1,739
Douglas	1,139	2.44	2,779	948	3,727
Saugatuck Twp.	16,413	2.69	44,151	1,753	45,904
AREAWIDE	17,882		47,590	3,780	51,370

residential areas, translating into the conversion of 234 acres of land. Fifty-three acres would be transformed into medium density residential use, and about 17 acres would be developed at higher densities as apartments of clustered units. Tables 9.4 to 9.6 show this projection of current trends.

BUILD OUT SCENARIO

The projections shown above are only estimates based on current trends. Yet any number of events could alter these trends. For example, provision of sewer and water service in to the Township could intensify the type, density, and rate of growth that occurs there. The location of a new industry in the Village could attract new families into the area. And Saugatuck's attraction as a center for tourism could continue to grow, fostering greater in-migration of retirees and others searching for an alternative lifestyle.

If the area were developed to its full capacity, what would it look like? This exercise, called a "build out" scenario, provides an estimate of the buildable capacity of the City and Village under currently zoned densities, with a rough estimate for the Township. Acres were estimated based on vacant or developable land (not including existing agricultural areas) in each community by zoned use and density/minimum lot size. These results are shown in Table 9.7.

This information can be translated into a population estimate by first dividing the developable acres by the minimum lot size in that zoning district to determine the number of households which could occupy the parcel(s). This reveals the area capacity for about 17,882

new households. The new households are then multiplied by the average household size for that community to derive a population estimate.

Thus, under a build out scenario, the area could accommodate about 47,590 new residents, bringing the total tri-community area population to over 50,000 people (see Table 9.8). If land currently being farmed were added to these estimates, the total would be considerably higher.

POLICY IMPLICATIONS

If development were to proceed under existing zoning, as reflected in the build out scenario, then the tri-community area would gradually turn into a suburban enclave, complete with a long commercial strip from one end of Blue Star Highway to another. This is problematic in light of the 1988 Public Opinion Survey which revealed the vast majority of respondents have the following preferences:

- maintain the scenic, small town/rural character of the area;
- no strip commercial development;
- small commercial shopping centers off of major roads;
- preserve open space along the waterfront;
- protect the environment by prohibiting development of dunes and wetlands.

These results suggest the need to reevaluate current zoning and regulatory policy. Policies to achieve the public's development objectives are included in Chapter 1, and the Future Land Use Plan in Chapter 10. Regulatory tools, such as zoning, subdivision regulations, and site plan review will be amended to insure consistency with this plan and the comprehensive plan of each jurisdiction.

Chapter 10

FUTURE LAND USE

Good land use planning is essential to the future quality of life of the tri-community area. Future land use arrangements are difficult to predict and guide to achieve desired results. A future land use map and plan embodies local land use goals, objectives, and policies and provides one land use scenario which a community may use as a physical guide. Goals and policies, in turn, provide the policy guide for land use and development decisions.

The future land use map accompanying this chapter is the composite of future land use maps in the Saugatuck, Douglas, and Saugatuck Township Comprehensive Plans (see Map 10.1). It seeks to anticipate community land use needs for 20-30 years. These future land use arrangements are based on information in this plan and the individual community plans, with an emphasis on border issues. Proposed future land use is based on analysis of existing land use, impacts of area trends, projected future land uses needs if current trends continue, and the relationship of land use activities to the natural resource base. All proposals are intended to be consistent with the goals, objectives, and policies presented in Chapter 1 (which were created with substantial public input).

Many factors could intervene that would require reevaluation of certain arrangements or the entire plan. For example, if a large mixed use development (e.g. 1000 single family units plus some commercial) were built or if a large single employer would enter the scene (e.g. an auto manufacturing facility) then land use arrangements in this plan must be reexamined.

A few key planning and design principles were used to evaluate alternative land use arrangements. With slightly different trends and projections, application of the same principles could lead to different conclusions and different land use arrangements. However, these differences would be related to the amount of particular land uses more than their location or relative relationships to adjoining uses. Likewise, there are many areas in which alternative land use arrangements would be satisfactory providing they remained in keeping with these basic planning principles. Consequently, it is crucial that this plan be regularly reviewed and updated at least once each five years to insure its continued relevance in planning for future land use needs.

PLANNING AND DESIGN PRINCIPLES

Future land use arrangements were determined based on compatibility with surrounding land uses, natural capacity of the land for particular uses, and necessary infrastructure improvements. These land use arrangements can and should be refined into timed and sequenced development areas, once some key decisions concerning the provision of sewer and water services are made.

The following planning and design principles are the technical foundation (or rationale) in support of the proposed land use arrangements graphically depicted on Map 10.1. Map 10.1 depicts generalized land use, which is carried out through mapping of zoning districts. The planning principles listed above are implemented primarily through zoning regulations and applied during the site plan review process. These principles are consistent with the goals, objectives, and policies in Chapter 1 and should remain the basis for reviewing any subsequent changes to the proposed Future Land Use Map.

These planning principles are:

- Protection of Public Health and Safety
- Conservation of Natural Resources
- Environmental Protection
- Minimizing Public Service Costs
- Efficiency and Convenience in Meeting Land Use Needs
- Insuring Compatibility Between Land Uses (Nuisance Prevention)

Often a land use decision based on one principle also advances another. For example, prevention of filling or construction on floodplains protects public health and safety, conserves natural resources, protects the environment, and minimizes public service costs (especially for relief efforts). It may also create a valuable buffer or open space between uses and hence help insure compatibility.

Protection of Public Health and Safety

Key situations in which this principle is applied include:

- avoiding construction in areas which present natural hazards. In the tri-community area these include areas too close to the Lake Michigan shoreline at high risk from erosion from coastal wave action; floodplains; saturated soils and wetlands; soils not well suited for support of foundations or safe disposal of septic wastes; and steep slopes.
- avoiding construction where an intensive land use activity is not adequately serviced by all weather public access;
- avoiding construction in areas with soils contaminated by hazardous and/or toxic waste.

Conservation of Natural Resources

Failure to consciously protect nonrenewable natural resources exposes a community to unbridled destruction of those resources which are the foundation for an area's character and quality of life. Conservation of natural resources usually focuses on: land, water, minerals, certain soils (such as prime farmland), wetlands, sand dunes, areas supporting an abundance and diversity of wildlife, and unique forested lands. Areas where the land and the water meet are the most important. Indiscriminate land subdivision frequently reduces the size or alters the shape of land, thereby compromising the resource value and production potential of those lands. This occurs frequently in prime agricultural areas and once lost, these lands may never be reclaimed for food production purposes.

If widespread, such losses can dramatically alter the character of an area. These changes reflect lost opportunities— usually higher public service costs and gradual degradation of an area's tourism potential.

Environmental Protection

This principle aims at preventing pollution, impairment, or destruction of the environment. While there is considerable overlap with natural resource conservation issues, environmental protection measures focus primarily on air and water quality, and the impact of activities where the water meets the land. Environmental quality is best preserved by planning for appropriate land use activities in and near sensitive environmental areas, and managing development accordingly.

Minimizing Public Service Costs

Public service costs may be minimized by encouraging new land uses where existing infrastructure is not used to capacity and where expansion can be most economically supplied. This also results in compact settlement patterns, prevents sprawl, and if favored by taxpayers because it results in the lowest public service costs both for construction and maintenance.

Efficiency and Convenience in Meeting Land Use Needs

To be efficient in meeting future land use needs communities must make better use of existing infrastructure and plan for infrastructure expansion in a manner which keeps the costs low and does not create huge areas where infrastructure will not be fully used for many years. It also means locating future land uses so that travel between activity centers is minimized. For example: building schools, neighborhood commercial activities, day care facilities, fire and police protection, etc. near the residential areas they serve. This saves municipal costs on initial road construction and future maintenance, reduces everyone's gasoline expenditures, and conserves fossil fuel supplies for future use.

Insuring Compatibility Between Land Uses

A central objective of land use planning is to locate future land uses so that they are compatible with one another. This prevents future nuisance situations between adjacent land uses, such as loud sound, ground vibrations, dust, bright lights, restricted air flow, shadows, odors, traffic, and similar impacts. A few obvious examples of incompatible land uses include factories, drive-in establishments, or auto repair facilities adjacent to single family homes. With proper planning, land uses can be tiered to buffer impacts and orderly development can occur. Examples include: commercial service establishments on highway frontage with backlot wholesale, storage, or office uses abutting a residential area; or single family residential uses adjacent to park and recreation areas.

DEVELOPMENT AND CONSERVATION AREAS

The future land use map for the tri-community area was prepared by first identifying conservation areas and then examining the suitability of remaining lands for various development purposes. Conservation areas fall into

two basic types: agricultural resources and other natural resources. Nonrenewable agricultural resources are limited to prime agricultural soils which are uniquely suited for crop production and require the least expenditure of energy and chemicals per acre of crop produced. Prime farmland may not be artificially created and is a rapidly diminishing natural resource. While Michigan has an abundance of farmland, prime farmland is in much shorter supply. Therefore, this plan recommends preservation of prime agricultural lands for agricultural production purposes.

Other natural resource areas were used as the basis for establishing conservation areas. These include sand dunes, wetlands, floodplains, streams, creeks and drains, the Kalamazoo River, Lake Kalamazoo, and areas at high risk of erosion along Lake Michigan. These areas are proposed for very limited future development in keeping with their fragility and importance in buffering Lake Michigan storms, filtering and storing water during periods of flooding, draining stormwater from land, providing habitat for a wide range of plants and animals, and for their wide ranging open space values. Destroying these resources would destroy the essential qualities which continue to attract residents and tourists to the area. If conserved and wisely used, waterways and farms will become a natural greenbelt system that continues to enhance the area for years to come. Local zoning ordinances should be amended to include conservation practices.

ENTRY POINTS

There are four major entry points into the three communities. Each of these go through Saugatuck Township. They are:

- from Lake Michigan on the Kalamazoo River
- from I-196 at Blue Star Highway (north) near 136th Ave.
- from I-196 at M-89 (south end)
- from Fennville on M-89

In addition there are two entry points specific to Saugatuck and two to Douglas. These are:

- from Blue Star Highway onto Washington Road/Holland St.
- from Blue Star Highway at the Kalamazoo River bridge onto Lake Street (north end)
- from Blue Star Highway at the Kalamazoo River bridge (south end)
- from I-196 at Blue Star Highway (south end of Douglas just south of 129th St.)

At the present time, only the entry points flanking the Kalamazoo River Bridge on Blue Star Highway and the entry from Lake Michigan provide an aesthetic and inviting entry into the tri-community area. The entry along North Blue Star Highway is especially bad. Incompatible land uses, poorly maintained properties, buildings too close to the road, poorly marked ingress and egress to commercial establishments, poor road conditions, a proliferation of off-premises advertising signs, and an unattractive Saugatuck entry sign and intersection greet the newcomer or tourist. Less severe characteristics surround the southern entry to Douglas from I-196. The remaining entry points don't leave a bad impression, they simply leave no impression at all. The public opinion surveys also reflected citizen concern about the appearance of properties along Blue Star Highway. The situation is further harmed by signs along I-196 which fail to inform southbound travelers at exit # 41 that they can access Douglas (only Saugatuck is mentioned) or along northbound I-196 at exit # 36 which tell travelers that they can access Ganges, but not Saugatuck and Douglas.

