APPENDIX L: TRAFFIC ANALYSIS

NOTE: The Community Planning and Development (CPD) Department is completing a review and revision of the incomplete draft traffic analysis attempted by HNTB. Once CPD staff completes the necessary revisions to ensure accuracy and applicability, the analysis will be inserted into this Appendix.

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APPENDIX M: TRANSPORTATION PLAN

NOTE: The Transportation Plan will include sections discussing in detail the Township's thoroughfares, future road lane widths, access management, traffic calming, walkability, and other transportation issues anticipated to arise during the twenty-year period of the Master Plan. During the period in which this Master Plan is effective, the Transportation Plan, when approved by the Planning Commission, is incorporated into this Appendix. The intent of this Appendix is to serve as a collection point for transportation plans developed and approved as part of the Master Plan implementation efforts. Therefore, Appendix M is adopted as part of this Master Plan, by reference to the forthcoming transportation planning content, as prepared by Township staff, and when approved by the Planning Commission.

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APPENDIX N: COMMUNITY FACILITIES ANALYSIS

The following community facilities analysis has been compiled as the foundation for the Township's capital improvements plan. Community facilities include the various buildings, sites, and services that are necessary for governmental entities to provide services to its residents. Several of the community facilities, such as police, fire, recreation, libraries, and public services possess a high profile within the community. Other facilities are used to provide those daily administrative services that are less visible to the public. The majority of the facilities included in this analysis are Township-owned and operated. The Township's overall land usage is also affected by facilities owned and operated by federal, state, and county governments. Therefore, facilities owned and/or operated by these levels of government are included in this analysis. The Waterford School District, Oakland Community College, and Oakland Intermediate School District each own and operate facilities that provide services to Waterford citizens and influence land use policy within Waterford. The frequency and quality of the interrelationships between government, educational institutions, and residential properties constitute an important element in terms of community facilities. Community facilities have an impact on the community's future land use pattern and play a critical part in a municipality's overall development and identity. Often, the impression created by a particular community is directly related to the capacity, functionality and accessibility of its municipal buildings, schools, parks, libraries, and other public facilities.

Therefore, the analysis of community facilities is an important component of a successful and viable Master Plan. It is desirable to plan for and anticipate the land use capacity necessary for these facilities to serve the community as it grows and matures, so that neighborhoods and citizens are not deprived of community facilities at the time of development and redevelopment. The goal in developing a capital improvements plan based on this community facilities analysis is to plan for and guide needed capital improvements and expenditures in a fiscally sound manner and to ensure that these improvements are consistent with goals and policies of Waterford Township and its residents. Consideration of these needs as part of the community's total development offers a practical basis for a community to address these needs during the budgetary process.

GENERAL TOWNSHIP FINANCIAL STRUCTURE

All Township community facilities are dependent upon funding for construction, maintenance, and staffing. As was shown in Appendix A – Background Studies, residential uses account for over 80 percent of the Township's tax base. The current assessed value of the total real property within the Township is nearly 2.6 billion dollars. The assessed value of real and personal property is a critical factor in determining the financial capacity for funding governmental services and facilities. The property tax through real and personal property is the primary revenue-producing tool for the Township. Other revenue sources include state and federal funds, local fees, licenses and permits, district court revenue and other sources. Table N-1 shows the general fund revenues and expenditures for Waterford Township between 1996 and 2003. Property taxes accounted for 31.6% of the total revenue of the Township in 1996, and an anticipated 38.2% of the revenue in 2003. During the same time period intergovernmental revenues decreased approximately 3.3% and interest income decreased 1.1%. The decrease in both sources is a result of the current weak economy and is beyond the control of Waterford government officials. This does place the burden on the local property tax to pay for government services and facilities. Because the assessed value of property within the Township continues to grow, the property taxes generated through the assessments remain relatively stable. One revenue-producing tool that the Township may

consider is tax increment financing (TIF) if a Downtown Development Authority (DDA) is established to achieve Master Plan Goal Four (please refer to pages 9-8 and 9-9). However, a TIF might present a long-term negative impact on the revenue stream for the general fund and special millages if it is not carefully structured. The Township must conduct detailed analysis of the impact of a proposed TIF to ensure that the impact on the general and special millage revenue stream is minimal.

The general fund expenditures for the Township have averaged a 5.9% increase during the past seven years. This expenditure level has kept ahead of the inflation rate during the same time period. However, considering that the Township underwent a substantial paradigm shift in its administrative operation through the implementation of electronic information systems technology, the Township has pursued a measured and reasonable expenditure policy. Since 1996, the Township has established a computer network that fully integrates information processing and electronic communication between all Township offices. In addition, a full-service geographic information system (GIS) was developed and implemented. An electronic document management system has been adopted and is being implemented in some departments, with the goal to fully implement all Township offices in the near future.

The annual Township budget is the key to establishing the Township Board's revenue and expenditure goals. The annual budget determines the operational activities and the capital improvements that will be undertaken during each fiscal year. Consequently, the adoption of the budget represents the most important policy decision of the Township Board. The Township Board has worked to accomplish its goals through a relatively stable total millage rate during the past 23 years, as shown in Figure N-1. The total Township millage rate has averaged 10.005 during this time period, ranging from a low of 8.9681 in 1982 and 1983 and a high of 11.6551 in 1988. The millage rate has remained at 9.6419 during the past six years, with the rate increasing in 2003 to 10.2719 due to voter approval of an additional 0.63 mills for emergency medical services provided by the Fire Department.

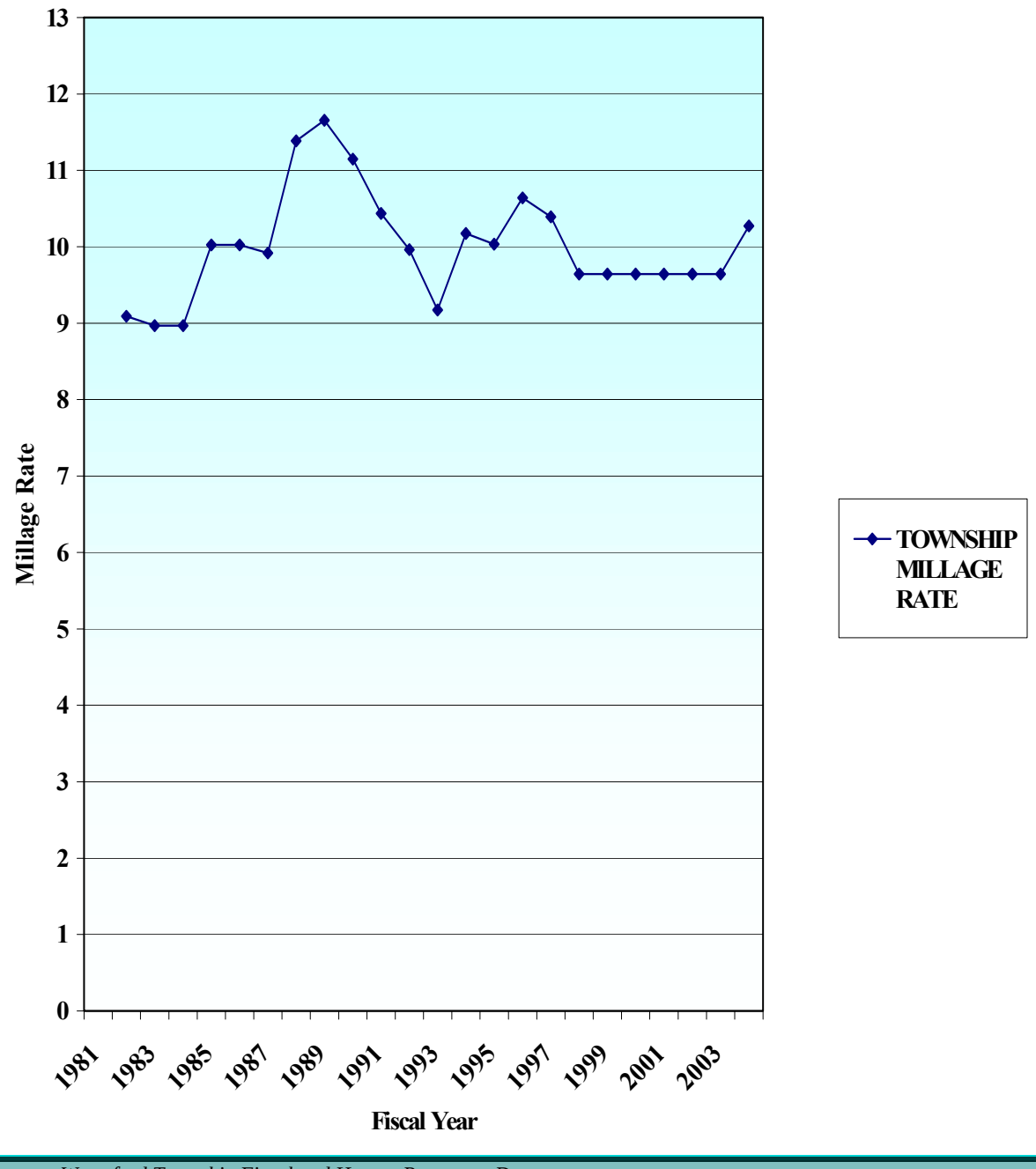
The components of the total millage rate indicates the level of commitment on the part of the community to public safety funding and maintenance of a modern, full-service library. Figure N-2 provides a graphic view of the levels of the different components of the Township's total millage rate during the past 23 years. The Township residents have supported the funding of police and fire services through passage of five millages, two for police and three for fire. In 1998, voters approved a millage to fund the construction of new state-of-the-art buildings to house the Police Department and the Fire Department. Since 1992, Township residents have also passed and renewed a separate millage for the construction of a new main library building. During the 1970s, Township voters approved a millage to fund and maintain a Township-wide bikepath system. However, the millage was not brought back before the voters for renewal in the late 1980s and was allowed to expire. It is therefore unknown whether Township residents would be supportive of reviving such a millage, although the support for the goal of enhancing walkability adopted through this Master Plan indicates that support does exist for a millage such as this. The only millage request during the past 20 years that did not receive the support of the people was for funding the construction of a new community center in 1991. It appears that while there was support for building a new community center, and this support continues to this day as reflected in the goals of this Master Plan, the millage request might have been too high to be supported by the community. A more modest millage request might receive voter approval. Figure N-2 also exhibits the efforts of the Township to adjust the various millage components to ensure a relatively stable overall millage rate. This indicates that any additional millage requests should take into account the Township's historic efforts to maintain and adjust this balance among the millage components.