If left unresolved could have severe consequences for the area's competitiveness with other resort communities. First impressions are very important in the tourism industry. Attractive entryways help entice tourists into the community and leave a positive impression to encourage future visits. The entry points represent the community and should reflect those qualities which make the area special. Fortunately, these design problems are easily overcome, and with only minimum public investment. A special effort to develop alternatives for improving the entry points should be initiated. In addition, new land developments in these areas (or changes to existing ones) need to be carefully reviewed to insure that changes enhance (and do not further detract from) the positive image and character that should exist in these areas.

RESIDENTIAL

Residential use will continue to be the predominant developed land use in the tri-community area. The existing residential areas in Saugatuck and Douglas provide a rich and interesting mix of housing sizes, styles and ages. The challenge in the next twenty years will be maintaining the older housing stock and ensur-

ing that the growing ranks of part-time residents and absentee owners does not result in housing deterioration. Equally important will be efforts to blend new development with the older character of existing land uses. Douglas has considerable potential for new housing development and has the greatest opportunity of the three jurisdictions to encourage the construction of affordable housing, due to available land that is suited for basement construction and the potential to extend sewer and water efficiently.

If the Saugatuck School District is to survive with the same breadth of programming and quality it has today, then affordable housing oriented to families must be available. In terms of new construction, affordable housing typically means homes of about 1,000-1,200 square feet, on smaller than average lots, and priced at not more than $70,000. Some public incentives or "write-downs" are typically necessary to alter one of these basic elements. Some housing meeting this definition is being built on large lots in the rural parts of the Township, but not in any significant quantities.

A unique opportunity exists for the area communities to take the initiative in providing affordable housing. If plans proceed to acquire the property commonly known as the Jager property, for a new water intake plant, part of the parcel could also be used for affordable housing. A design competition or specially hired site plan could be arranged to provide for affordable housing in this area. The site plan would be required to tier houses by size and type to blend with existing homes along Lake Shore Drive. The treatment plant could be buffered from the residential area and the land costs paid back through development.

New residential construction in the Township should be encouraged on soils suitable for basements and with soils capable of safe septic disposal. The best locations for concentrations of such housing are north of Saugatuck and southwest of Douglas. No new residential subdivisions should be developed in the agricultural areas of the Township during the planning period.

Within Saugatuck, there will be pressure to remove existing homes along the waterfront and replace with higher density condominiums. Condominium development that greatly diminishes the public view of the waterfront should not be permitted, especially along Lake St. Additionally, the height of new construction should not exceed 25 feet along the waterfront. It would be better to place the taller, higher density development back onto "the hill" and leave the shoreline open.

COMMERCIAL

There will be three primary commercial centers within the tri-community area. Downtown Saugatuck will continue to serve as the major center for commercial tourist activities. This should be encouraged. The downtown area should not be permitted to expand outside the area presently zoned for downtown commercial use. Appropriate measures should be adopted to mitigate impacts of the city center on adjoining residential areas.

The shopping area in Douglas along Blue Star and extending down to the freeway interchange should be encouraged to continue to (re)develop with a primary focus on local commercial services and a secondary focus on highway related uses near the interchange. This area needs curbs and gutters and right turn lanes. The buildings and parking on many properties are poorly designed, so any opportunity to improve design, safety, and function should be seized. Additional tourist-oriented businesses should be discouraged in this area, and instead redirected to downtown Saugatuck and the original Douglas Village Center.

The present commercial zoning of Blue Star south of the Douglas interchange should be eliminated except for small areas representing existing commercial establishments at the freeway and M-89 interchanges. Land use analysis reveals that this commercial land is far in excess of projected need within the planning period. It cannot be cost-effectively serviced with sewer and water, nor can it be adequately controlled with the existing zoning in place. It will, over time, only detract from more appropriate commercial areas in Saugatuck, Douglas and along north Blue Star Highway, and create an extended commercial strip.

The area between Saugatuck, the North Blue Star Highway, and I-196 freeway interchange, which is presently developed for a variety of land uses, should be encouraged to develop for highway service uses through more refined zoning regulations than are presently in place. No further warehousing, boat storage or repair, mini-storage, or similar land uses should be permitted along the frontage. Instead, motels, auto service centers, restaurants, and similar highway service establishments should be allowed. General business uses like shoe stores, banks, hardware stores, etc., should encour-

aged in the general business area in Douglas and not in interchange areas. Allowing general business establishments to spread results increase the number and length of trips for local residents, causes a corresponding waste of fossil fuels, and increases the potential for individual businesses to fail, since the "critical mass" of general business opportunities in a single location is not present.

INDUSTRIAL

Neither the Haworth facility in Douglas nor the Rich Products fruit processing facilities in Saugatuck represent the best use of those properties in the long run (which is commercial). However, they are well-maintained local companies which are major employers, and without a public effort to relocate those firms in comparable facilities elsewhere, the local comprehensive plans will continue to recognize them. At the same time, the small industrial area along Blue Star in Douglas should continue to be developed for light industrial activities. If a large light industrial concern, or industrial office facility were to be interested in a location in the area, the land between I-196 and 63rd St. at the northern freeway interchange should be considered. While there are some limitations to development of that land, it could probably be served with sewer and water efficiently. However, road improvements would be necessary to bring roads up to all weather standards. If a waterfront location were desired for use by a new industrial concern, it should be considered only if it can be efficiently provided with public services, there is no public loss of access to the waterfront, and the activity is waterfront dependent. Other scattered site locations should not be considered for new industrial activity.

Industrial parks are an excellent way to manage future industrial growth. Although they have broad, long-term public benefits (including lower service costs, fewer nuisance impacts, better design, and less environmental impact), industrial parks require a large short-term investment in land and public services. Therefore, it is crucial that studies be conducted to insure that the park could be competitive with others in the area. The Michigan Department of Commerce maintains an inventory of industrial parks through the Statewide Site Network. Only certified industrial parks will be included on this list, and thereby be able to effectively compete for new industries. To be certified, industrial parks must be at least 40 acres, a site plan for the park must be approved, soil borings must be conducted, infrastructure must be completed, utilities must be installed 300 feet into the park, and protective covenants must be established.

AGRICULTURE

Agriculture is a major contributor to the economy and rural character of the tri-community area. It provides a contrast with developed areas of Saugatuck and Douglas. The south central portion of the Township contains thousands of acres of prime agricultural soils, is characterized by extensive farming of those soils, and much of this land is enrolled in PA 116, the state Farmland and Open Space Protection program (see Map 4.10).

The size of existing farms, the location of these lands away from the immediate path of development, the lack of existing or planned sewer and water services, the lack of need to convert prime farmland to nonagricultural use, and the broader public purpose of preserving prime farmland for present and future food production strongly argues in favor of retaining these lands in agricultural production for the entire planning period and beyond. Land divisions and development for nonagricultural purposes should not be permitted in this area.

The adjoining lands on the east and to the north of the prime farmland soils (and south of the river) are also characterized by a large number of farms, although the average lot and farm sizes are smaller. Scattered residential development on large lots is also taking place. The soils are suitable for limited residential development, but agricultural uses should be the primary land use in these areas. No plans are underway to provide sewer and water to this area within the planning period and it would not be cost effective to do so. Consequently, development density should remain low.

Another future agricultural use issue goes beyond where agricultural areas should be located and focuses on the character of the agricultural area and its relationship with the regional economy. Agriculture in the tri-community area has prospered primarily through cultivation of fruit, grain crops, hay and alfalfa, and in the case of nurseries, plants. These activities take advantage of the area's prime soils. Efforts are also underway to attract tourists to the larger fruit farms to watch cider-making, eat freshly baked fruit products, and pick fruit—

thus capitalizing on economic opportunities presented by the area's tourism industry.

These issues raise concern over the compatibility of high density livestock and poultry operations with the character of agricultural areas and the impact of the noxious odors on tourism—which is a central component of the region's economy.

High density livestock operations also pose substantial health and safety questions. This is a strong consideration due to the nature of the soils in the agricultural areas and their proximity to extensive wetlands and water bodies. It is also relevant that groundwater is the sole source of potable water in the agricultural area. Based on these economic and environmental considerations, this planning area is not an appropriate location for high density livestock operations.

WATERFRONT

Most of the nonwetland shoreline in the City and Village have been developed. The balance is in private ownership. With the exception of the condominium properties and the large Rich Products office building on Lake Street, these parcels are developed at a scale and density that greatly contributes to the ambience and character of the area. Much of the City's downtown waterfront has an excellent system of interconnected public and private walkways providing shoreline access. This magnifies the attraction of Saugatuck as a tourist haven. But public boat access is more limited, and parking for car and boat trailers is scarce. Private marina space is also limited and expensive.

Douglas has few public access sites, even though half of the Douglas waterfront is still undeveloped. Access has not been fully developed on public lands to take advantage of the recreational potential. For example, steps should be taken soon to preserve the lovely vista along Blue Star Highway near the bridge in Douglas for future generations.

The public opinion survey reflected little support for additional marina development in the Village either by public or private parties. But over 80% of the respondents favored public acquisition of underdeveloped waterfront lands in Douglas. Thus, the waterfront areas in Saugatuck and Douglas should be maintained in present uses except where opportunities exist to acquire more public access sites. Additional marina development should be limited, especially on Lake Kalamazoo, due to congestion during summer weekends.

Public waterfront properties in Douglas should be developed to enhance their recreational potential. The Kewatin stands as a symbol of the area's shipping history—a local historical landmark. It should not be allowed to fall into disrepair. If the Kewatin cannot be adequately maintained in the future, however, then it should be removed so it does not become a blight on the shoreline. Mooring of other large vessels along the Lake Kalamazoo shoreline should be prohibited, as this would block the limited public access to the waterfront.

Areas along the north shore of the Kalamazoo River between Blue Star and I-196 should remain in their present natural state. Public parcels along the west end of the south shore should be improved for additional recreational use. A limited number of new boat slips would also be appropriate. Additional marina development should not be allowed east of I-196, nor should any other intensive shoreline development be allowed in this area within the planning period.

New efforts should be initiated to undertake annual river cleanup campaigns. The Kalamazoo River is the principal natural resource and a scenic amenity, but it has been polluted by activities upstream. More efforts are needed upstream to improve water quality downstream. More local efforts should also be initiated to further enhance the recreational potential of Lake Kalamazoo and the Kalamazoo River.