Table N-1 General Fund History – Waterford Township - 1996-2003

Revenues	Actual 1996	Actual 1997	Actual 1998	Actual 1999	Actual 2000	Actual 2001	Budgeted 2002	Budgeted 2003
Property Tax	$4,797,813	$5,538,231	$5,808,414	$6,266,972	$6,607,475	$6,986,896	$8,037,702	$8,676,025
State Sources	6,439,110	6,098,228	6,321,849	7,230,136	7,152,407	7,623,375	7,657,575	7,537,725
Special Assessments	33,570	21,166	24,188	8,707	9,410	11,948	6,000	1,000
Licenses & Permits	1,191,832	1,393,453	1,423,863	1,333,988	1,045,288	1,131,927	1,130,100	1,264,600
Fines & Fees	2,750,484	2,791,908	3,007,229	3,004,318	2,443,570	2,595,741	2,886,500	2,849,750
Charges for Services	1,307,087	931,622	1,047,235	1,086,060	1,227,749	1,321,429	1,390,570	1,484,338
Interest	828,627	942,901	983,544	651,532	1,132,360	434,824	850,000	500,000
Others	341,464	138,975	186,768	227,514	190,000	226,864	710,104	386,594
Total Revenue	$17,689,987	$17,856,484	$18,803,090	$19,809,227	$19,808,813	$20,333,004	$22,668,551	$22,700,032
General Government	$5,716,361	$6,368,356	$7,223,149	$7,001,460	$7,024,331	$7,526,958	$8,358,856	$8,497,995
Planning, Building	1,247,890	1,358,177	1,590,110	1,598,364	1,695,617	1,813,422	1,891,206	1,929,910
Health & Welfare	209,714	231,363	228,494	188,164	169,584	161,257	199,600	201,600
Recreation & Culture	1,371,439	1,326,567	1,569,653	1,660,537	1,707,764	1,809,509	1,828,754	2,005,592
Capital Expenditures	549,859	537,880	549,063	842,344	696,981	698,061	1,522,008	520,894
Debt Service	144,650	139,635	139,409	126,080	117,150	105,605	113,685	109,558
Other	0	0	0	0	0	123,516	0	0
Operating Transfers Out	6,873,240	7,311,377	7,904,318	7,675,205	8,202,940	8,651,899	10,332,194	10,483,555
Total Expenditures	$16,113,153	$17,273,315	$19,204,196	$19,092,145	$19,614,367	$20,890,227	$24,246,303	$23,749,104
Excess Revenue Over (Under) Expenditure	$1,576,834	$583,169	$(401,106)	$717,073	$194,446	($557,223)	($1,577,752)	($1,049,072)
Beginning Fund Balance	$2,578,322	$4,155,156	$4,738,325	$4,337,219	$5,054,292	$5,248,738	$4,691,515	$3,113,763
Ending Fund Balance	$4,155,156	$4,738,325	$4,337,219	$5,054,292	$5,248,738	$4,691,515	$3,113,763	$2,064,691

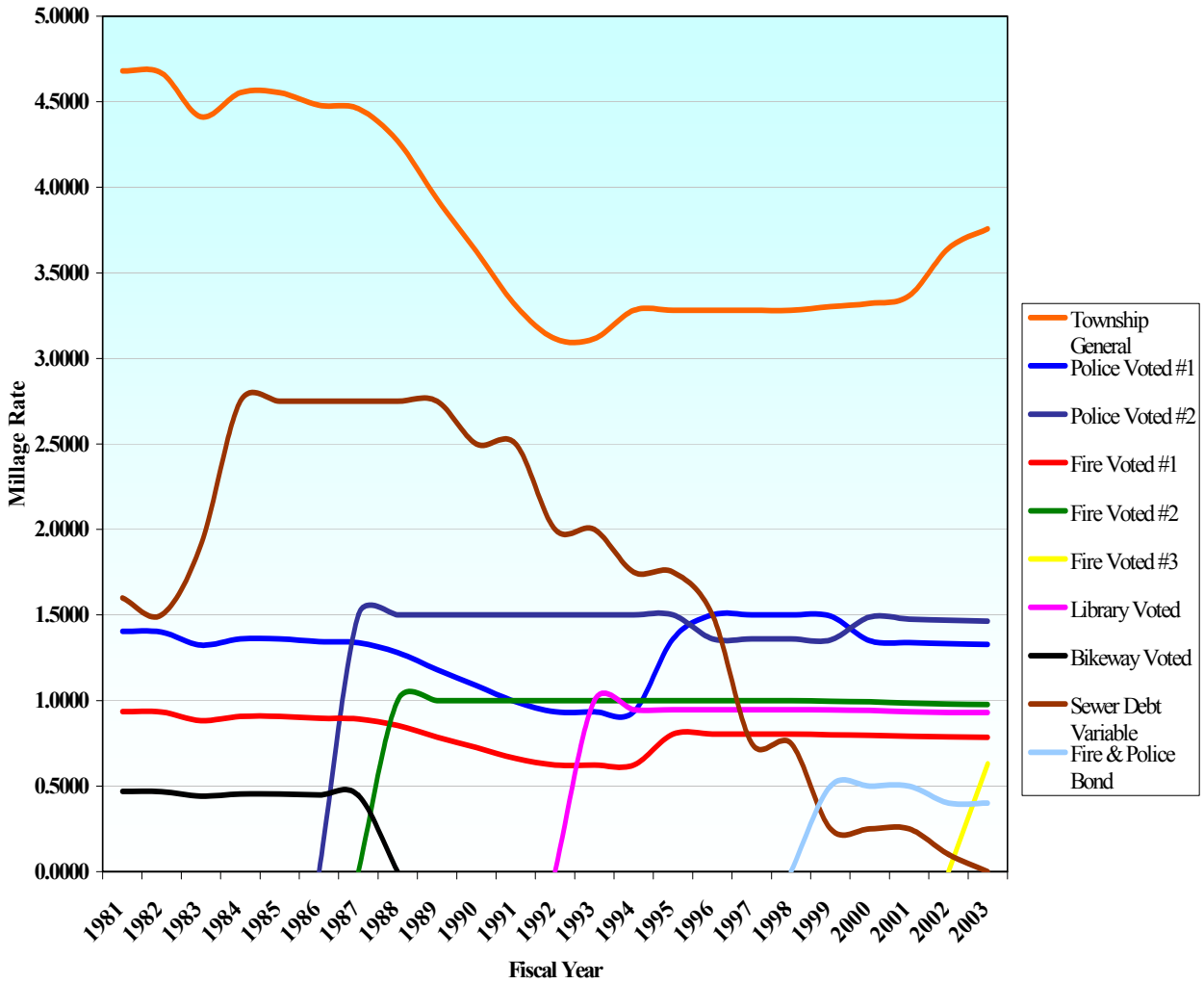
Source: Waterford Township Fiscal and Human Resources Department

Figure N-1 Township Millage Rate – 1981-2003



Source: Waterford Township Fiscal and Human Resources Department

Figure N-2 Components of Township Millage Rate – 1981-2003



Source: Waterford Township Fiscal and Human Resources Department

In addition to financial resources, staffing is necessary to provide services and to operate and maintain community facilities. Table N-2 shows the numerical growth of the number of staff positions budgeted for each department during the past 33 years. Overall, staff positions have grown 183%, from 136 positions in 1970 to 385 positions in 2003. Over 53% of the 249 positions added since 1970, were in the Police and Fire Departments, which is also reflective of the support given to these two public safety services by citizens through the millage approval process. The numbers indicate that staff level has grown 750% for parks and recreation services, 400% for library services, 244% for police services, 229% for fire services, 139% for public works services, 133% for district court services, and 89% for general government services.

Table N-2 Budgeted Full-Time Positions 1970-2003

Department	Fiscal Year 1970	Fiscal Year 1984	Fiscal Year 1994	Fiscal Year 1999	Fiscal Year 2001	Fiscal Year 2002	Fiscal Year 2003
Supervisor/Assessing	9	7	10	10	10	10	10
Clerk	6	5	6	7	7	7	7
Treasurer	6	8	10	7	7	7	7
Information Systems	0	0	0	4	4	4	4
Fiscal & Human Resources	0	2	1	4	4	4	4
District Court	15	28	33	32	34	35	35
Community Planning & Development	4	3	6	9.5	14.5	14.5	14.5
Community Development	0	3	3	3.5	0	0	0
Building & Engineering Department	8	11	11	16	16	16	16
Parks & Recreation	2	8	11	12	12	13	13
CAI Building	0	0	0	3	3	3	3
Hess-Hathaway	0	0	0	0	1	1	1
Police Department	32	74	98	121	122	117	117
Animal Control	2	1	0	0	0	0	0
Fire Department	21	31	51	55	56	56	69
Library	4	7	9	18	19	20	20
Water & Sewer	22	32	42	52	51.5	52.3	52.3
Facilities & Operations	5	11	11	13	13	12.2	12.2
TOTAL	**136**	**231**	**302**	**367**	**374**	**372**	**385**

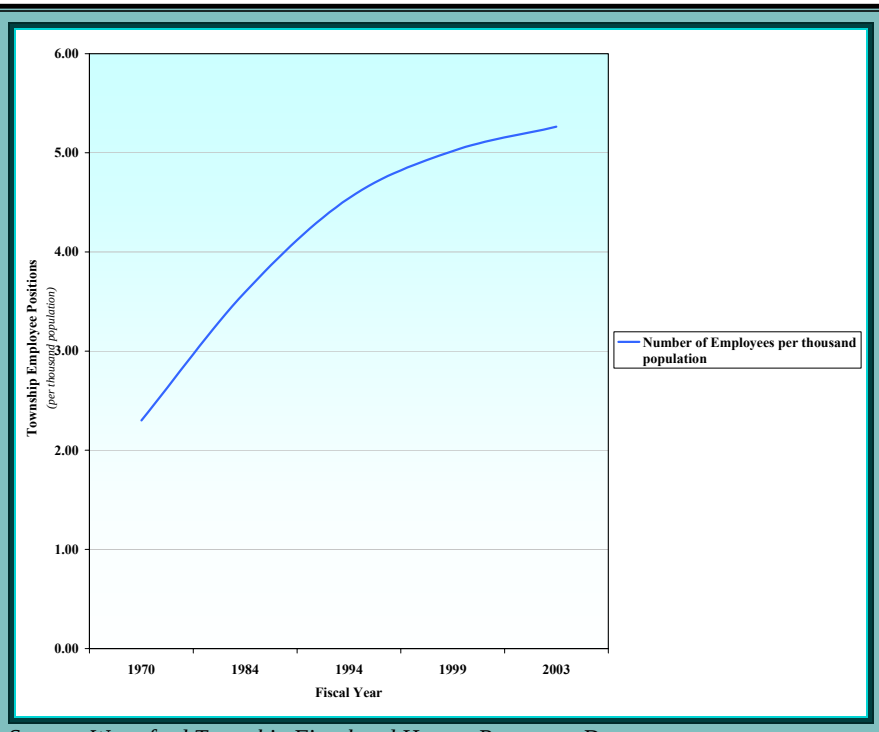
Source: Waterford Township Fiscal and Human Resources Department

NOTES:

- The Information Systems Department was created in 1997. Two employees previously assigned to the Treasurer's Office were moved into this department.
- The Facilities & Operations Department and Water & Sewer Department were made divisions of a new Department of Public Works in 1994.
- The Building Department and Engineering Department were merged into one Building and Engineering Department in 1994.
- The Township purchased the CAI Building in 1999 and hired three full-time employees to staff it. Maintenance and operation of the CAI Building and Hess-Hathaway Park are the responsibility of the Parks & Recreation Department.
- The Community Development Department and Planning Department were merged in 2000 to form the Community Planning and Development Department.
- The Animal Control division of the Police Department was abolished in 1992. Responsibility for animal control services was transferred to the Oakland County Animal Welfare Division.

The increase in the total number of Township employees does not provide a complete picture of effective and adequate staffing. Another means of analyzing the Township staffing levels is determining the number of employees per thousand residents. Figure N-3 shows the staffing service level during the past 23 years. During that time frame, the Township staffing service level improved from 2.3 employees per thousand population to 5.26 in 2003. Figure N-4 provides the staffing service levels during the same time period for each Township service classification. Each classification's service level has improved during the past 23 years, notably for police and fire. However, while the improvement in the police and fire service levels are notable when compared with Waterford's historic record, the service levels are still below the average service level standard for comparably-sized communities[1]. For instance, while the Waterford police staff service level for both civilian and uniformed employees is 1.6, the average for communities with a population between 50,000 and 99,999 is 2.2. The Waterford fire staff service level is 0.94, while the average for communities with a population between 50,000 and 99,999 is 1.25 for career firefighters. Another example revealing that Waterford's staffing service level has improved during the past 23 years but is not excessive can be found in library services. While the staff service level for the library has improved from 0.07 in 1970 to 0.27 in 2003, the accepted standard for comparable size communities is 0.5 staff persons per 1,000 population.