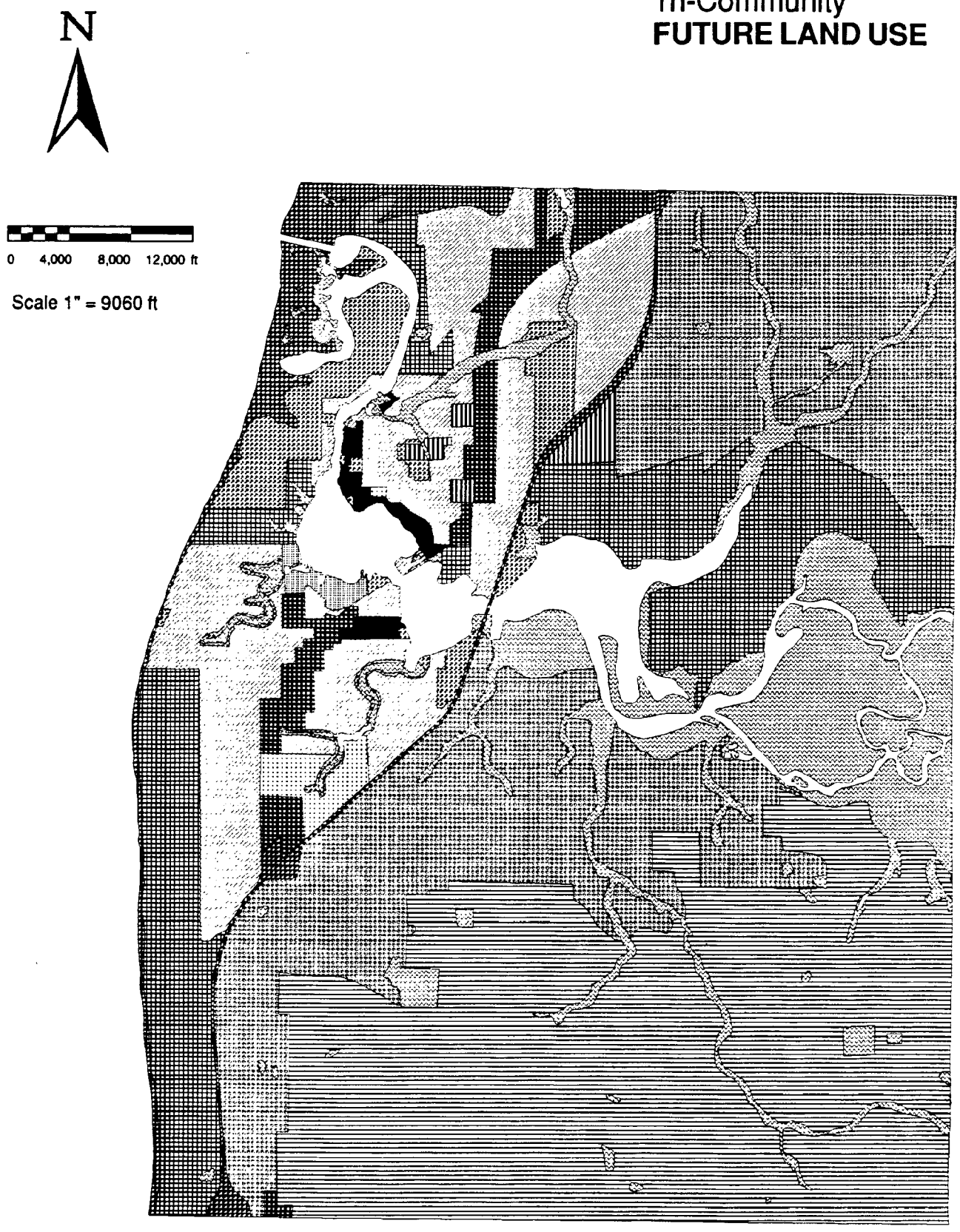
MAP 10.1 FUTURE LAND USE

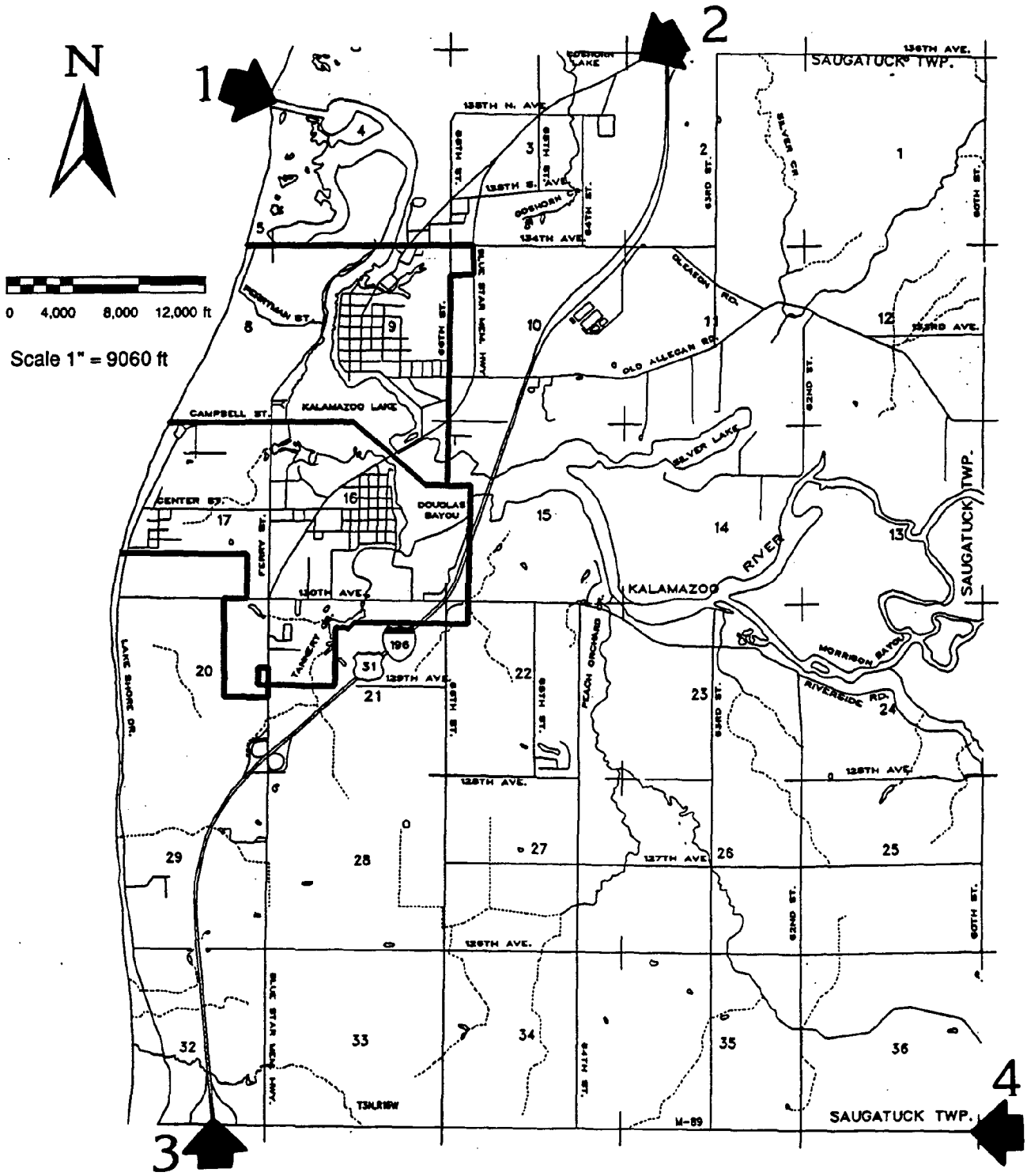
Tri-Community

August 1989

Planning & Zoning Center, Inc, Lansing, MI

Tri-Community
FUTURE LAND USE





MAP 10.2 MAJOR ENTRY POINTS

Tri-Community

Entry Points

August 1989 DATA SOURCE: Planning & Zoning Center Inc, Lansing, MI

Chapter 11

INTERGOVERNMENTAL COOPERATION

This plan synthesizes the key information that is found in each of the individual plans of Saugatuck, Douglas and Saugatuck Township. In addition, it makes a special effort to present an analysis and recommendations concerning joint environmental and waterfront issues (see Chapter 8). However, none of the elements of this regional plan can be implemented without the cooperation and action of the individual jurisdictions within which the land affected by specific proposals or policies lay. Obviously, this presents significant potential for failure, especially in light of what could occur if there were only a single jurisdiction. However, the reality is that three separate jurisdictions control land use in the tri-county area and this situation is not likely to change in the near future.

As a result, it is recommended that the Joint Planning Committee (3 representatives from each community) established to guide the development of this plan be maintained as a coordinating and oversight body to insure that the proposals in this plan are implemented and that the actions of single entity contrary to this plan do not go unchallenged. If special committees, such as the Joint Waterfront Committee are also continued, they should be formally included in the arrangement, otherwise, their functions should be absorbed by the Joint Planning Committee. The Joint Committee should meet at least quarterly or at the call of the chairperson and report its minutes promptly to the governing body of each member jurisdiction.

As there is no formal mechanism for adoption of this regional plan (although Act 281 of 1945, the Regional Planning Act could be used for this purpose, but it would first require the formal creation of a regional planning commission) there is also none for its amendment. However, as long as it is formally accepted by the individual planning commissions and legislative bodies as consistent with the individual plans prepared as a part of this process, then at least from the start it will have some credibility. Its future credibility however, will depend on whether the subsequent actions of individual local governments are consistent with it. It could and should be modified as necessary, simply by the concurrence of proposed changes by each Planning Commission and governing body.

In the end however, since the individual communities will carry the primary burden of implementation, it is important to review the basic tools they have to undertake the substantial tasks laid out in this plan. In addition to regulatory tools and facilities management tools, there are also a host of funding sources that may be available to assist with particular projects. It is almost always safe to say that joint proposals involving two or more jurisdictions have a greater chance of receiving funding in competitive grant situations than either of the communities alone. As a result, the tri-communities are encouraged to work together in their efforts to secure financial assistance to implement the proposals in this plan. Chapter 12 reviews the options that are known to be available.

The completion of this areawide plan should be considered a milestone in the intergovernmental relations between Saugatuck, Douglas and Saugatuck Township. However, it should also be viewed as only the end of phase one in an ongoing planning process. Constantly changing social and economic trends will require periodic updating or amendments to this plan. The interval at which these revisions should be made will largely be determined by the intensity and quantity of change within the tri-community area. Revisions to the future land use map should be made whenever it no longer serves as a useful guide and support for land use decision making. The same is true of the policies portion of the plan. A generally accepted practice is to undertake a thorough update at least once every 5 years.

By itself this plan has no legal regulatory force but rather, serves as a foundation upon which regulatory measures are based. The two primary land use regulatory documents which are also the principal means of implementation of this plan, are the zoning ordinance and subdivision control regulations. These regulatory instruments are described in the next chapter.

Ongoing efforts to consolidate additional public services such as police and possibly public works should be continued where mutually

beneficial. Likewise, efforts to fully include the Township as a partner in the Kalamazoo Lake Sewer and Water Authority should be aggressively pursued as should the conversion of the authority into a more independent authority. This would help to take it outside of political influence in day to day administration.

Likewise, at some point, additional consideration should be given to consolidation of all governmental services into a single unit of government. A formal analysis of costs and benefits of consolidation may reveal the benefit of this alternative. See the additional thoughts in this regard in Chapter 12.

This plan was created in the spirit of cooperation and mutual benefit, its implementation depends upon more of the same– tenfold.

Chapter 12

STRATEGIES FOR IMPLEMENTATION

PRIMARY IMPLEMENTATION TOOLS

Relationship to Zoning

All three communities have a zoning ordinance adopted pursuant to the Michigan zoning enabling acts. The intent of these ordinances is to regulate the use of land to provide for orderly growth and development and allow the integration of land uses without creating nuisances. The zoning ordinance defines land use districts and regulates height, bulk use, area of lot to be covered, and open space to be preserved within each district.