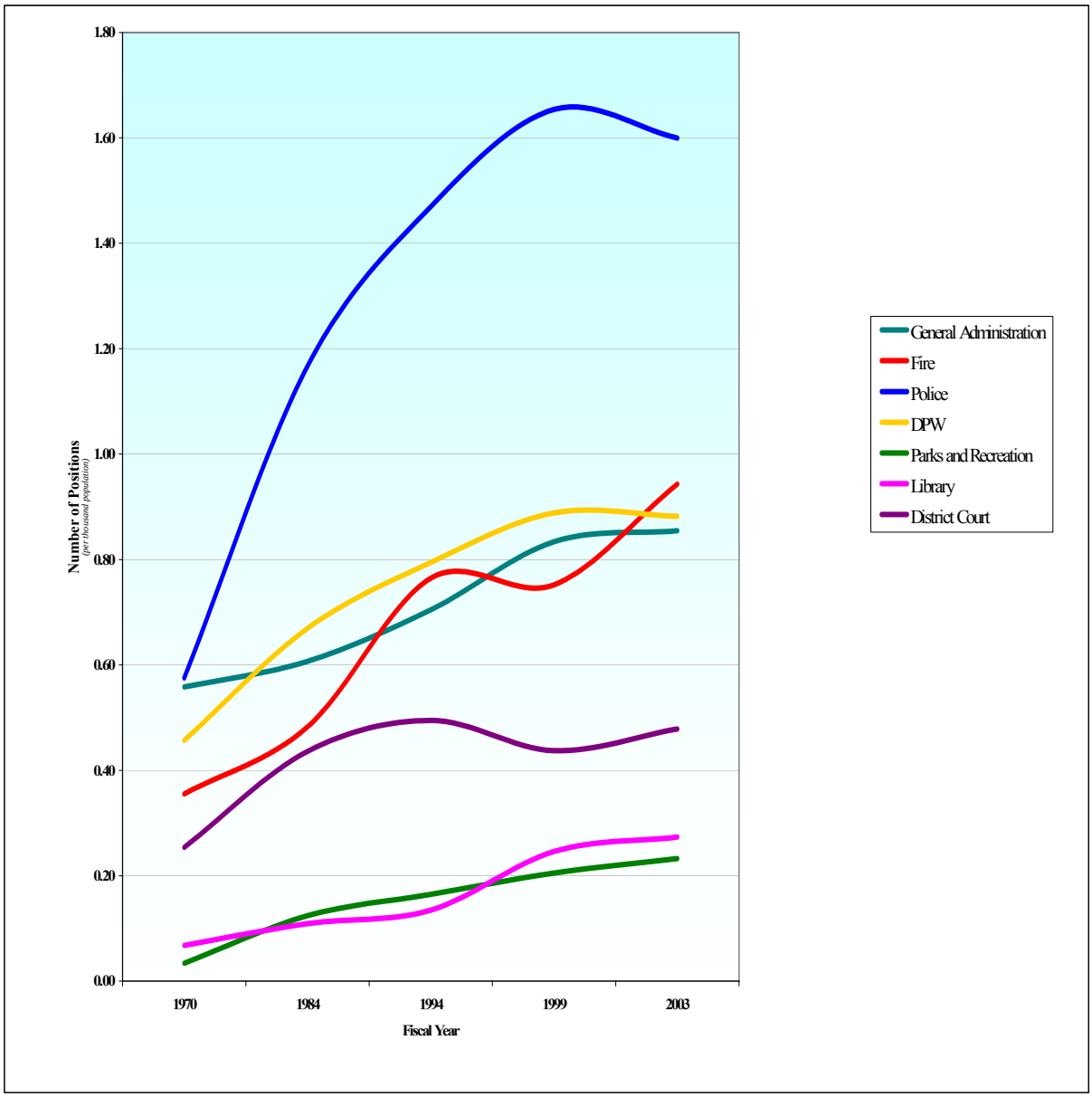
Figure N-3
Number of Township Employee Positions
Per Thousand Population – 1970-2003



Source: Waterford Township Fiscal and Human Resources Department

[1]Municipal Benchmarks: Assessing Local Performance and Establishing Community Standards by David N. Ammons SAGE Publications, Inc. Thousand Oaks, CA 1996

Figure N-4
Number of Township Employee Positions
Per Thousand Population, by Service Classification – 1970-2003



Source: Waterford Township Fiscal and Human Resources Department

GENERAL TOWNSHIP SERVICES AND FACILITIES

The development of a civic center as an important community focal point is an accepted planning concept. The location of a civic center in an area easily accessible to its citizens strengthens its viability and brings public awareness and recognition as a community gathering place. The presence of a civic center is especially important to establishing a sense of identity or place for those communities without a downtown area.

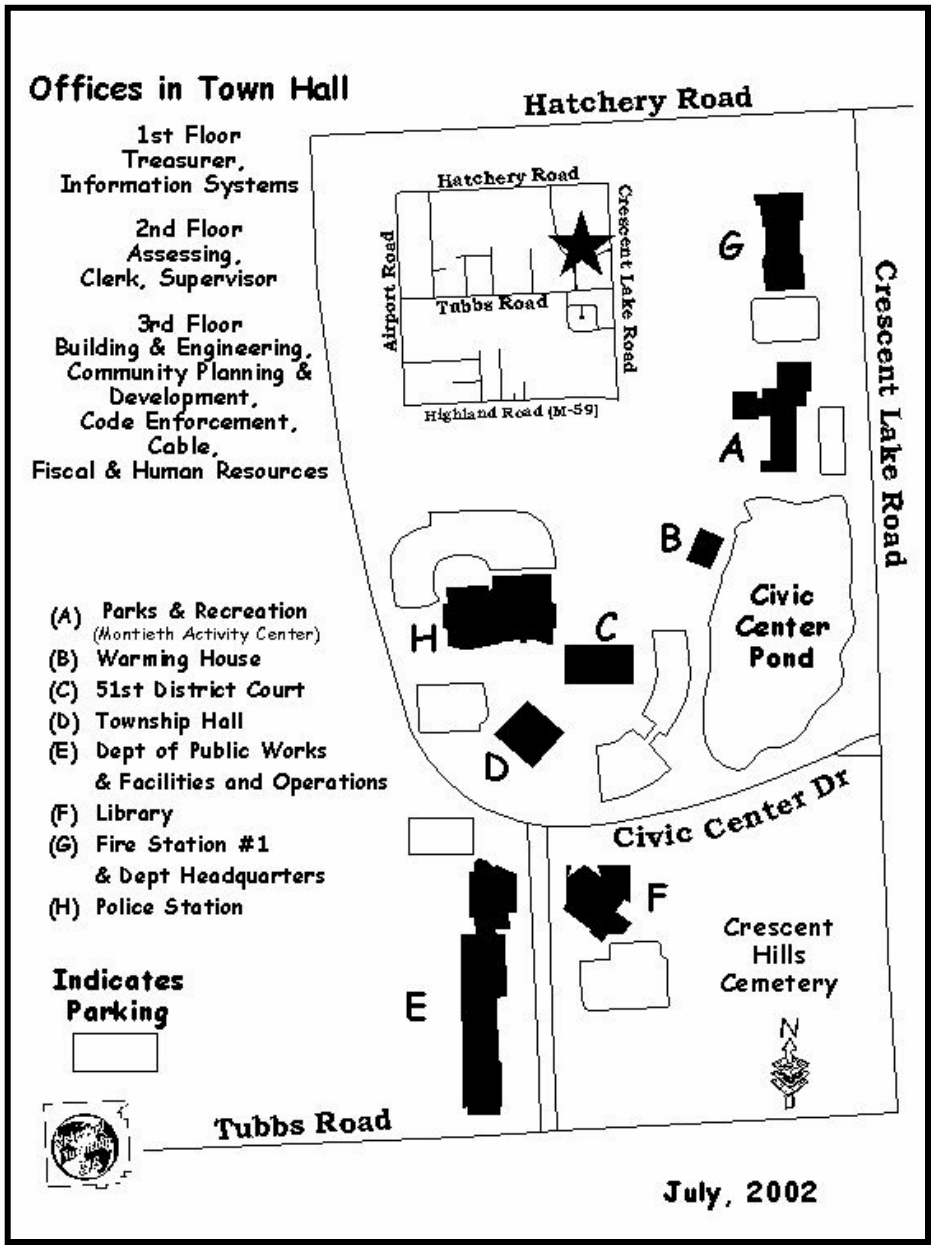
The benefit of a civic center can be both functional and aesthetic. The diversity of governmental services and functions generally requires several public buildings and facilities for effective service delivery. The proper location, size and improvements of such facilities are essential for the effective administration and service and depend upon both an understanding of the various governmental functions and subsequent maintenance programs to meet their needs. By grouping essential services, such as administrative offices, police, fire, and public works along with quality of life services such as parks, recreation, and the library, Township citizens are afforded the convenience of a multiple use location. If properly designed, it will add to the economic vitality of the community because people are placed within easy access of some of their daily and weekly activities. It also decreases the time and distance residents must travel to complete their governmental business trips. In addition, the close proximity of the primary Township buildings and facilities provides for more effective and efficient maintenance and oversight than if the buildings were located throughout the community.

Waterford Township's Civic Center site, shown in Map N-1, accommodates a number of Township functions and buildings, including Township Hall, the Police Department Headquarters, Fire Station #1 and Fire Department Headquarters, the Department of Public Works Building, the Main Library, the 51st District Court, the Parks and Recreation Building, the Warming House overlooking the Civic Center pond, the Crescent Hills Cemetery, soccer fields, and public parking. These uses are concentrated in a Civic Center setting of approximately 76 acres near the center of the Township.

The three-story Township Hall contains nearly 43,000 square feet of gross floor area and houses the basic administrative functions of the Township. Built in 1979, there is still reasonable room within the building to house additional staff without costly modifications or additions. The use of contemporary modular office units over the years has maintained the capacity for effectively accommodating increased staffing levels. Future expansion of the building does not appear necessary. The Township Hall building also contains an auditorium that serves as the main meeting room for the Township Board, Planning Commission, and Zoning Board of Appeals. There are also four conference rooms for business meetings. There is still a need for additional space for long term storage of official records and documents. The shortage of storage space in Township Hall requires the Township to begin off-site storage of its historical documents. Consideration might be given in the future to retrofitting excess space for document storage facilities in one of the other buildings on the Civic Center campus. One alternative that might be considered, if Township citizens support the construction of a new community recreation center, is to retrofit a portion of the building currently being used as the Parks and Recreation Department Headquarters. Additionally, some of the pressure that has grown over the years for document storage space might subside significantly as the Township moves full-time into electronic document storage, provided that State of Michigan document retention requirements are amended to provide for electronic document storage in place of hard copy storage.

Map N-1

Civic Center Campus



In addition to the buildings and facilities on the Civic Center campus, Waterford also provides library and recreation services at the CAI building, located in an industrial-zoned area on Williams Lake Road, between Airport Road and Dixie Highway. The CAI building is over 55 years old and is in need of numerous repairs and maintenance updates. If the Master Plan goal to construct and operate a new community recreation center is achieved, the services provided in this building could be transferred to the new building and the existing property sold. The Township sponsors a Community Resource Center at the Summit Place Mall. Located by the Telegraph Road mall entrance, the Waterford Community Resource Center is a user-friendly facility which aims to provide Waterford citizens with a variety of information about government activities and community functions. Numerous brochures from local, county, state and federal levels of government are available, as well as information from various community organizations. Additional Township facilities and buildings, such as parks, satellite libraries, fire stations, and water and sewer facilities, are located throughout the Township and are described in the following sections dealing with parks and recreation, library, fire, and water and sewer services.

51ST DISTRICT COURT

The 51st District Court occupies a building on the Civic Center campus that contains approximately 17,200 square feet of gross floor area. The building was constructed in 1988 and appears to be able to accommodate the Court's future needs. If, in the future, this situation changes and the Court requires additional space, there is enough land adjacent to the existing building to construct a small expansion. Since the building is currently one-story, consideration could be given to adding additional stories. However, this alternative would require extensive engineering study, involve a costly reconstruction process, and necessitate the temporary relocation of the Court operations.

OAKLAND COUNTY GOVERNMENT

The seat of the Oakland County government, known as the Oakland County Service Center, is located on an expanse of property along Telegraph Road. A portion of the County property is located in Pontiac and another portion, approximately 319 acres, is located in Waterford. The majority of Oakland County Government offices and facilities are located within the Service Center. The primary office buildings, such as the County Courthouse, County Jail, and Executive Office Buildings, are situated on the Pontiac side of the Service Center. The Waterford side holds several secondary office buildings, the Children's Village juvenile detention center, Road Commission for Oakland County service offices, and Waterford Oaks Park.

Sharing the location of the Oakland County Government Service Center provides several benefits to Waterford Township. Some of the primary advantages are employment opportunities, proximity for close intergovernmental and resident-government interaction, the Service Center's contribution of aesthetic quality to the surrounding area, and its potential for generating redevelopment opportunities in nearby areas.

POST OFFICE

The United States Postal Service operates two retail post office facilities in Waterford, one in a strip retail center on Dixie Highway near Midland, and the other in a new building on Cooley Lake Road near the Highland Lakes campus of Oakland Community College. Both facilities are less than ten years old. In addition, the Postal Service operates a maintenance facility on Elizabeth Lake Road and leases and operates a postal collection and distribution center, located on M-59, west of Crescent Lake Road, for the lakes area communities. The Postal Service acquired nearly eight acres adjacent to the leased property to construct a modern collection and distribution center, anticipating continued population growth in Waterford and the surrounding lakes area communities.

POLICE SERVICES

The Waterford Township Police Department was established in 1953. Fifty years later, the members of Waterford's Police Department continue to preserve and protect the citizens of Waterford. The Township police force is currently staffed by 90 sworn officers and 26 support staff. In addition to patrol duties, Waterford officers staff several specialized units including a Special Response Team, Motor Unit, Honor Guard, and K9 Unit. The typical patrol structure is to provide 24-hour patrol. Officers typically work 10-hour shifts, four days a week. Additionally, the Oakland County Sheriff and Waterford Police Department have signed a mutual aid agreement for the provision of supplemental emergency police protection services when requested by the Township. The mission of the Waterford Township Police Department is to:

- Preserve the safety of the public, promote orderly flow of traffic, investigate reported acts of criminal activity, provide services in addition to the enforcement of laws, and protect the rights of all people.
- The Waterford Township Police Department's mission includes participating with other governmental entities and other agencies of Waterford Township to further the betterment of the community.
- The Waterford Township Police Department exists to support and maintain the quality of life in Waterford, and acts to develop a sense of security and well being in the residents, businesses, and visitors.

The Waterford Police Department is located in a new facility opened in 2001 on the Civic Center Campus. The facility is state-of-the-art and fully equipped to handle current law enforcement needs as well as anticipated needs through the next 20 years. The building includes a firearms practice area, jail holding cells, network-ready training area, a physical training area, crime scene investigation facilities, and an evidence storage area. The building also houses a unified dispatching center that serves both the Police and Fire Departments. It is not anticipated that the new Police Department Headquarters building will require expansion during the next 20 years since extensive planning for future needs was incorporated into the construction of the new building.

In addition to the main building, police officers have two substation/community policing locations at their disposal. One of the substation areas is located in the Community Resource Center at the Summit Place Mall and the other substation area is located at the Oakland County International Airport. These two locations are generally unmanned and are used on an as-needed basis.

The Police Department projects, as shown in Table N-3, that the number of assistance calls will increase from 1 to 2% per year, reflecting projected population increases. In approximately 10 to 15 years, the number of annual assistance calls is projected to plateau in tandem with Waterford reaching its maximum population.

Table N-3: Annual Number of Police Department Assistance Calls – 1992-2002

Year	Number of Calls
1992	41,110
1993	42,735
1994	45,558
1995	51,809
1996	51,383
1997	48,341
1998	46,125
1999	50,014
2000	49,317
2001	48,725
2002	39,989

Source: Waterford Township Police Department

Anticipated staffing needs are outlined in Table N-4. As previously explained, the average staffing level for civilian police department employees per 1,000 population for a community of Waterford's size is 0.5. The comparable standard for uniformed personnel is 1.7. The Police Department projected future staffing levels reflect a consistent level of service during the next 20 years, while continuing to remain below the average staffing levels for comparable size communities. In order to achieve the Master Goal of maintain the existing level of police services, staffing levels should remain within the range indicated in Table N-4 for the population as projected.

Table N-4: Projected Police Department Staff Levels – 2003-2020

	2003 *(Actual)*	**2005** *(Projected)*	**2010** *(Projected)*	**2020** *(Projected)*
Total Population	73,150	74,500	76,576	79,848
Total Sworn Officer Staff	90	100	100	100
Sworn Officer Staffing Level *(per thousand population)*	1.23	1.34	1.30	1.25
National Average Staffing Level *(for communities with 50,000 to 99,999 population)*	1.7	1.7	1.7	1.7
Total Estimated Sworn Officer Staff *(based on national average staffing level)*	124	127	130	136
Proposed Sworn Officer Staffing Level Range	90-124	100-127	100-130	100-136
Total Civilian Staff	26	26	31	31
Civilian Staffing Level *(per thousand population)*	0.35	0.35	0.40	0.39
National Average Staffing Level *(for communities with 50,000 to 99,999 population)*	0.5	0.5	0.5	0.5
Total Estimated Civilian Staff *(based on national average staffing level)*	37	37	38	40
Proposed Civilian Staffing Level Range	26-37	26-37	31-38	31-40

Source: Waterford Township Police Department, David N. Ammons, Municipal Benchmarks, SAGE 1996

FIRE AND EMERGENCY MEDICAL SERVICES

The Waterford Township Fire Department was formed in 1941. As of the beginning of 2003, fire protection and emergency medical services are provided by a career staff headed by a full-time Fire Chief, Deputy Chief, and 64 employees. An auxiliary volunteer group is available to provide supplemental assistance to the career force. There are five fire stations positioned throughout the Township. Each station has been strategically located to provide effective service coverage of the entire Township in the shortest possible response time. Two stations have staffed paramedics and advanced life support vehicles. In 2002, Township residents approved a 0.63 special millage to fund expansion of paramedic services to a third station. The mission of the Waterford Fire Department is to protect the lives and property of the residents and visitors of Waterford through:

- Public education in fire safety and hazard recognition
- Aggressive fire suppression and rescue
- Professional emergency medical treatment of the sick and injured
- Efficient pre-incident planning and emergency management
- Hazardous materials control and mitigation

Station service boundary lines have been drawn, as shown on Map N-2, dividing the Township into five sectors based on geographic location, travel distances, and traffic conditions. When an emergency arises, trucks and personnel are dispatched from the closest fire station, ensuring the fastest possible response time. The average response time of the Waterford Fire Department is less than four minutes. The total number of annual response calls, as shown in Table N-5, is consistently near 4,500. Additionally, emergency medical rescue calls have become a major part of the department's service activity, averaging over 75% of the total calls for service during the past five years, as shown in Table N-6, and growing as a percentage of the total calls each year.

Table N-5: Annual Number of Fire Department Assistance Calls by Situation – 1997-2001

Type of Situation	Year/Number of Calls				
	1997	1998	1999	2000	2001
Situation Found Undetermined	0	1	4	0	3
Fire Explosion	249	265	227	215	180
Overpressure Rupture	10	6	5	6	7
Emergency Medical Rescue Call	3,195	3,314	3,255	3,415	3,437
Hazardous Condition	309	249	203	180	134
Service Call	237	271	248	243	232
Good Intent Call	162	217	243	235	235
False Call	220	179	188	141	142
Other Situation	9	8	6	8	7
Total Incident Count	**4,391**	**4,510**	**4,379**	**4,443**	**4,377**

Source: Waterford Township Fire Department

Table N-6: Emergency Medical Rescue Calls as a Percent of Total Annual Assistance Calls – 1997-2001

Year/Percent of Total				
1997	1998	1999	2000	2001
72.8%	73.5%	74.3%	76.9%	78.5%

Source: Waterford Township Fire Department

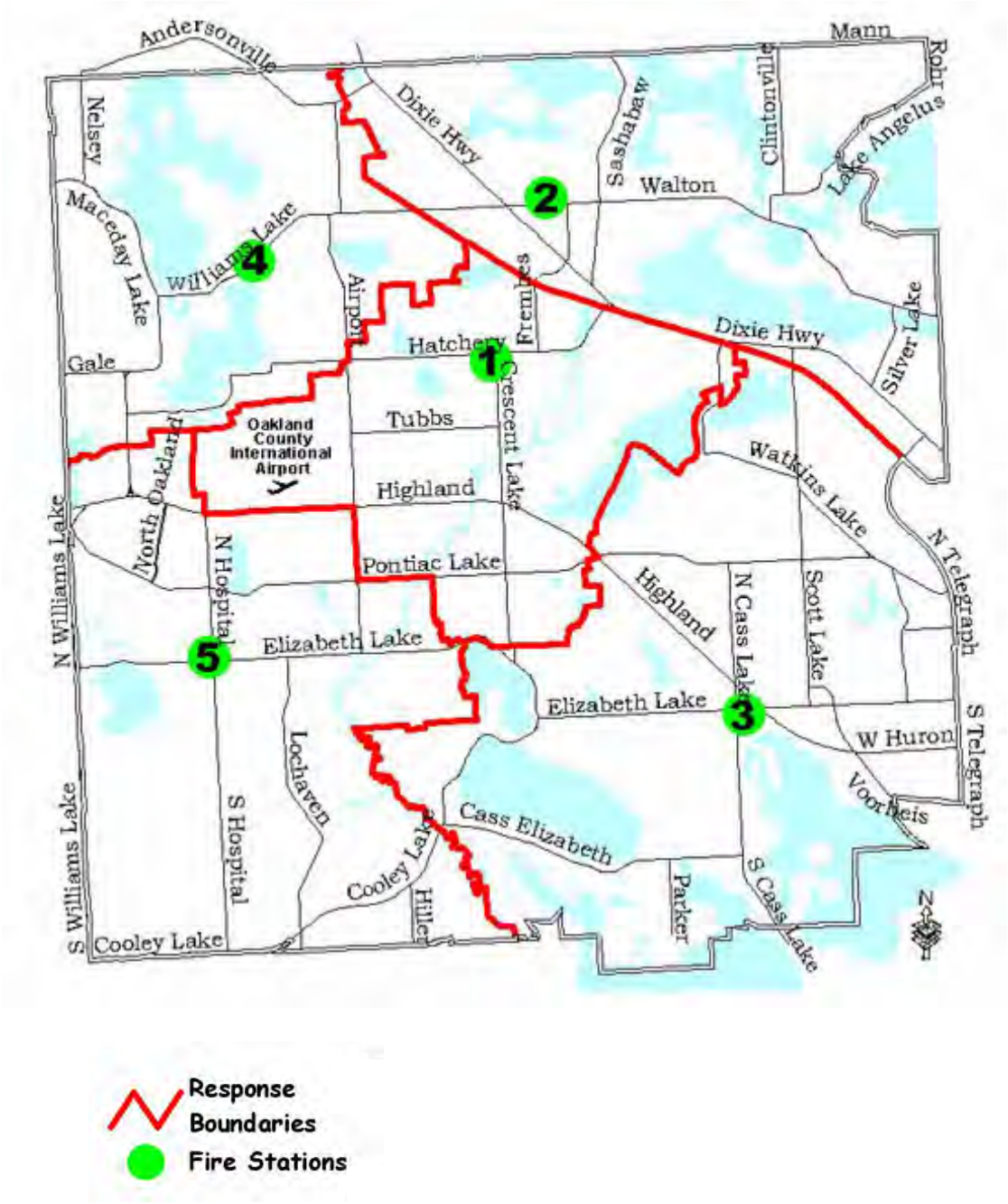
Anticipated staffing needs are outlined in Table N-7. As previously explained, the average staffing level for fire department employees per 1,000 population for a community of Waterford's size is 1.25. The Fire Department projected future staffing levels reflect a consistent level of service during the next 20 years, while continuing to remain below the average staffing levels for comparably-sized communities. In order to achieve the Master Plan Goal of maintaining the existing level of fire and emergency medical services, staffing levels should remain within the range indicated in Table N-7 for the population as projected.