Because the zoning ordinance should be based upon the analysis contained in the comprehensive plan, present zoning ordinances should be revised to reflect this plan's new goals, policies, and future land use proposals.

In connection with the administration of the zoning ordinance, each community should continue to maintain a formal site plan review process. Through this process applicants, in order to obtain zoning approval, must submit plans which clearly indicate how their development proposals will change and affect both the parcel of land being developed as well as surrounding properties.

It is recommended that all commercial and industrial development, as well as all subdivisions, multiple family housing, planned unit developments, and other development requiring more than five (5) parking spaces, undergo site plan review.

Relationship To Plans/Zoning In Adjacent Jurisdictions

The land use proposals in this plan were carefully prepared with an eye to ensuring compatibility with those of the adjoining communities, and in the case of Saugatuck Township, with adjoining townships. Equal care should be taken in the future to seek and receive comment on proposals that are on or near a border from an adjoining jurisdiction. Failure to do so will only insure future conflict over adjacent land uses, or the provision of new public services.

Relationship to Subdivision Regulations

Saugatuck Township should consider the adoption of subdivision regulations. The enabling legislation that permits the enactment of such regulations is Public Act 288 of 1967, also known as the Subdivision Control Act of 1967. This Act allows a community to set requirements and design standards for streets, blocks, lots, curbs, sidewalks, open spaces, easements, public utilities, and other associated subdivision improvements. With the implementation of a subdivision ordinance there would be added assurance that development would occur in an orderly manner.

The Village of Douglas and City of Saugatuck should amend their subdivision and zoning regulations to prohibit the establishment of lots which would be unbuildable under existing state or local regulations (such as lots which are wholly within a protected wetland). This provision should also be included in Township regulations.

Relationship to Capital Improvements

In its basic form, a CIP is a complete list of all proposed public improvements planned for a 6 year period (the time span may vary), including costs, sources of funding, location, and priority. The CIP outlines the projects that will replace or improve existing facilities, or that will be necessary to serve current and projected land use development within a community.

Advanced planning for public works through the use of a CIP assures more effective and economical capital expenditures, as well as the provision of public works in a timely manner. The use of capital improvements programming can be an effective tool for implementing the comprehensive plan by giving priority to those projects which have been identified in the Plan as being most important to the future development and well being of the community. None of the three communities currently has a formal capital improvement program, and all could benefit from one.

Other important implementation measures and funding sources include the following:

Land Use & Infrastructure Policies

A strong effort will be necessary to coordinate future capital improvements decisions and land use policies with adjoining units of government. As a result, proposed policy changes should be circulated for comment early. Likewise, proposed capital improvement programs should be prepared with adequate time for review and comment by the adjoining jurisdictions.

Community Participation And Education

In order to gain the support, acceptance, and input of area residents for future planning, ongoing efforts should be continued to provide information to them, and involve them in the planning process. The importance of their role in that process should be emphasized. Public acceptance will make the implementation of plans much easier and public input makes plans better and more responsive to local needs.

SPECIAL AREA & FINANCING TECHNIQUES

Building and Property Maintenance Codes

All three communities have adopted the BOCA (Building Officials and Code Administrators International, Inc.) as the basic building code to regulate construction methods and materials. The adoption and enforcement of a building code is important in maintaining safe, high quality housing and in minimizing deteriorating housing conditions which contribute to blight within neighborhoods. This should be continued.

All three communities should consider adopting a basic property maintenance code to regulate blighting influences which result from failure to properly maintain property and structures. A standard code such as the BOCA Basic Housing - Property Maintenance Code or a locally developed code could be adopted.

Community Development Block Grant Program

The Community Development Block Grant program was authorized under Title I of the Housing and Community Development Act of 1974. The Act had the effect of combining several federal categorical grants such as Urban Renewal and Model Cities into one. Grants under the program must principally benefit low and moderate income families.

In Michigan there are two categories of eligible applicants: entitlement and non-entitlement. Entitlement communities, by meeting specific eligibility criteria, are given grant funds outright without having to compete for them. Non -entitlement applicants must compete for grant funds by applying through the Michigan Small Cities Community Development Block Grant Program. None of the three communities are entitlement communities. Therefore, all would have to apply through the Small Cities Program.

Operation of the Michigan CDBG Program is the responsibility of the Michigan Department of Commerce with central program administration by the Department's Office of Federal Grant Management (OFGM). The Department of Commerce has entered into an agreement with the Michigan State Housing Development Authority (MSHDA) assigning administrative responsibilities for the housing component of the program.

In the housing area, samples of grant eligible activities include:

- Home Improvement Programs
- Rental Rehabilitation Programs
- Weatherization and Energy Conservation
- Home Repair for the Elderly
- Public Improvement in conjunction with targeted housing activity (limited to 25 percent of grant request)
- Housing Related Services
- Housing for the Homeless

The maximum grant amount is $250,000. By applying and obtaining a Small Cities Block Grant, the tri-communities could establish a housing rehabilitation program which would help preserve housing throughout the area.

The CDBG program also has the following categories of assistance:

- Base Industrial Loan program helps financially viable businesses needing financial assistance for growth, modernization, or expansion. Limit $750,000).
- Commercial Retail Loan program is for commercial, services, tourism, and other non-residential projects; and minority owned and retail projects in distressed communities. Limit $400,000.
- Public Infrastructure Assistance program funds public improvements for the location and expansion of public infrastructures. Limit $750,000.
- Downtown Development program provides financing to assist businesses in the redevelopment of the downtown area. Limit

$500,000 or $300,000 for infrastructure improvement.

- Communities in Transition program funds community development activities, such as public sewer and water systems, parks, bridges, roads, and comprehensive redevelopment planning. Limit $400,000.
- Emergency Community Assistance program funds communities experiencing an imminent and urgent threat to public health, safety, or welfare which occurred within 90 days of application. Limit: $500,000.

Downtown Development Authority - Act 197 of 1975

Permits a city, village, or township to establish a nonprofit development corporation called a Downtown Development Authority (DDA) with broad powers, including those of taxation and bonding, to focus on revitalization and development within established "downtown" boundaries.

The Act gives an authority broad powers with regard to the planning and development of the downtown district. It may engage in downtown planning, promote housing and public facility developments, and economic development projects. Operating revenues may be raised through public and private contributions or through properties the DDA may control. With the approval of the municipal governing body, an ad valorem tax may be levied on real and tangible personal property within the downtown district. Capital financing may be raised in a number of ways:

- A DDA may issue revenue bonds. These, with municipality approval, may be secured by *"the full faith and credit"* of the municipality.
- A DDA can request the municipality to borrow money and issue notes in anticipation of collected taxes.
- A DDA, with municipality approval, may create a *"tax increment financing plan"* in which it devotes projected increases in future tax revenues from increased assessed valuation in the project area - *"captured assessed value"* - for repayment of debts incurred in making selected public improvements. Revenue bonds are issued in anticipation of future revenue.

Michigan State Housing Development Authority (MSHDA) Programs

To help preserve Michigan's older existing housing, Public Act 130 was passed in 1977 to allow MSHDA to begin a home improvement loan program that offers reduced interest rates to eligible low and moderate income families. MSHDA has created the Home Improvement, Neighborhood Improvement and Community Home Improvement Programs (HIP/NIP/CHIP). To get a loan, residents should apply to one of the banks, savings and loans, or credit unions that take part in HIP/NIP/CHIP.

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) grant program was authorized by Public Law 88-578, effective January 1, 1965. The purpose of the program is to provide federal funds for acquisition and development of facilities for outdoor recreation. The LWCF Program is administered jointly by the National Park Service, U.S. Department of the Interior, and the Michigan Department of Natural Resources.

All political subdivisions of the state, including school districts, are eligible to participate in the program. Eligible projects include:

1. Acquisition of land for outdoor recreation, including additions to existing parks, forest lands, or wildlife areas.

2. Development including, but not limited to such facilities as: picnic areas, beaches, boating access, fishing and hunting facilities, winter sports areas, playgrounds, ballfields, tennis courts, and trails.

For development grants, the applicant must have title to the site in question. The minimum grant allowable is $10,000 and the maximum grant allowable is $250,000.

For all grant proposals, the amount of the grant cannot exceed more than 50 percent of the total project cost.

Michigan Natural Resources Trust Fund

The Kammer Recreational Land Trust Fund Act of 1976 (Public Act 204) was passed by the Michigan Legislature and signed by the Governor on July 23 1976. This Act created the Michigan Land Trust Fund. The program provided funds for public acquisition of recreational lands through the sale of oil, gas, and mineral leases and royalties from oil, gas, and mineral extractions on state lands.

On November 6, 1984, Michigan residents cast their vote in favor of Proposal B. This constitutional amendment created the Michigan Natural Resources Trust Fund (MNRTF), Public Act 101 of 1985, which officially replaced the Michigan Land Trust Fund on October 1, 1985. MNRTF assists state and local governments (including school districts) in acquiring land or rights to land for recreational uses, protecting land because of its environmental importance or scenic beauty, and developing public recreational facilities.

Any individual, group, organization, or unit of government may submit a land acquisition proposal, but only units of government may take title to and manage the land. Only units of government may submit development proposals. All proposals for local grants must include a local match of at least 25 percent of the total project cost. There is no minimum or maximum for acquisition projects; for development projects, the minimum funding request is $15,000, the maximum is $375,000.

Costal Zone Management Fund

The Land & Water Management Division of the Department of Natural Resources offers grants for the purpose of planning, designing, and carrying out low-cost projects to improve Great Lakes shorelines and connecting waterways.

The Recreation Bond

The Recreation bond calls for money to be spent on DNR and local recreation facilities in four categories:

Recreation infrastructure: such as ballfields, tennis courts, beaches and other shoreline areas, boat launches, trails, picnic areas, historic structures, playgrounds, roads, parking, restrooms, etc., which are not less than 15 years old;

Waterfront recreation: such as fishing piers, boardwalks, boat launches, marinas, amphitheaters, landscaping, and shoreline stabilization;

Community recreation: playgrounds, sportsfields, community centers, senior centers, fishing sites, and trails for the handicapped;

Tourism-enhancing recreation: including campgrounds, boating facilities, historical sites, recreational conversion of abandoned rights-of-way, and fishing access.

In its statewide inventory of recreational facilities, the DNR has identified Allegan County as deficient in a number of recreational facilities. Those relevant for the tri-community area include deficiencies in bicycle trails, fishing access, fishing piers, boat launches, campgrounds, nature areas, hiking trails, nature trails, cross country ski trails, picnic areas, and playgrounds. Allegan County communities with proposals for such projects will get funding priority over similar projects proposed in non-deficient counties. Table 12.1 includes the minimum number or size of selected recreation facilities to be considered toward bond funding.