Table N-7: Projected Fire Department Staff Levels – 2003-2020

	2003 *(Actual)*	**2005** *(Projected)*	**2010** *(Projected)*	**2020** *(Projected)*
Total Population	73,150	74,500	76,576	79,848
Total Fire Department Staff	66	67	69	72
Fire Department Staffing Level *(per thousand population)*	0.90	0.90	0.90	0.90
National Average Career Firefighter Staffing Level *(for communities with 50,000 to 99,999 population)*	1.25	1.25	1.25	1.25
Total Estimated Career Firefighter Staff *(based on national average staffing level)*	91	93	96	100
Proposed Career Firefighter Staffing Level Range	66-91	67-93	69-96	72-100

Source: Waterford Township Fire Department, Community Planning and Development Department, David N. Ammons, Municipal Benchmarks, SAGE 1996

Map N-2 Fire Station Locations and Service Area Boundaries



The Township is currently served by the five fire station buildings which are described in Table N-8. The national average number of fire stations per 1,000 population for a community the size of Waterford is 0.075. At the current population of 73,150, this would indicate a need for 5.48 stations. Therefore, the Township is stretching the limits of the average level of service with its five current stations. However, if the population increases during the next 20 years to 79,848, as projected, the Township may need to consider constructing a sixth fire station to maintain current service levels and response times. There is an immediate need to replace the Station 2 building with a modern facility since it is over 50 years old. The other station buildings are in relatively good shape and could continue to serve Waterford during the next twenty years without being replaced.

Table N-8: Inventory of Fire Station Buildings

Station Locations	Year Built	Description
Headquarters and Station 1 2495 Crescent Lake Rd.	2000	Station 1 serves as the headquarters for Township fire and emergency medical services and is responsible for protecting the central sector of the Township. The building contains administrative office space, state-of-the-art training facilities, conference rooms, equipment repair facilities, a computer technology center, living quarters for Station 1, and fire apparatus bays. Houses an Engine, the Aerial Truck, an Advanced Life Support Rescue Vehicle and the Command Vehicle.
Station 2 4596 W. Walton Blvd.	1952	Station 2 is responsible for responding to calls in the Township's northeast sector and serves as the Department's vehicle repair and maintenance facility. Station 2 houses an Engine and will be home to the third Advanced Life Support Rescue.
Station 3 3435 Elizabeth Lake Rd.	1989	Station 3 is responsible for protecting the Township's southeast sector. Station 3 houses an Engine and an Advanced Life Support Rescue.
Station 4 6615 Williams Lake Rd.	1974	Station 4 is primarily responsible for protecting the Township's northwest sector and the first response unit for the Oakland-County International Airport. Station 4 houses an Engine.
Station 5 25 N. Hospital Rd	1979	Station 5 has the primary responsibility of protecting the southwest sector of the Township and is the first response unit to the Oakland Community College Highland Lakes Campus. Station 5 houses an Engine.

Source: Waterford Township Fire Department

The Township is currently served by seven pumpers, one aerial apparatus, four rescue vehicles, and one command vehicle, all of which are briefly described in Table N-9. The national average for the number of pumpers per 1,000 population for a community the size of Waterford is 0.086. At the current population of 73,150, this would indicate a need for 6.3 pumpers. Therefore, the Township achieves the national average for pumpers. The current number of pumpers should accommodate population increases to the projected 79,848 during the next 20 years. There is an immediate need to replace the Station 2 building with a modern facility since it is over 50 years old. The national average for the number of aerial apparatus per 1,000 population for a community the size of Waterford is 0.022. At the current population of 73,150, this would indicate a need for 1.6 aerial apparatus. Although the Township is below the national average for aerial apparatus, there are few buildings greater than two stories in height. The current number of buildings in excess of two stories is not anticipated to increase during the next 20 years. The aerial apparatus is also an important tool in providing elevated water streams on two-story buildings and large-footprint

commercial buildings. Therefore, the current aerial apparatus could accommodate population increases to the projected 79,848 during the next 20 years. However, if during the next 20 years the number of buildings with heights exceeding two stories increases, the number of large-footprint commercial buildings increases, or if the aging of the Township's building stock results in an increase of fires requiring additional aerial apparatus support, the Township may want to consider adding an additional aerial apparatus in order to meet the national average.

Table N-9: Inventory of Fire Department Vehicles

Vehicle Name	Vehicle Description
Engine 201	Engine 201 is a 1990 Sutphen Class A pumper with a 1,250 gallon-per-minute Hale pump. It has an on-board 500 gallon water tank and carries 1,000 feet of 4" supply hose, 700 feet of 2-1/2" supply hose, a 150 foot 2-1/2" pre-connected attack line, and two 200 foot 1-3/4" pre-connected cross-lay attack lines. It also has a 3" surface mounted deck gun capable of delivering the full 1,250 gallons per minute of water. All engines carry "foam" and have the capability of delivering it. All engines carry cardiac defibrillators.
Engines 203 & 204	Engines 203 and 204 are identical 1995 Sutphen fully enclosed cab Class A pumpers with 1,250 gallon-per-minute Hale pumps. They both have on-board 500 gallon water tanks and carry 1,000 feet of 4" supply hose, 700 feet of 2-1/2" supply hose, a 150 foot 2-1/2" pre-connected attack line, and two 200 foot 1-¾" pre-connected cross-lay attack lines. They also have 3" surface mounted deck guns capable of delivering the full 1,250 gallons per minute of water. All engines carry "foam" and have the capability of delivering it. All engines carry cardiac defibrillators.
Engines 205, 206 and 207	Engines 205, 206 and 207 are models 2000 (Engine 205) and 2001 (Engines 206 and 207) Pierce Dash Class A Pumpers. Each is capable of delivering 1,500 gallons-per-minute from a Hale single stage pump. They all have an on-board 500 gallon water tank and carry 2,000 feet of 4" supply hose and 700 feet of 2-1/2" supply hose. Each engine is capable of delivering its capacity through several pre-connected attack lines; one 150 foot 2-1/2" line, two 200 foot 1-3/4" lines and one 100 foot 1 3/4" car fire line. Each engine also has a removable deck gun (monitor) able to flow up to 1,250 gallons-per-minute. Each engine has 3,000 gallon folding water tanks, hard suction (drafting), and miscellaneous drafting accessories. Engine 206 has a 500 gpm Hale portable pump with hard suction. All engines carry "foam" and have the capability of delivering it. All engines carry cardiac defibrillators.
Tower 1	Tower 1 is a 1991 Sutphen Aerial Platform truck with a 100-foot ladder (at 70 degrees) and a self-leveling, self-stabilizing bucket. It has a 1,500 gallon-per-minute Hale pump capable of delivering its full capacity through the two 2-1/2" nozzles mounted on either side of the bucket. The primary mission of Tower 1 is high angle rescue and deployment and its capability to deliver large amounts of water from above its target. It has played a vital role in rapidly extinguishing several large fires in large commercial buildings and apartment complexes and is frequently called upon to assist neighboring departments.
Rescue Vehicle R-98	R-98 is a 1998 Freightliner FL60/Wheeled Coach Medical Attack Vehicle (MAV) rescue currently in service as a "Special Response" unit. The equipment carried on this vehicle is for First Response Haz-Mat and Special Rescue.
Rescue Vehicles R-99, R-00, R-01, R-02 and R-03	1999, 2000, 2001, 2002, and 2003 are nearly identical Freightliner FL60/Wheeled Coach Medical Attack Vehicle (MAV), State of Michigan fully licensed, fully equipped Advance Life Support (ALS) transporting units. Some of the equipment carried on these vehicles are 'Jaws of Life', forcible entry tools, self-contained breathing apparatus (SCBA), spare air bottles, cardiac defibrillator, advanced medical equipment, emergency drugs and hand tools.
Command Vehicle	The Command Vehicle is a 2000 Ford Heavy Duty F350 Crew Cab 4-wheel drive truck with a PowerStroke Diesel and a custom designed box. It serves as the command officer's vehicle and carries additional equipment and supplies including extra oxygen bottles and air cylinders, a high velocity gasoline powered exhaust fan, a power winch, a generator, extra chain saws, specialized forcible entry tools, tactical nozzles, extra medical supplies, maps, floorplans and extra portable radios. During an incident, it functions as the mobile command post and houses technical and tactical reference materials required by the Incident Commander.

Source: Waterford Township Fire Department

PUBLIC WORKS

At the current time, central municipal water and/or sewer service is available to nearly every area within the Township. These services are provided by 64 full time employees of the Waterford Township Department of Public Works (DPW). The DPW is comprised of the Water and Sewer Division and the Facilities and Operations Division and has an annual budget of approximately $15,000,000.

The DPW is located in a new building constructed during 2001 and 2002, to replace two aging buildings, one that housed the Water & Sewer offices, and the other one housed the Facilities & Operations offices. The new building is a state-of-the-art full-service facility that provides a modern work environment in which DPW employees can better serve Waterford citizens for several decades. The new DPW facility was designed to be expandable in the areas of both working space and technological capability. The new complex houses all of the DPW operations (both Water/Sewer and Facilities/Operations) under one roof. The service area of the new building contains a modern automotive maintenance garage where all of the Township's vehicles and equipment are serviced and maintained. The office area is where Township residents are assisted with utility connections, maintenance and billing issues.

The DPW has implemented several technological systems in order to provide services safely, efficiently, and effectively to Township residents. Among these systems are a Supervisory Control and Data Acquisition (SCADA) system, a Computer Maintenance Management system(CMMS), a hydraulic water and sewer modeling system, as well as the Township's Geographic Information System (GIS), and Document Management system. The SCADA has been fully implemented through the incorporation of sophisticated computers and communication to enable real-time monitoring and control of all Township water plants, tanks, and sewer pumping stations. The SCADA allows DPW staff to receive alarms via computer, pager, and cell phone whenever conditions vary from the normal standards for the Township water and sewer systems. The SCADA also provides critical operational performance data on a continuous basis. The CMMS is an electronic work order system used to schedule and initiate work to be performed as well as track costs such as labor, material, and equipment. It is also used to maintain proper equipment and supply inventories. The hydraulic water and sewer modeling system is a mathematical and graphical representation of the entire water and sewer system in the Township and is used to predict system responses and problems under an infinite number of scenarios. It is also used to properly size new infrastructure and to evaluate the impact of new development to ensure that water availability and control presents no constraint on the utilization of land in the Township. The Township GIS is used for cemetery management and viewing documents, flow monitoring, and physical asset information in relation to its geographic location. The DPW also possesses television monitoring capabilities to monitor the internal condition of its sewer main infrastructure.

Sewer Collection System

The Department provides for the safe and efficient collection and transport of all wastewater from properties connected to the sewer system through approximately 360 miles of sanitary sewer line and 63 sewer pumping stations. The Township's sewer infrastructure includes 8,000 manholes and 24,500 sewer service connections. Sewer service is provided to residential and commercial projects developed in the Township. Wastewater is discharged through the Clinton Oakland Interceptor, operated and maintained by the Oakland County Drain Commissioner's Office, to the Detroit wastewater disposal system, while Waterford maintains the system within its borders. The discharge capacity of the Waterford system is 37.46 cubic feet per second (cfs). The current average discharge is approximately 13 cfs.

Currently, issues that are being dealt with regarding the sewer system range from capital improvement projects to upgrade sewer pumping stations and improve capacity by reducing infiltration/inflow and sewer main rehabilitation. New connections and sewer expansions are financed through the Water and Sewer Enterprise Fund, while private development pays for the cost of new infrastructure required for servicing proposed development. There is a minimal record of MDEQ violations; in the last five years, there has been only one reported violation. Additionally, businesses in Waterford have been good stewards of the environment since there have been no cases of suspected illegal dumping in recent years. The Township does work actively to enforce the environmental quality of its water and sewer systems and will do what it takes to eliminate violations of Township requirements, such as when an oil recovery business on Williams Drive was closed due to illegal dumping into the sanitary system and numerous fire code violations.

Water Distribution System

The Water Department provides high quality, potable water for residential, commercial, and industrial uses, as well as for Township-wide fire protection. The water system's peak delivery capability is approximately 21.3 million gallons per day (MGD). The overall capacity of the water system is 24.8 MGD. The water system is maintained by the Waterford Township Department of Public Works and is classified as an Integrated Municipal Water System.

Waterford Township's water supply is obtained from 15 wells located at 12 different locations throughout the Township. Ten of the well sites contain a Water Treatment Plant that perform a variety of treatment processes including iron and manganese removal. Additional chemicals are also added to disinfect the water and to control other contaminants such as lead and copper. Water storage is provided by two elevated storage tanks (respectively 0.75 and 1.0 million gallon capacity) and one ground storage tank (6.0 million gallon capacity). The Township's water infrastructure includes 3,600 water valves and 24,000 water service connections.

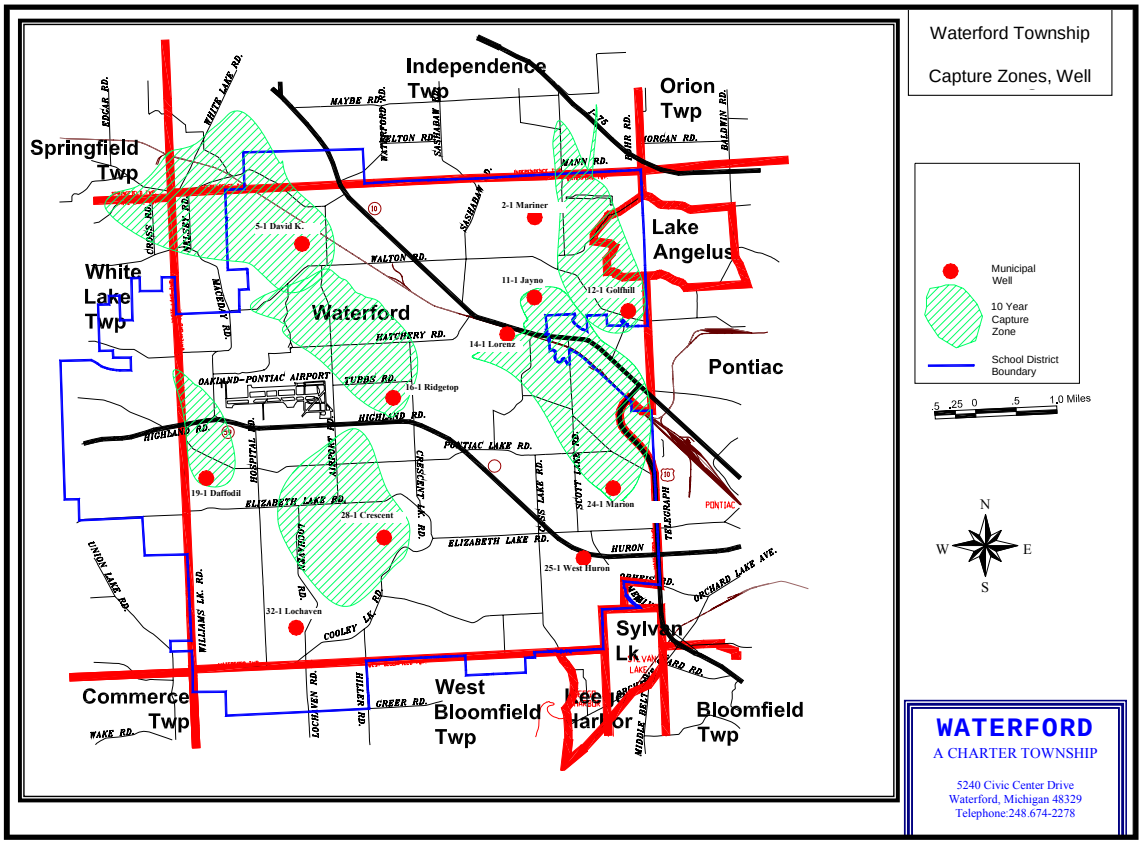
The Environmental Protection Agency (EPA) and the Michigan Department of Environmental Quality (MDEQ) require all municipalities to report the quality of drinking water. The monitored categories are Copper, Lead, Arsenic, Coliform, Barium, Selenium, Nitrate, Chloride, Fluoride and Trihalomethanes, to determine if the Maximum Contaminant Level (MCL) level is exceeded. If a particular MCL, or Action Level (AL), is exceeded, additional treatment or other action may be required. Waterford Township's water quality is exceptional, and complies with all parameters monitored by the MDEQ.

Current issues being addressed regarding the distribution system and treatment processes include capital projects to increase the firm pumping and treatment capacity to at least 26 MGD to provide redundancy in case mechanical or other problems take a well and/or treatment facility off-line. Other capital projects include the replacement of 4-inch water main with 8-inch ductile iron water main and the replacement of cast iron water main with ductile iron water main.

Waterford Township DPW currently has 10 MDEQ approved Well Head Protection Areas (WHPA), which are shown on Map N-3. These areas define the boundaries of the 10-year zone of capture for a specific wellhead. The Wellhead Protection areas are identical to the 10-year Capture Zones. If there were a contaminant released at the edge of the boundary, it would take approximately 10 years for it to reach the wellhead, if untreated. As a result of the WHPAs, if contamination is discovered, an action plan can be developed to resolve the problem before the wellhead becomes contaminated. The Township also currently has a Michigan Department of Environmental Quality (MDEQ) approved Well Head Protection Plan (WHPP). Approved WHPAs for Waterford Township are listed as follows:

Lotus Lake
Lorena Street
Pleasant Lake
Jayno Heights
Vista Villa
Donelson Park
Crescent Lake
Marion Street
Lake Oakland
Silver Lake

Map N-3 Capture Zones and Well Locations



Fire Suppression

As part of the DPW's continued efforts to safely serve the public, they have initiated a program of color-coding the Township's 3,400 fire hydrants to correlate with the water main size serving the hydrant. In an emergency, this allows the Fire Department to know immediately what size water main will be supplying the fire fighting efforts. Knowing the water main sizes will help them connect their hoses on the largest main available to increase water flow for firefighting. Table N-10 identifies the size of the water main according to the associated fire hydrant color.

Table N-10: Hydrant Color Codes for Water Main Service Size

Fire Hydrant Color	Water Main Size
Red	6"
Orange	8"
Blue	10 to 12"
Yellow	16" to 20"
Green	24" to 36"

Source: Waterford Township Department of Public Works

Facilities and Operations

The DPW's Facilities and Operations Division (F & O) works in the background of the Township operation to ensure that all buildings and equipment are maintained in working order so that services to Township citizens continue uniterrupted. Among its responsibilities, F & O staff provide general maintenance for 281,600 square feet, or 6.5 acres, of Township building floor space, as well as 4.1 acres of Township grounds. Over 200 vehicles are serviced and maintained. The Township's 41 miles of bike path are also maintained by F & O staff. The F & O staff maintains the 51 acres contained within the five Township cemeteries list in Table N-11 as well as the one mile of cemetery road. In addition, F & O is responsible for all cemetery interments in the Township cemeteries.

As part of an overall enhancement of services F&O has begun implementing a computerized maintenance management and data base program which will cover all township buildings, grounds, vehicles, equipment and cemeteries operations under their charge.

Table N-11: Cemetery Locations and Availability

Cemetery Name	Location	New Plots Available?
Crescent Hills	Civic Center Drive	Yes
Waterford Center	Corner of Airport Road and Pontiac Lake Road	Yes
Four Towns	Cooley Lake Road near Lochaven	No
Drayton Plains	Dixie Highway and Williams Lake Road	Yes
Waterford Village	Clippert off of Dixie Highway	No

Source: Waterford Township Department of Public Works

PUBLIC UTILITIES

Electric Service

The Township's electricity needs are provided by DTE Energy.

Natural Gas

Consumers Energy operates and maintains natural gas lines within Waterford Township and offers natural gas service.

Telephone

SBC provide basic land-based telephone service to Township residents. Fiber optic and high speed Digital Service Link are available through a variety of vendors.

Cable

Comcast possesses a frachise to provide cable service to Township residents.

STORMWATER MANAGEMENT

Waterford Township does not currently monitor, control, maintain or build any drains for the management of stormwater. Under Michigan State law, the Drain Code, Act 40 of 1956 as amended, gives the County Drain Commissioner the powers and responsibilities for managing stormwater within Oakland County. The County Drain Commissioner also has additional statutory

responsibilities regarding soil and sedimentation control, along with other responsibilities delegated by the Oakland County Board of Commissioners. The Drain Commissioner cannot establish drains unless petitioned by residents or the municipality; it may not enclose drains unless petitioned; and it may not recommend new drains. The Township provided the initative in working towards the establishment of new drains by the Drain Commissioner for the community. The Oakland County Drain Commissioner established and continues to maintain approximately 20 miles of storm drain within Waterford Township as shown in Table N-12. Of this total, about 53 percent are enclosed drains with the remainder of the total being open drains. Enclosed drains are generally located in areas of relatively dense population, with open drains in the remaining areas. Table N-12 also reviews the level of design capacity for each of the established County drains. In addition to the drains under the jurisdiction of the Drain Commissioner, the Road Commission for Oakland County (RCOC) has responsibility for controlling storm water runoff from public rights-of-way. Most of the RCOC's storm drain system is open ditching.