Grant requests may not exceed $750,000 and may not be less than $15,000. Applicants must match bond funds with 25% of the total project cost, not including other state grants or legislative appropriations. Bond money will only be allocated to projects on sites controlled by public agencies. In the tourism category, priorities are given to projects which: create new and innovative recreation-related tourism attractions; involve partnerships between the public and private sector; and projects for which feasibility studies have been conducted which demonstrate local, regional, and statewide economic benefits. [Applications and further information may be obtained from: DNR, Recreation Services

TABLE 12.1

RECREATION FACILITIES & THEIR MINIMUM NUMBER OR SIZE NECESSARY TO ACHIEVE MINIMUM POINTS

RECREATION FACILITY	MINIMUM SIZE
Bicycle Trail	1 mile
Playground	3 pcs. of play equipment
Swimming Beach	50 feet
Boat Launch	5 parking spaces
Campground	10 campsites
Non-motorized Trail	1/2 mile
Cross-country Ski	
Hiking	
Nature	
Horse	
Fishing Access	50 feet
Fishing Piers	1
Nature Area	10 acres

NOTE: Points are not to be awarded separately for cross-country ski trails, nature trails, and hiking trails. These trails are to be considered as one facility.

Source: DNR, **Michigan's 1987-88 Recreation Action Program Guidebook.**

Division, P.O. Box 30028, Lansing, MI 48909 (517) 335-3043.]

Recreation Improvement Fund

The Recreation Improvement Fund was created from State fuel tax revenue. About $750,000 per year is being targeted for development of non-motorized trails (hiking, bicycle, cross-country, and nature trails). No application forms or criteria have yet been prepared, but the Recreation Division is encouraging local governments to submit proposals based on local determination of need, location, and financing.

Local Facility Development Grants

These grants come from a number of funding sources and are available for planning, design, or development of local recreational facilities. The Village of Douglas received $11,000 through this program in FY 1987-88 for improvement of its boat launch site on Kalamazoo Lake.

Land Acquisition Grants

Land acquisition grants are available for projects aimed at open space preservation; park creation or expansion; acquisition of environmental resources such as sand dunes, woodlots, or wetland areas; waterfront access sites; and many other land acquisition projects intended for (passive or active) recreational purposes.

Waterways Fund

The Waterways Division of the Department of Natural Resources offers grants for the purpose of developing public boating facilities. The emphasis is on creating boat access sites and supporting facilities.

Road Funds

In 1987, three acts were passed to provide a new source of revenue for cities, villages,and county road commissions. The Transportation Economic Development Fund (Act 231 of 1987, as amended), the Road Construction and Improvement Act (Act 233 of 1987), and the Local Road Improvements and Operation Revenue Act (Act 237 of 1987, as amended). The acts will be in effect for five years, when they will be reviewed for continuation by the legislature.

The Local Road Improvements and Operation Revenue Act authorizes county road commissions to impose a vehicle registration fee and use these funds for road improvements. This Act has had little utility, however, because the fee must be approved by a public vote. Michigan voters in 3 counties rejected proposed fees in the November 1988 election. Many counties chose not to even put it on the ballot, fearing the same result.

The Road Construction and Improvement Act (Act 233) provides funding through the transportation economic development fund only to rural counties (less than 400,000 population) with a national lakeshore, national park, or in which 34% or more of the land is commercial forest land. Then a portion of the remaining funds are available for use for county, city, and village street improvements.

The Transportation Economic Development Fund allocates money for the purposes of bringing county roads to all season highway standards. This is important because heavy trucks can only travel regularly on all season roads.

The Transportation Economic Development Act also offers counties, cities, and villages the opportunity to compete for additional funding on special projects with economic development objectives. This competitive grant is awarded by the State Highway Commission. Qualified project categories are listed below:

(a) Economic development road projects in any of the following targeted industries: agriculture or food processing; tourism; forestry; high technology research; manufacturing; office centers solely occupied by the owner or not less than 50,000 square feet occupying more than 3 acres of land.

(b) Projects that result in the addition of county roads or city or village streets to the state trunk line system.

(c) Projects for reducing congestion on county primary and city major streets within urban counties.

(d) Projects for development within rural counties on county rural primary roads or major streets within incorporated villages and cities with a population of less than 5,000.

PUBLIC WORKS FINANCING

In addition to using general fund monies, it is often necessary for a community to bond to raise sufficient funds for implementing substantial public improvements. Bonding offers a method of financing for improvements such as water and sewer lines, street construction, side-

walks, and public parking facilities. Common municipal bond types include:

1. General Obligation Bonds - full faith and credit pledges, the principal amount borrowed plus interest must be repaid from general tax revenues.

2. Revenue Bonds - require that the principal amount borrowed plus interest be repaid through revenues produced from the public works project the bonds were used to finance (often a water or sewer system).

3. Special Assessment Bonds - require that the principal amount borrowed plus interest be repaid through special assessments on the property owners in a special assessment district for whatever public purpose the property owners have agreed (by petition or voting) to be assessed.

TAX INCENTIVES

The state law permitting communities to provide property tax incentives for industrial development is Act 198, which allows a community to provide tax abatements as an incentive for industrial firms which want to renovate existing or build new facilities.

ADDITIONAL RECOMMENDATIONS

Other Planning & Economic Development Assistance

Each jurisdiction should maintain regular communication with the County Planning Commission, the West Michigan Regional Planning Commission, and the Allegan County Community Growth Alliance. These organizations should be encouraged to continue their County and region-wide planning and economic development efforts and to share relevant materials with Saugatuck, Saugatuck Township, and the Village of Douglas. Likewise a copy of this Plan should be forwarded to each of these agencies when adopted.

Pro-Business Alliance

One way to strengthen the tri-community area's economic development potential is to establish a pro-business exchange, either separately by jurisdiction, or jointly across all three. The exchange could be modelled after the Michigan Bell Business Retention and Expansion Program. (The tri-community area is not eligible for participation in the Michigan Bell Business Retention and Expansion program because it is not in a Michigan Bell service area.) A pro-business exchange creates an atmosphere of cooperation which benefits both the business and the community.

The role of a pro-business exchange is to assist existing businesses in finding solutions for their problems (i.e. inadequate parking, expansion or relocation needs, etc.) and help make new businesses feel welcome. The exchange would work with area businesses to determine their needs and appoint an ombudsman to inform new businesses of local services and contacts. Businesses are often not aware of the services available to them or who to contact for more information. A brochure could be prepared which identifies who to contact for information on zoning, construction, planning, utilities, and taxation. The brochure could also identify permit fees, tax and utility rates, and transportation, delivery, freight, health, and financial services available in the area.

Revision Of Ordinances

Each of the individual community plans prepared concurrently with this joint plan include recommendations for changes to zoning, subdivision regulation and related local ordinances (and in the case of the Township, the adoption of same). If this is not done, then the legal support for future zoning decisions is undermined. Of course, the plan itself could also be changed so that there is greater consistency between the plan and zoning regulations, but it that is done, the supporting logic and data should also be included.

Poverty

The changing economy, higher health care costs, higher literacy and skills requirements for employees, and inflation have seriously hurt the nation's poor, including the elderly on fixed incomes. Social security benefits are the only retirement income for about two-thirds of all American retirees, and an estimated one million Michigan residents have no private or public health insurance.

The poor are often overlooked in community development efforts, yet they are the group most in need of public assistance. In the tri-community area, 7.1% of Township residents, 8.6% of City residents, and 11.3% of Village residents were living below the poverty level in 1980. That's an annual income of less than $3,778 for those under 65, and $3,479 for those 65 and over.

Each community should continue to monitor the number of people in poverty through the census counts and work with local churches and non-profit groups to assist them through food drives, temporary shelters, or other needed services.

Establishing Specific Incremental Growth Areas

Once a final decision on whether the Township will or will not become a full partner in the Kalamazoo Lake Water & Sewer Authority has been made, then it will be possible to determine if specific incremental sewer and water extensions can be made, and at what cost. That process could result in specific targeting of new growth areas and the modification of local zoning and capital improvements programs to reflect the phasing of growth in those areas.

Collection of Traffic Count Data

A more detailed analysis of street and road needs should be undertaken. However, doing so is limited by the lack of any systematic and recent traffic count information. The three jurisdictions would greatly benefit from jointly purchasing the necessary equipment and undertaking specific traffic counts on a regular basis. The cost and training associated with this is minimal compared to the benefit.

Blue Star Highway Corridor Study

Blue Star Highway from the Kalamazoo River bridge north to the freeway exit has the potential to grow dramatically and haphazardly under existing zoning regulations. As a result it deserves a more thorough and careful analysis than has been possible to date. The same is true of Blue Star Highway as it passes through Douglas. A lot by lot analysis with an emphasis on traffic flow, ingress, egress, bicycle use, pedestrian access, parking, shared access, signs, land use, and the potential impact and appropriate timing for the extension of sewer and water should be initiated. The first and most important step will be the collection of data on traffic flow and traffic generation by road segment (see recommendations).

Downtown Saugatuck

Downtown Saugatuck has a parking problem during the summer months. Low cost solutions have been difficult to find. However, discretionary tourist visits are likely being lost on peak days due to limited parking. Expert analysis is needed. Solutions should not include the establishment of above ground parking structures that significantly alter the character of the area.

Public Open Space Acquisition

Programs to acquire public open space should be initiated. One option is to create a local nonprofit land conservancy. There are several very effective ones operating in Michigan. Priority should be given to building a trust fund for acquisition and maintenance or tying into existing ones by the Nature Conservancy and similar organizations. Initial acquisitions should be the dune lands adjoining the channel. These lands should either be managed as a part of the City's holdings to the south and the State's to the north of the channel, or in common by all three jurisdictions, or by a conservancy trust. Considerable additional research and effort is needed.

Kalamazoo Lake Sewer & Water Authority

The Township should join as a full member of the authority and then the authority should be modified so that it is a more independent operating authority and not under the control of the legislative bodies of the three jurisdictions. This would distance it from political influences in day to day administration. Efforts are presently underway to evaluate the potential for doing so.

One Jurisdiction

The benefits of merging the three communities into one jurisdiction far outweigh the detriments if the long term future of the area is considered. However, past efforts to do so have been met with failure and the citizen opinion survey still reflects an evenly divided electorate. Yet, no systematic analysis of the issue considering all aspects (planning, development control, cost, revenues, taxes, economic development, short versus long term, impact on community character, etc.) have ever been performed. Such an analysis should be done to more clearly lay out and analyze the issues. It should be undertaken by the three communities together, but could also be done by an outside group, such as the business community or a taxpayers organization.

Periodic Updating and Revisions

As these additional studies are undertaken the plan should be updated to reflect the new

information. At a minimum the plan should be comprehensively reviewed and updated at least once every five years.

Managing Growth and Change

The key to successfully managing future growth and community change is integrating planning into day to day decision making and establishing a continuing planning process. The only way to get out of a reactionary mode (or crisis decision making) is by planning and insuring the tools available to meet a broad range of issues are current and at hand. For that reason it will be especially important that the recommendations of this plan be implemented as the opportunity presents itself (or revised as circumstances dictate).

Many new tools may be made available to local governments over the next few years to manage the growth and change process. It will be a challenge to tri-community area officials to pick from among the new tools, those that will provide greater choice over local destiny and quality of life.

APPENDIX A

References

REFERENCES

Listed below are some of the key reports, studies, plans, and data sources which were used as references in the preparation of this plan. Other data sources are referenced throughout the plan.