Waterford Township lies within the Clinton River watershed; therefore all surface water eventually works its way to the Clinton River. The majority of storm drains within the Township empty into the 34 lakes and Clinton River, the primary components of the watershed in the Township. Waterford Township requires on-site retention/detention for all subdivisions, sites and new development. Retention/detention is required to limit site runoff to pre-development quantity. Waterford Township has certain floodplain areas as shown on the Federal Emergency Management Agency (FEMA) floodplain maps. These areas generally follow the wetland areas near the lakes and the Clinton River.

In order to improve efforts to enforce water quality, the U.S. Environmental Protection Agency (USEPA) has issued the Phase II Storm Water Rule, which requires urbanized municipalities that operate a separate storm water drainage system to obtain a storm water permit by March 10, 2003. This permit program affects over 170 communities in Southeast Michigan, including Waterford Township. The program is administered by the Michigan Department of Environmental Quality (MDEQ), and is being coordinated by the Southeast Michigan Council of Governments (SEMCOG). The Township has been an active participant, along with some of its neighboring communities that lay within the same Clinton River subwatershed, in preparing all of the documents necessary to apply for its storm water permit. The Township anticipates submitting its permit application before the deadline and working to implement the components of the permit once approved by USEPA.

As Waterford continues beyond its development phase and into its redevelopment phase, active maintenance of the Township's creeks and County drains will continue to be important for preventing future flooding and addressing drainage concerns. Federal Clean Water Act requirements will remain a critical component in the Township's efforts to maintain a quality environment. Waterford will continue to work on being at the forefront of efforts to maintain and enhance reasonable and effective Township ordinances and policies that promote and enforce stormwater management, wetland protection, and regulation of lowland filling. Continued rigorous review and evaluation of stormwater retention and/or pre-treatment requirements to avoid the discharge of potentially harmful waters to any body of water is recommended. Discharges to wetlands should continue to be evaluated with respect to the reasonable capabilities of such areas to remove harmful substances before they adversely affect surface or underground water resources. Plans for new developments that are not in a drainage district or are in areas of drainage problems should continue to be required to provide retention/detention systems to help alleviate this problem. Because there are multiple jurisdictions responsible for stormwater management within the Township, it is recommended that a complete study of the Township drainage system be undertaken in order to monitor

drainage capacity, recommend drainage provisions for each area of the Township, and recommend improvements to current drains and the construction of new drains.

Table N-12 Inventory of Oakland County Storm Drains – Waterford Township

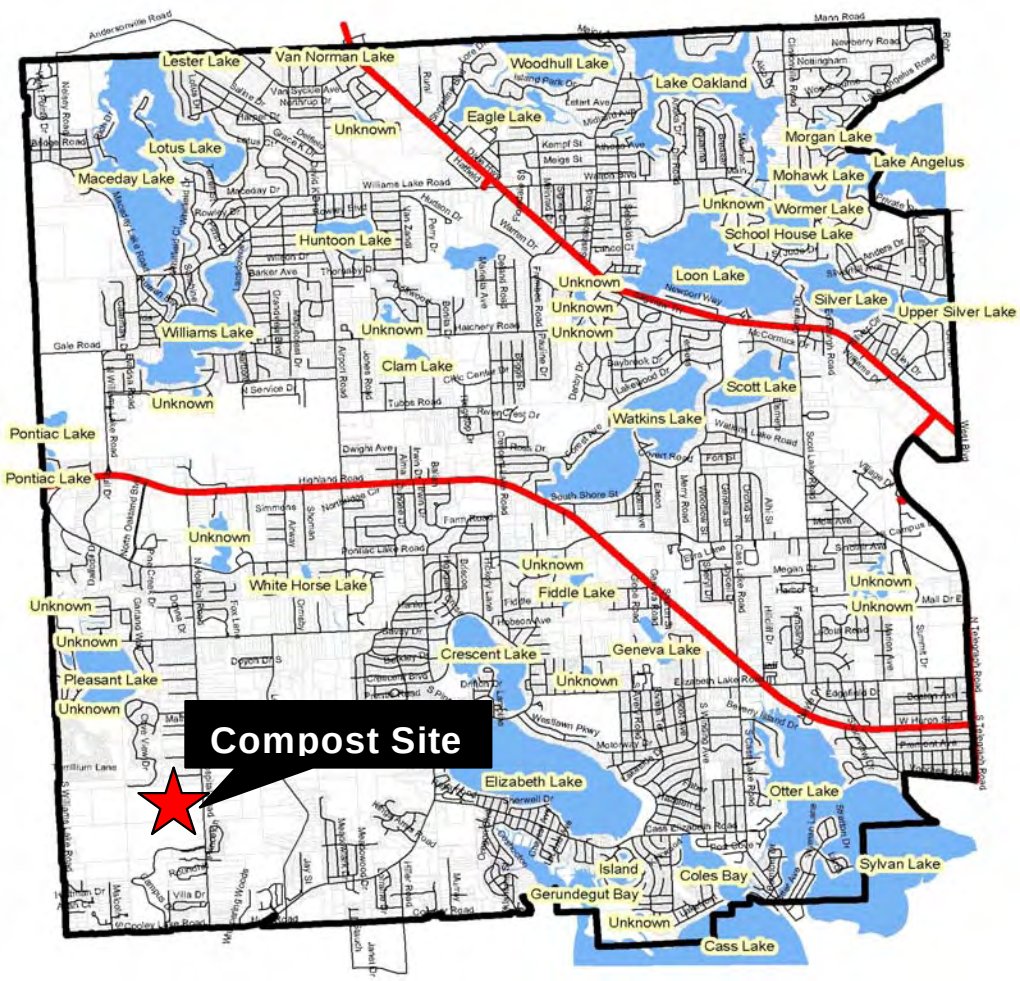
Name	Year Built	Footage In Open Drains	Footage In Enclosed Drains	Total (feet)	Comments
Birdsland	1939		5,942	5,942	Over design capacity. Outlets to private drainage system.
Drayton Plains	1924	2,190	9,538	11,728	Over design capacity north of Williams Lake Road. Road.
Drayton Plains Extension	1947		1,086	1,086	---
Four Towns	1897	8,203	---	8,203	Currently functioning near design capacity.
Lochaven	1945	15,000	---	15,000	Currently functioning near design capacity.
Lochaven Branch	----	5,400	---	5,400	Currently functioning near design capacity.
McIvor	1951	---	700	700	Currently functioning near design capacity.
Otter	1920	7,500	---	7,500	Over design capacity between Cass Lake Road and outlet.
Pontiac Creek Extension-Branch I	1948	5,400	1,990	7,390	Over design capacity west of Scott Lake Road.
Pontiac Creek Extension-Branch II	----	2,000	330	2,330	Severely over design capacity. Western most portion non-existent.
Silver Crest	1944	---	2,068	2,068	Over design capacity southwest of Dixie Highway.
Tuttle	1947	---	5,805	5,805	Currently functioning near design capacity.
West End	1923	----	8,300	8,300	Currently functioning near design capacity.
Wilmont	1970	3,610	20,010	23,620	Currently functioning adequately.
Tilden	----	-----	---	---	Adjacent to Waterford Township – Currently functioning near design capacity
TOTALS		**49,303**	**55,769**	**105,072**	

Source: Waterford Township Building and Engineering Department

SOLID WASTE COLLECTION AND RECYCLING

Waterford Township does not provide any form of Township-wide collection of solid waste; therefore, every household and business must contract separately with a private waste hauler for solid waste removal. A proposal for Township-wide solid waste removal was placed on the ballot in 1998 and was defeated by the voters. Waterford Township does currently offer recycling to Township residents. On the first and third Saturdays of each month, corrugated cardboard, magazines and paper is collected by a private recycling company in front of Township Hall. Additionally, the Township provides a fee-based compost site between April 15 and December 1 for residents to dispose of their leaves, grass clippings and small brush, or to take the resulting compost for personal use. The compost site is currently located on the west side of South Hospital Road, between Pershing and the Oakland Community College-Highland Lakes Campus, as shown on Map N-4. Besides composting and recycling, it is recommended that the Township investigate the establishment of an annual drop-off of hazardous wastes such as motor oil, household cleaners and old batteries.

Map N-4 Compost Site Location



PARKS & RECREATION

One of the crucial components of a community's quality of life is a diverse and significant inventory of well-maintained and safe parks and recreational activities. Parks contribute to the preservation of a community's open space while providing a peaceful and healthy outdoor environment for current residents and future generations. Recreational activities encompass a wide array of activities that benefit individuals both physically and mentally by freeing the mind and body from the stress and monotony of the daily work schedule. While many recreational activities can be conducted in the privacy of home and yard, others require the use of larger facilities operated by public agencies or private entities. The demand for recreational facilities will vary depending upon a community's goals and sense of identity, its physical characteristics, its demographic composition, and its social and cultural influences. The analyses contained within Appendix A - Background Studies indicates that Waterford's population is characterized by:

- A population which continues to contain a significant number of persons under the age of eighteen.
- An increasing number of persons age 65 and over. As this demographic group continues to live longer, individuals in this age group continue to demonstrate demand for an increasing variety of physical, social, cultural, and educational services each year.
- Educational and income statistics indicate a continuing diverse composition of Waterford's population, with the Township continuing as a primarily middle-class community.

These basic demographic indicators anticipate continuing future demand for a diverse variety of recreational facilities and services. The Township possesses the capacity to provide for these diverse needs through its physical features such as over 30 lakes and the Clinton River, its location in the geographic center of Oakland County, and its past recreation planning. It also benefits from a historic pattern of support from the Waterford School District, which has contributed to providing a comprehensive recreational program and access to school facilities. Such support and cooperation is critical for the continued success of Waterford's recreation facilities and programs as operating costs continue to rise and the public demands increasing efficiency in providing public facilities.

Planning for Township recreation facilities and programs is the responsibility of the Township Board, the Parks and Recreation Board, and the Planning Commission. The Township Parks and Recreation Board prepared its first comprehensive Recreation Plan in 1986, updating it in 1991, 1997, and is currently finalizing an update that was conducted in coordination with the citizen participation process that produced the Township's current Master Plan. The statistics and projections evaluated for the Township Master Plan were also integral elements in the Recreation Plan update. Utilizing basic planning data, certain modifications and adjustments are offered to assist the Recreation Board in their update activities. These suggestions and/or modifications reflect land use planning findings and proposals and require refinements to reflect specific standards and operational procedures found to be applicable by the Recreation Board. Development of the Township's parks system, the general location of the major components are shown on Map N-5, has been guided by the 1997 Recreation Plan and will be guided by the 2003 Plan once fully adopted.

Recreation has been recognized as necessary for the physical and psychological well being of the community and for its individual members. The rapid tempo of modern society has created a demand for open areas, breathing spaces, and recreation through which all ages and segments of the population can relieve the stresses of today's lifestyles and work environments. Open spaces also are valuable for their

influence on surrounding property. Parks and other well-designed open areas have been found to stabilize or increase property value. They generally improve the character of neighborhoods and are aesthetically pleasing. The maintenance of Waterford's housing stock value depends in no small part on the quality of life amenities that are offered within the community, such as the provision of ample areas of open space and recreation facilities. A community's recreation needs, both short and long-term, should be evaluated in relation to the amount of land available for recreation purposes, the types of facilities available at these sites and the range of programs and services offered to Township residents.