DEMOGRAPHICS

U.S. Census, **Current Population Reports**, East North Central 1986 Population and 1985 Per Capita Income Estimates for Counties and Incorporated Places, Series P-26, No. 86-ENC-SC *(also referenced for economic data).*

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Village of Douglas Land Use Plan, prepared by the Village of Douglas Planning Commission with the assistance of the West Michigan Regional Planning Commission, adopted November 19, 1986.

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A Feasibility Study on the Utilization of a Single Ground Storage Reservoir, Saugatuck-Douglas Water System, prepared for Kalamazoo Lake Sewer & Water Authority by Holland Engineering, Inc., January 18, 1983.

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Village of Saugatuck Streets and Public Utilities Condition Report, May 1984.

Waterworks Reliability Study for Kalamazoo Lake Sewer and Water Authority, prepared by Fishbeck, Thompson, Carr, & Huber, Inc., March 1987.

ZONING

City of Saugatuck Zoning Ordinance, as amended through October 1989.

Saugatuck Township Zoning Ordinance, as amended through October 1989.

Village of Douglas Zoning Ordinance, as amended through October 1989.

APPENDIX B

Demographic, Economic, and Housing Data

A. DEMOGRAPHIC CHARACTERISTICS

1. Age Cohorts (Raw Data)

	Saugatuck	Douglas	Saug. Twp.	Area	County
under 1	13	23	25	61	1496
1-2	15	11	26	52	2560
3-4	21	17	56	94	2544
5	3	19	24	46	1289
6	11	6	29	46	1332
7-9	30	36	20	86	4274
10-13	47	59	106	212	5989
14	6	14	47	67	1522
15	17	15	23	55	1642
16	18	23	32	73	1758
17	15	18	34	67	1666
18	19	14	4	37	1392
19	13	16	51	80	1403
20	24	22	34	80	1402
21	14	18	21	53	1230
22-24	50	60	78	188	4267
25-29	106	84	107	297	6706
30-34	92	72	166	330	6503
35-44	101	106	142	349	9306
45-54	136	82	265	483	7820
55-59	59	48	108	215	3927
60-61	21	17	8	46	1172
62-64	27	30	75	132	1882
65-74	138	85	110	333	5151
75-84	57	49	104	210	2555
85+	26	4	17	47	767

Source: U.S. Census of Population and Housing, 1980--Summary Tape File 3A, item 15. Detroit, MI, tel. 313-354-4654.

2. Age Cohorts (Aggregated and Percent Comparisons)

Age	Saugatuck	Douglas	Saug. Twp.	Area	County
0-4	49 (4.5)	51 (5.4)	107 (6.3)	207 (5.5)	6,600 (8.1)
5-14	97 (9.0)	134 (14.1)	226 (13.2)	457 (12.2)	14,406 (17.7)
15-24	170 (15.8)	186 (19.6)	277 (16.2)	633 (16.9)	14,760 (18.1)
25-34	198 (18.4)	156 (16.5)	273 (15.9)	627 (16.8)	13,209 (16.2)
35-44	101 (9.4)	106 (11.2)	142 (8.3)	349 (9.3)	9,306 (11.4)
45-54	136 (12.6)	82 (8.6)	265 (15.5)	483 (12.9)	7,820 (9.6)
55-64	107 (9.9)	95 (10.0)	191 (11.2)	393 (10.5)	6,981 (8.6)
65+	221 (20.5)	138 (14.6)	231 (13.5)	590 (15.8)	8,473 (10.4)

Source: (same as above, 1960 and 1980).

3. Change in Age Cohorts from 1960-1980 - Tri-Community Area

Age	1960 M/F	1960	1980 M/F	1980	Change 1960-80
0-4	121/140	261 (9.8)	113/94	207 (5.5)	-20.7%
5-14	274/249	523 (19.6)	233/224	457 (12.2)	-12.6%
15-24	133/146	279 (10.5)	325/308	633 (16.9)	126.9%
25-34	129/139	268 (10.1)	337/290	627 (16.8)	134.0%
35-44	170/166	336 (12.6)	170/179	349 (9.3)	3.9%
45-54	142/147	289 (10.9)	239/244	483 (12.9)	67.1%
55-64	115/163	278 (10.4)	192/201	393 (10.5)	41.4%
65+	196/232	428 (16.1)	231/359	590 (15.8)	37.9%

Source: (same as above, 1960 and 1980).

4. Place of Birth

	Saugatuck	Douglas	Saug. Twp.*	Area	County
Michigan	615 (56.9)	577 (60.9)	990 (57.8)	2182 (58.3)	63,771 (78.2)
Another State	422 (39.1)	320 (33.8)	598 (34.9)	1340 (35.8)	15,934 (19.5)
Born Abroad	5 (0.4)	2 (0.2)	-	7 (0.2)	227 (0.3)
Foreign Born	37 (3.4)	49 (4.4)	124 (7.2)	210 (5.6)	1,623 (2.0)

* Some individuals not accounted for.
Source: (same as above), item 33.

5. Place of Residence - 1975 (Persons 5 years old and over)

	Saugatuck	Douglas	Saug. Twp.	Area	County
Same House	503 (48.6)	423 (47.9)	984 (59.5)	1910 (53.4)	44,575 (59.3)
Same County	187 (18.0)	156 (17.6)	144 (8.7)	487 (13.6)	15,428 (20.5)
Another County	228 (22.0)	198 (22.4)	244 (14.7)	670 (18.7)	10,923 (14.5)
Another State	117 (11.3)	103 (11.6)	280 (16.9)	500 (14.0)	3,962 (5.2)
Abroad	-	8 (0.9)	-	8 (0.2)	241 (0.3)

Source: (same as above), item 34.

6. Household Characteristics

	Saugatuck	Douglas	Saug. Twp.	Area	County
Total HHs	537	391	633	1561	27,282
Ave. HH size	2.00	2.44	2.69	2.39	2.95
2 parent fam.	219	222	411	852	19,520
Female HH head	41	31	28	100	1,911

Source: (same as above), items 10 and 20

7. Marital Status

	Saugatuck	Saug Twp	Douglas
Single	262 (28.1%)	325 (23.9%)	177 (23.2%)
Married	467 (50.1%)	849 (62.5%)	449 (58.8%)
Separated	25 (2.7%)	28 (2.1%)	16 (2.1%)
Widowed	107 (11.5%)	75 (5.5%)	66 (8.7%)
Divorced	72 (7.7%)	82 (6.0%)	55 (7.2%)

Source: (same as above), item 26.

B. HOUSING STOCK

1. Structure Type

	Saugatuck	Douglas	Saug Twp.	Area	County
Total units	772	529	850	2,151	31,864
Year Round Units	569	406	734	1,709	28,985
1 in Structure	385	290	636	1,311	23,190
2 in Structure	49	20	32	101	1,001
3 and 4 in Struct	68	16	-	84	583
5 or more	60	40	-	100	1,199
Mobile Homes	7	40	66	113	3,012
Vacant, Seasonal, & Migratory	203	123	116	442	2,879
1 in Structure	150	108	106	364	2,250
2 in Structure	6	11	5	22	51
3-4 in Structure	18	4	-	22	57
5 or more	29	-	-	29	153
Mobile Home/Trailer	-	-	5	5	368

Source: U.S. Census of Population and Housing, 1980--Summary Tape File 3A, item 102/103. Detroit, MI, tel. 313-354-4654

2. Year Structure Built - Year Round Units

	Saugatuck	Douglas	Saug Twp.	Area	County
1975-80	36 (6.3)	22 (5.5)	72 (9.8)	130 (7.6)	3568 (12.3)
1970-74	19 (3.3)	46 (11.3)	116 (15.8)	181 (10.6)	4326 (14.9)
1960-69	51 (9.0)	81 (19.9)	133 (18.1)	265 (15.5)	4458 (15.4)
1950-59	73 (12.8)	32 (7.9)	99 (13.5)	204 (11.9)	3647 (12.6)
1940-49	56 (9.8)	36 (8.9)	68 (9.3)	160 (9.4)	2507 (8.6)
Pre 1940	334 (58.7)	189 (46.5)	246 (33.5)	769 (45.0)	10479 (36.2)

Source: (same as above), item 109.

3. Occupancy

	Saugatuck	Douglas	Saug Twp.	Area	County
Total Units	772	529	850	2,151	31,864
Owner occupied	334 (43.2)	271 (51.2)	531 (62.4)	1,136 (52.8)	22,271 (69.8)
Renter occupied	205 (26.5)	117 (22.1)	117 (13.7)	439 (20.4)	4,961 (15.5)

Source: (same as above), item 97.

C. ECONOMIC CHARACTERISTICS

1. Type of Employment

	Saugatuck	Douglas	Saug Twp.	Area	County
Private Wage/Salary	402 (73.5)	333 (76.9)	492 (71.4)	1227 (73.5)	26697 (78.5)
Federal Gov.	7 (1.3)	1 (0.2)	11 (1.6)	19 (1.1)	308 (0.9)
State Gov.	21 (3.8)	25 (5.8)	2 (0.3)	67 (4.0)	775 (2.3)
Local Gov.	49 (9.0)	33 (7.6)	56 (8.1)	138 (12.0)	3022 (8.9)
Self Employed	68 (12.4)	40 (9.2)	92 (13.4)	200 (12.0)	2977 (8.7)
Unpaid Family Worke	-	1 (0.2)	17 (2.5)	18 (1.0)	246 (0.7)

Source: (same as above), item 67.

2. Real Property SEV - 1988

	Saugatuck	Twp/Douglas	Area	County	County (%)
Residential	21,167,486	43,730,725	64,898,211	604,509,215	66.2
Commercial	10,677,205	9,402,800	20,080,005	101,799,772	11.1
Industrial	779,150	1,126,200	1,905,350	50,272,956	5.5
Agricultural	N/C	2,661,790	2,661,790	153,232,546	16.8
Developmental	N/C	430,733	430,733	3,251,687	0.4

Source: Michigan Department of Treasury, State Tax Commission, 1988.
Lansing, MI, tel. 517-373-1091.

3. Total Annual Real Property SEV - 1980-88

Year	Saugatuck	Douglas	Saug Twp.*	Saug. Twp.**	Area
1980	13,709,600	10,560,200	18,482,350	42,752,150	42,752,150
1981	15,682,000	11,723,580	21,042,164	48,447,744	48,447,744
1982	18,314,033	13,341,647	23,287,428	54,943,108	54,943,108
1983	20,855,000	15,101,800	25,691,300	61,648,100	61,648,100
1984	25,831,436	16,848,894	27,155,345	69,835,675	69,835,675
1985	27,382,650	18,756,700	28,922,650	47,679,350	75,062,000
1986	29,737,980	20,321,283	30,023,509	50,344,792	80,082,772
1987	32,727,560	21,957,626	32,464,745	54,422,371	87,149,931

* not including Villages.
** including Saugatuck and Douglas through 1984 and Douglas only after 1984.
Source: Michigan Department of Treasury, State Tax Commission, 1988.
Lansing, MI, tel. 517-373-1091

4. Annual Average Employment -Tri-Community Area

Year	Ave. Emp.
1980	1,491
1981	1,527
1982	1,555
1983	1,613
1984	1,695
1985	1,656
1986	1,175
1987	2,461
1988	2,550
1989	2,700

Source: Michigan Employment Security Commission, Field Analysis Unit.
Detroit, Michigan, tel. 313-876-5427.

5. Persons in Poverty by Age

	Saugatuck	Douglas	Saug Twp.	Area	County
Less than 55	67	77	83	227	5181
55-59	3	6	-	9	281
60-64	8	-	-	8	206
65+	15	24	39	78	1127

Source: U.S. Census of Population and Housing, 1980--Summary Tape File 3A, item 93.
Detroit, MI, tel. 313-354-4654.

APPENDIX C

Public Opinion Survey Responses

SURVEY RESPONSES

Saugatuck Twp., Village of Douglas and City of Saugatuck
September 1988 Survey
(numbers in italics are all %)

RESPONDENT CHARACTERISTICS

	City	Village	Township	
Reg. voters:	85.4	87.6	95.2	
Lived here 10+ yrs:	62.6	55.7	54.0	
Plan to live here 10+ yrs:	69.6	75.0	72.0	
Live here 12 months:	60.8	73.5	81.0	
Own homes:	94.0	78.4	92.0	
Rent:	3.4	17.1	27.5	
Own/manage business:	11.7	21.3	16.7	
College grad or prof degree:	66.3	40.6	46.2	
Average age:	54.32	55.06	56.77	
Sex-Male:	63.3	62.5	68	
Sex-female:	36.1	37.5	32	
Employed:	67.3	61.4	55.8	
Employed in city or village:	51.5	64.5	16.5	(34.0 in Twp)
Retired:	38.3	38.0	38.3	

RESPONSE RATE

City: sent 726, received 372 + 11 renters = 51.2%
Village: sent 550, received 257 + 30 renters = 46.7%
Township: sent 986, received 372 + 22 renters = 37.7%

COMMUNITY VALUES

Reasons for living in your community:

Over 50% responses	City	Village	Township
Small town atmosphere/ Twp Rural Country atmos.	85.4	84.6	87.70
Quiet Town	70.3	87.9	90.7
Friendly people	94.3	86.9	70.0
Attractive beautiful surr.	94.0	85.7	82.6
Good place to raise kids	57.8	57.3	69.8
Trad. values		57.1	58.8
Freedom to be self	75.9	79.0	73.2
Low crime	91.0	90.3	82.8
Good schools	64.0	61.7	59.4
Low taxes	78.3	65.4	73.9
Close to larger cities		59.9	
Avail. of good housing	53.9	62.2	50.8
Family in area		52.2	
Water based recreation	66.4	61.2	58.9
Not industrialized		53.6	57.9
Convenient shopping		50.6	

HOW HAS COMMUNITY CHANGED?

	City	Village	Township
Better:	32.8	24.6	21.5
Same:	43.2	56.6	58.1
Worse:	24.0	18.9	20.4

	City	Village	Township
Community as is:	Sm Vlg 67.5	Sm Vlg 93.7	Rural Twp 72.4
As would like it to be:	Sm Vlg 65.3	Sm Vlg 76.8	Rural Twp 63.2
As you think it will be:	Sm city 39.4 Holl sub 21.8 Sm vlg 19.7	Sm Vlg 37.9 Sub 15.2 bdrm 23.1 City 23.9	Holl Sub 48.4 Rural Twp 19.9 bdrm 26.0 Small City 5.7

OVERALL VIEW

How would you rate area on following things:

Location, general appearance, churches, recreation - tended to be *highest* in all 3 communities.

Jobs, entertainment, medical care, shopping, social services and taxes tended to be *lowest* in all 3 communities.

COMMUNITY PROBLEMS

How important do you feel each of these is to future of the 3 communities

Over 50%	City	Village	Township
New job opportunities	52.5		
Lack of hospital or after hrs	55.2	70.0	56.9
Parking downtown Saugatuck	65.8	67.2	69.5
Erosion along Lakeshore Dr.	74.1	81.0	61.7
Teens with nothing to do		69.5	56.8
Drugs		59.6	57.9
Alcohol		68.2	65.6
Contamin. of drinking water		77.4	
Reduct in lk & riv water qual.	57.0.8	74.22.	61.0
Destruction of wetlands		53.9	
Destruction of sand dunes		57.4	
Inadequate water supply		57.8	
Inadequate local planning	53.4		

SHOPPING AND SERVICES

Except for clothing & furniture (go elsewhere for more choice) people tend to shop in the Saugatuck area or near Holland.

People pursue the following shops/goods/and services in the Saugatuck area: baking goods, banking, beautician, barbers, day care, dry cleaners, family restaurants, flower shops, groceries, hardware, laundromats, lumber, and pharmacies.

People go to Holland for these shops/goods/services: auto/truck sales and services, furniture, clothing, dept. stores, fast food, lawn and garden supplies, movies, and sporting goods.

Many shop for clothing and furniture elsewhere for more choice.

COMMERCIAL DEVELOPMENT

	City	Village	Twp
Yes, sm. shopping ctrs. off major rds.	47.5	72.8	54.6
No, strip commercial	67.6	46.7	64.7
No large shopping center	48.9	50.8	48.2
Not in downtown Saugatuck	53.9	50.6	62.7
Not in downtown Douglas	51.0	50.2	38.5
Not in scattered commercial areas	45.9	42.1	45.7

Location along Blue Star Highway

	City	Village	Township
North	59.4	65.7	74.1
South	69.8	70.8	65.2
@ freeway interchg	60.6	65.0	52.1

BLUE STAR HIGHWAY

With regard to Blue Star Highway, high priority (>50%) was accorded the following improvements:

	City	Village	Township
Better lighting	51.8		
Uniform sign controls	52.3	50.3	
Add a center turn lane	50.8		
Improve appearance	66.8	76.8	61.3
Better lane striping	62.3	51.2	59.8
Resurfacing	65.3	66.3	73.5
Uniform speed limi 45 mph	56.6	60.0	57.1
Bike path	69.9	59.1	54.3
Fast food restaurants	50.0	50.7	50.5
More trees		61.2	
Improve traffic flow & safety			59.7

SAUGATUCK DOWNTOWN PRIORITIES	City Residents Only >50%
Flowers & landscaping	55.1
Historic Preservation	64.6
More Parking	70.5
Waterfront Park	52.7

Is there a **parking** problem other than between Memorial Day and Labor Day?
No - 72.2% (Saug. only)

Options for providing pking downtown:	Agree	Disagree	Unsure
Agreement to demolish old public works building	50.6	32.6	16.8
Disagree buying additional property	47.5	38.4	14.1
Disagree leaving problem to merchants	25.6	61.5	12.9
Narrow agreement about creating a partnership between city & bus.	38.8	32.6	28.6

DOUGLAS COMMERCIAL
New neighborhood Commercial in Douglas - where?
Along East Center St. in Douglas - 54.0%

Priorities for Douglas Downtown (>50%)

Dressing up storefronts	60.5
Flowers & landscaping	61.3
Historic Preservation	62.3
More Resid. oriented business	68.0
Waterfront park	61.1

INDUSTRIAL DEVELOPMENT
More favor than oppose more industrial development in the area, but a significant number in the Township are uncertain.

	City	Village	Township
Favor	52.3	43.4	49.1
Oppose	33.8	44.9	27.6
Uncertain	9.9	11.6	23.4

RESIDENTIAL (over 30%)

Needed now	City	Village	Twp
Apartments	37.1	52.4	37.4
Detached SF homes $50-70,000	52.6	60.6	49.2
Low income housing		39.8	37.7
Not needed			
Waterfront Condos	90.4	81.4	89.5
Mobile homes	71.4	58.8	58.3
Senior housing	38.1		
Low income housing	48.9		
Country Estates		38.7	

DENSITY
City - 43.6% favor lowering min. sq. ftg. (now 1040) of housing (21.4 uncertain) to make it more affordable while 34.9% opposed.

City - New housing should be at a density:
lower than along the Lake Kalamazoo waterfront - 55.0%;
the same as on the hill - 50.5%;
or downtown - 53.1%

Village - Lowering minimum square footage (now 1000) req. in Village
48.4% -Disagree 11.7% - Uncertain 39.9% - Agree

Village - Housing Density
Lower than along Lake Kalamazoo in Saugatuck - 65.3
Same as on hill in Sauguatuck - 65.2
Lower than downtown Saugatuck 62.3

RECREATION

Additional facilities

	City	Village	Twp
Lakefront open space (MI):	60.7	69.6	67.0
(#1) Vlg lkfrt open space (Kal Lake):	49.7	69.1	61.9
(#3) Vlg rvrfrt open space (Kal River):	48.6	65.1	61.8
Bike paths:	68.0	66.5	64.4
Cross country skiing:	61.5	43.8	59.8
Hiking trails	62.4		

ENVIRONMENTAL PROTECTION

	City	Village	Township
No new development in:			
forested sand dunes	81.0	76.7	72.0
open sand dunes	84.4	78.6	87.4
wetlands & swamps	73.1	71.6	82.8
inland wetlands & swamps	70.6	62.3	72.6

WATERFRONT DEVELOPMENT

The primary use of K. River, Kal Lake, Lake MI
Viewing: City-77-79%, Vlg-70-83%, Twp-44-65%
Silver Lake much lower - 18-24%

Next highest use varied by water body:
Kalamazoo River - Nature Study
Kalamazoo Lake - Power Boating
Lake Michigan - Swimming
Silver Lake - Power boating and fishing

WATER QUALITY	City	Village	Twp
Kazoo River & Lake - poor/very poor:	61-64%	66-70%	58-64%
Lake Michigan - good/very good:	50%	33.5%	31.8%

Silver Lake - most "*didn't know*": 40-48%

Most feel the **water quality** of these water bodies has deteriorated slightly, although most City residents feel it has stayed the same.

When rating the **adequacy of waterfront facilities**, the only ones (>50%) felt overwhelmingly adequate were condos, boat slips, marinas.

Inadequate facilities (>50%):
Boat launching on Lake MI: Vlg-50.0, Twp-63.7
Boat mooring sites: City-53.1
Campgrounds: City-51.7, Twp-54.7

PUBLIC MARINA

Should each community actively cooperate in the construction of an areawide public marina? - more disagree than agree, but a significant number are uncertain.

	Agree	Uncertain	Disagree
City	40.6	11.9	47.4
Village	42.4	23.4	34.2
Township	40.0	12.6	47.4

LAKE MICHIGAN BEACH
Whether the Village & Township should actively seek to find alternatives for low cost access by Village & Township residents to additional Lake MI beach facilities - more agree than disagree especially in Twp.

	Agree	Uncertain	Disagree
Village	49.8	21.7	28.5
Township	67.5	13.4	19.0

Undeveloped waterfront lands in Douglas should be acquired for open space by 80.9%

OTHER LAND USE QUESTIONS
76.8% of Saug. respondents favor **summertime festivals** as being *"good for the area."*

The following **Home Occupations** were favored by >50% in residentially zoned areas.

	City	Village	Township
Bed & Breakfasts	67.3	65.9	
Music Lessons	84.9	76.5	75.6
Dance lessons	76.7	66.0	68.7
Accounting	72.1	66.4	67.0
Typing	71.2	69.7	60.4
Dressmaking	78.3	71.2	67.6

Township residents were split on whether **pole barns** should be allowed in residential districts with 35.1% opposing, 30.5% uncertain, and 34.4% favoring.

PUBLIC SERVICES
Those rated *good* to *excellent* by more than 50%

	City	Village	Township
Fire protection	71.0	64.5	67.4
First responder	69.7	64.3	66.4
Interurban	73.8	75.4	71.4
Library	65.2	69.8	51.3
Park maintenance	55.7	52.7	
Police protection	53.2	69.7	
Schools K-6	63.3	65.7	
Schools 7-12	58.0	59.4	
Schools Comm Ed	60.8	51.3	
Sewer service	53.5	62.4	
Snow removal	61.3	62.4	53.9
Vlg. playground equip		57.9	
Twp cemeteries			62.4
State Police (Twp)			81.8

Those rated *poor* to *very poor* by more than 50%.

	City	Village	Township
Land use planning	65.6		56.3
Parking downtown (Saug)	64.9		
Property assessment		74.0	55.7
Street resurfacing	68.2		
Animal control		62.1	

High priorities for spending tax dollars

	City	Village	Township
Preventing crime	82.9	72.7	
Enforcing Ord.	58.9		
Fire protection	91.8	86.8	88.1
Ambulance service	72.9	74.2	81.0
Water supply	86.1	83.4	
Sewer service	83.9	66.8	
Street repair	78.7	71.3	
Improving City appearance	55.4		
Planning for future	79.7	65.7	61.0
Waterfront improvement	56.2	54.5	
Interurban bus. serv.		56.6	
Economic Development		56.1	
Road resurfacing			72.2

Frequency of Service Use

The City/Village/Township hall, and Oval beach, are most frequently used. The parks in the area, the interurban bus service, and the recycling center are infrequently used.

If it meant an **increase in general property taxes**, the only service receiving more than 35% support were:

	City	Village	Township
better water (quality)	48.8	59.9	
24 hour medical service		41.8	46.4
fire protection			35.5
ambulance service			36.0
better street maintenance	37.3		

PAYING FOR SEWER/WATER IN TOWNSHIP

In Township, support for paying for

- public water & sewer service for wells and treatment facilities was by general property taxes 41.2% (23.2 uncertain);
- for individual street/road lines was evenly split by general prop. taxes (26.7), spec assess (22.3), separate fee (26.0) and uncertain (24.9)
- connections should be paid by a separate fee (48.4) uncertain (24.6)

POSITION ON GOVERNMENT SERVICES & PROPERTY TAXES
The statement closest to respondent position on government services and property taxes

	City	Village	Township
It would be nice to have better services, but not if it means an increase in property taxes	63.0	58.4	43.7
Local gov't tries to do too much, it should do less & lower property taxes	15.0	16.9	30.2

COUNCILS & BOARDS
More respondents had **attended** City Council or P.C. meetings in Saugatuck and the Village than in the Township: C - 52.5 38.1%
V - 44.6 37.6
T - 27.4 18.3
with more people visiting the Board of Review than the Township Board (25.4

Responsiveness of local Boards/Commissions is listed below:

	Very Respon.			Not Very Respon.		
	C	V	T	C	V	T
City Coun/Vlg/Twp Bd	29.1	48.8	27.6	50.0	22.4	32.7
P.C.	31.0	41.0	27.2	44.7	25.6	29.2
ZBA	23.6	19.1	24.8	39.3	29.8	28.9
Bd of Review	13.0	59.0	24.9	49.8	12.8	36.8
School Board	39.9	21.1	32.3	21.5	37.3	16.6
Fire District	57.4	21.0	42.7	3.5	56.9	4.4
InterUrban	37.8	16.7	33.0	22.5	53.7	23.9
Water & Sewer Auth.	31.6	30.0	19.7	33.5	46.6	18.6
Twp Park & Rec. Comm.		14.2	24.3		40.1	18.2

More satisfaction with responsiveness in the Village than in either City or Twp.

CONSOLIDATION
Should each community adopt a policy of **consolidating services** with other governmental units?

	City	Village	Township
Yes	58.0	68.2	62.5
No	7.5	11.7	10.3
Uncertain	34.5	20.1	27.2

Those responding Yes above:

	City	Village	Township
Sewer	52.2	53.0	45.7
Water	54.0	54.7	44.2
Stormwater	37.1	34.1	26.9
Police	50.1	47.4	43.1
Streets & Rds	44.4	44.6	35.3
Pks & Summer Rec	41.8	44.6	35.5
Planning	44.1	38.3	35.3
Zoning	44.9	32.8	29.4
Bldg permits	30.5	28.2	21.6
City Manager	28.5	24.0	27.9
Munic Vehicle Maint	36.8	51.2	27.4

Should the City of Saugatuck, Village of Douglas and Twp.of Saugatuck **consolidate into a single unit of government**?

	City	Village	Township
Yes	52.8	47.5	49.4
No	47.2	52.5	50.6

APPENDIX D

Soil Types - Tri-Community Area

SOIL TYPES - TRI-COMMUNITY AREA

SOIL TYPE AND SLOPE	SOIL NUMBER	LIMITATIONS FOR SEPTIC TANK ABSORPTION FIELDS	LIMITATIONS FOR DWELLINGS WITH BASEMENTS
CATEGORY A - SANDY, RAPID PERMEABILITY, LOW WATER TABLE			
Chelsea loamy fine sand, 0-6%	44B	SE4	SL
Chelsea loamy fine sand, 6-12%	44C	SE4	MD1
Chelsea loamy fine sand, 12-18%	44D	SE1, SE4	SE1
Chelsea loamy fine sand, 18-30%	44E	SE1, SE4	SE1
Oakville fine sand, 0-6%	10B	SE4	SL
Oakville fine sand, 6-18%	10C	SE4	MD1
Oakville fine sand, 18-45%	10E	SE1, SE4	SE1
Oakville fine sand, loamy substratum, 0-6%	53B	SE3, SE5, SE4	SL
Urban land - Oakville complex, 0-6%	72B	SL	SE4
CATEGORY B - SANDY, RAPID PERMEABILITY, HIGH WATER TABLE			
Brady sandy loam, 0-3%	19A	SE3	SE3
Covert sand, 0-4%	57A	SE3, SE4	MD3
Matherton loam, 0-3%	22A	SE3, SE4	SE3
Metea loamy fine sand, 1-6%	27B	SE4, SE5	SL
Metea loamy fine sand, 6-12%	27C	SE4, SE5	MD1
Morocco fine sand, 0-3%	70A	SE3, SE4	SE3
Morocco-Newton complex, 0-3%	15B	SE3, SE4	SE3
Pipestone sand, 0-4%	26A	SE3, SE4	SE3
Thetford loamy fine sand, 0-4%	51A	SE3	SE3
Tedrow fine sand,0-4%	49A	SE3, SE4	SE3
CATEGORY C - WET, HEAVY, SLOW PERMEABILITY			
Blount silt loam, 1-4%	41B	SE3, SE5	SE3
Capac loam, 0-6%	16B	SE3, SE5	SE3
Capac-Wixom complex, 1-4%	21B	SE3, SE5	SE3
Glynwood clay loam, 1-6%	8B	SE5, SE3	MD3, MD2
Glynwood clay loam, 6-12%	8C	SE5, SE3	MD1, MD2, MD3
Kibbie fine sandy loam, 0-3%	33A	SE3	SE3
Marlette loam, 6-12%	14C	SE5	MD1
Marlette loam, 12-18%	14D	SE1, SE5	SE1
Marlette loam, 18-35%	14E	SE1, SE5	SE1
Marlette-Capac loams, 1-6%	75B	SE3, SE5	SL
Metamora sandy loam, 1-4%	42B	SE5, SE3	SE3
Rimer loamy sand, 0-4%	28A	SE3, SE5	SE3
Seward loamy fine sand, 1-6%	60B	SE5, SE3	SL

SOIL TYPE AND SLOPE	SOIL NUMBER	LIMITATIONS FOR SEPTIC TANK ABSORPTION FIELDS	LIMITATIONS FOR DWELLINGS WITH BASEMENTS
CATEGORY D - VERY WET SOILS, ORGANICS, FLOODPLAINS			
Adrian muck	6	SE6, SE4	SE6, SE10
Algansee loamy sand, protected, 0-3%	73A	SE3, SE4	SE8, SE3
Aquents and Histosols, ponded	50		
Belleville loamy sand	48	SE6, SE5	SE6
Brookston loam	17	SE6	SE6
Belleville-Brookston complex	64	SE6, SE5	SE6
Cohoctah silt loam,	29	SE3, SE8	SE8, SE3
Cohoctah silt loam, protected	65	SE6	SE8, SE6
Colwood silt loam	30	SE6	SE6
Corunna sandy loam	36	SE6, SE5	SE6
Dune land and beaches	4		
Glendora loamy sand	2	SE6, SE3, SE4	SE8, SE3
Glendora loamy sand, protected	74	SE6, SE4	SE8, SE6
Granby sandy loam	39	SE6, SE4	SE6
Houghton muck	5	SE6, SE5	SE6, SE10
Martisco muck	67	SE8, SE6, SE5	SE8, SE6
Napolean muck	47	SE6	SE6, SE10
Newton mucky fine sand	69	SE6, SE4	SE6
Palms muck	7	SE11, SE6	SE6, SE10
Pewamo silt loam	45	SE5, SE6	SE6
Sebewa loam	23	SE4, SE6	SE6
Sloan silt loam	62	SE8, SE3, SE5	SE8, SE3
CATEGORY E - WELL DRAINED LOAM AND LOAMY FINE SAND			
Ockley loam, 6-12%	12C	MD1	MD2, MD1
Ockley loam, 12-18%	12D	SE1	SE1
Ockley loam, 18-30%	12E	SE1	SE1
Riddles loam, 6-12%	63C	MD1	MD1, MD2
Tekenink loamy fine sand, 6-12%	31C	MD1	MD1
Tekenink loamy fine sand, 12-18%	31D	SE1	SE1
Tekenink loamy fine sand, 18-35%	31E	SE1	SE1
CATEGORY F - WELL DRAINED LOAM AND LOAMY FINE SAND			
Ockley loam, 1-6%	12B	SL	MD2
Oshtemo-Chelsea complex, 0-6%	11B	SL	SL
Oshtemo-Chelsea complex, 6-12%	11C	MD1	MD1
Oshtemo-Chelsea complex, 12-18%	11D	SE1	SE1
Oshtemo-Chelsea complex, 18-35%	11E	SE1	SE1
Riddles loam, 1-6%	63B	SL	MD2
Tekenink loamy fine sand, 2-6%	31B	SL	SL

UNCLASSIFIED SOILS

Aquents, sandy and loamy	34
Pits	18
Udipsamments	66

KEY FOR LIMITATION CODES

SEVERE LIMITATIONS:

SE1	SLOPE
SE2	SHRINK-SWELL
SE3	WETNESS
SE4	POOR FILTER
SE5	PERCS SLOWLY
SE6	PONDING
SE7	CUTBANKS CAVE
SE8	FLOODING
SE9	EXCESSIVE HUMUS
SE10	LOW STRENGTH
SE11	SUBSIDES

MODERATE LIMITATIONS:

MD1	SLOPE
MD2	SHRINK-SWELL
MD3	WETNESS

SLIGHT LIMITATIONS:

SL	SLIGHT LIMITATIONS

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