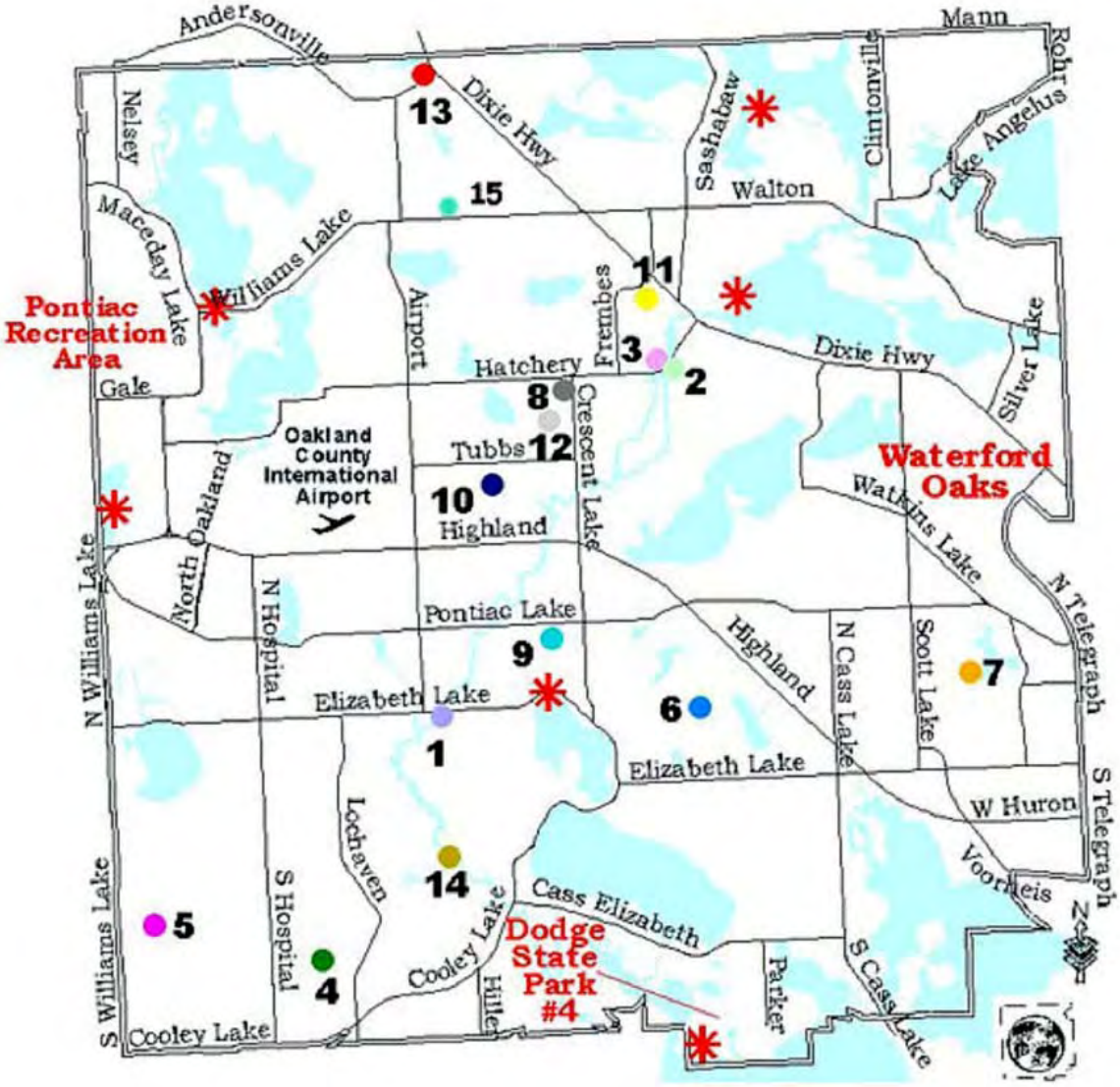
Several techniques can be used for the purpose of projecting future needs. Frequently, these techniques rely on comparisons of existing facilities to commonly accepted standards. These standards present optimum conditions as a benchmark against which progress can be measured. The risk in using these standards is that they may not be uniformly applicable to all communities and might need to be adapted to the unique physical, social, and economic conditions that may characterize a specific community. The Township has five classifications of recreation facilities: Neighborhood Parks and School-Parks, Community Parks and Sports Complexes, Regional Parks, Natural Resource Areas, and Special Use Facilities. Differing in size and purpose, each level caters to particular needs; a balanced mixture of all five types is essential for a well-rounded desirable recreation program for Waterford Township. This section analyzes the Township's recreation facilities inventory through this classification system, determining the current capacity levels for each classification, as well as project the capacity and potential needs during the next twenty years. The recreation planning standards used for this analysis is shown in Table N-13.

Table N-13 Recreation Planning Standards by Classification

Recreation Facility Classification	Acres per 1,000 persons	Ideal Acres	Service Area (Radius Miles)
Neighborhood Parks	1.0 – 2.0	5 minimum, 5-10 optimum per park	¼ to ½
School-Park *(counts toward a community's neighborhood park needs)*	1.0-2.0	Determined by location of school district property	Variable-depends on function
Community Parks	5.0 – 8.0	30-50 optimum per park	½ to 3
Sports Complex *(counts toward a community's community park needs)*	5.0 – 8.0	25 minimum, 40-80 optimum per park	Strategically located community-wide facilities
Regional Parks	5.0 – 10.0	200 per park	1 hour driving time
Natural Resource Area		varies	Depends upon availability and opportunity
Special Use		variable	Variable-dependent upon specific use

Source: Park, Recreation, Open Space and Greenway Guidelines, 1996, by James D. Mertes, Ph.D., CLP and James R. Hall, CLP

Map N-5 Major Parks and Recreation Sites - Waterford Township



1 Clinton River Canoe Site
2 Drayton Plains Nature Center
3 Fish Hatchery Park
4 Herrington Park
5 Hess-Hathaway Park
6 Lions Park
7 Marion Street Park
8 Monteith Center Site
9 Optimist Park
10 Rotary Park
11 Shell Park
12 Waterford Civic Center Warming House
13 Waterford Historical Church
14 Elizabeth Lake Woods Park
15 CAI Building

Public Boat Launch

Neighborhood Parks

The neighborhood park remains the basic unit of the park system and serves as the recreational and social focus of the neighborhood. These sites are intended to be areas for active and passive recreational activities such as field games, court games, crafts, playground and playscape equipment, skating, hiking, and picnicking. This type of park is optimally suited to serve a neighborhood consisting of up to 5,000 people and having a service radius of one-quarter to one-half mile. The desirable size of such a facility is between five and ten acres. Park size may vary for individual sites, depending on neighborhood characteristics and the amount of land potentially available. Between one and two acres of neighborhood parkland should be provided for each 1,000 persons anticipated to reside within a given neighborhood area. Such facilities should be easily accessible to the neighborhood they are intended to serve, with consideration given to pedestrian and bicycle safety. Each site should be designed so that it relates to the characteristics of surrounding neighborhood.

School-Parks

When neighborhood parks are developed in conjunction with elementary school sites as shared school/park sites, they have many inherent advantages. These include reduced land costs and economies of scale relative to both development and maintenance. Joint use of development avoids the duplication of services and requires less total acreage than developing each facility independent of one another. In Waterford, elementary school sites are the main source of public facilities on the neighborhood level. Due to their strategic location throughout the Township, nearby residents of all ages are within a desirable walking distance so that they may take advantage of the sites' preserved open space, ball fields and/or playground equipment. As Table N-15 illustrates, some elementary school sites contain acreage that exceeds the ideal acreage total, but every school site does fall within the optimum range.

Community Parks

Community parks are larger in size than neighborhood parks and serve two or more neighborhoods. Their focus is on meeting active and passive recreation needs while preserving unique landscapes and open spaces. This classification of park allows for group activities and other recreational opportunities generally not feasible in neighborhood parks due to size limitations and usage intensity. A community park customarily includes areas suited for intense recreational facilities such as swimming pools, swimming beaches, archery ranges, ice skating areas, ball fields, and tennis courts. They are frequently areas of diverse environmental quality, featuring areas of natural quality for outdoor recreation activities, such as walking, viewing nature, and picnicking. Each community park should ideally be about 30 to 50 acres in size. Although its service area should be 0.5 to 3.0 miles in radius, the quality of the natural resource base should play a significant role in site selection. Ideally, community parks should be provided at a ratio of between five and eight acres per 1,000 persons.

Sports Complexes

The sports complex classification is a specialized subset of the community park classification. The intent of this classification is to highlight those facilities that consolidate heavily programmed athletic fields and associated facilities at larger and fewer sites strategically located throughout the community. This allows for: economies of scale and higher quality facilities, improved management/scheduling, improved control of facility use, greater control of negative impacts to neighborhood and community parks, such as overuse, noise, traffic congestion, parking, and domination of facilities by those outside the neighborhood. Sport complexes should be developed to accommodate the specific needs of user groups and athletic associations based on demands and

program offerings. Sports complexes include fields and courts for softball, soccer, tennis, basketball, volleyball, and racquetball. Sports complexes should be strategically located to serve customers community-wide. Ideally, sports complexes should be provided at a ratio of between five and eight acres per 1,000 persons. The ideal sports complex should be a minimum of 25 acres in size, with an optimum size of 40 to 80 acres.

Regional Facilities

Regional park facilities are usually maintained by County or State agencies; the local government unit is not responsible for them. Nonetheless, they provide recreational opportunities which must be considered in the overall recreational system for the Township. Most of these regional facilities are larger than parks in the other classifications and can offer a greater variety of recreational experiences. This type of park is optimally suited to serve customers within one hour driving time of the park. Between five and ten acres of regional parkland should be provided for each 1,000 persons residing within the community. Ideally regional parks should be about 200 acres in size, although specialized facilities may require a smaller size to match the use, such as the boat launch sites.

Natural Resource Areas

Many communities have established goals to acquire land to ensure that it remains undeveloped and in its natural state, providing citizens with open space and visually pleasing natural landscapes. These acquisitions fall within the natural resource areas classification, which are lands owned and reserved by the public to preserve significant natural resources and protect property unsuitable for development in accordance with the community's land use regulations. The objective of acquiring and maintaining Natural Feature Areas does not mandate an optimum size. The optimum size will be directly related to what a community wants to preserve and protect. The customer service area will also depend upon how much of the natural features area the community wishes to encourage public access.

Special Use Facilities

The special use facilities classification provides for an extensive range of parks and recreation facilities that are generally operated to provide a single-purpose use. Some communities may find that organizations or businesses are operating recreational uses that were developed around its cultural or historic sites. Others may be traditional single purpose facilities such as community centers, senior centers, hockey arenas, golf courses, or bowling alleys. The size and service area of this recreation facility classification will vary depending upon the customer base of the facility and the specific type of use.

Current Recreation Facilities Inventory

The Township's parks and recreation system is managed by the Parks and Recreation Department through its administrative offices in the Montieth Activity Center on the Civic Center Campus. The Waterford Parks and Recreation Department has grown along with the increase in the amount of park acreage, number of recreation facilities, and number of programs offered. The department coordinates recreational programs for youth and adult as well as the maintenance of all the Township parks. The Township's park and recreation facilities, as shown in Table N-14, range from active recreational facilities to passive nature preserves. In addition to the Parks and Recreation Department, several entities operate and maintain recreational facilities in the Township, which are shown in Table N-15. Playgrounds, fields, and other facilities at schools managed by Waterford Public Schools provide additional recreational opportunities for Waterford residents.

While the Township has undertaken a broader role as a provider of recreation services, it recognizes the financial limitations accompanying such an expanded role. To lessen the financial burden of an expanded recreation role and to avoid an unnecessary duplication of services, the Township promotes the need and wisdom to foster and expand cooperative arrangements with other recreation providers, especially the Waterford School District, Oakland County Parks, and the State of Michigan. The results of this cooperative effort is seen in the variety of recreational facilities provided by agencies other than the Township.

Table N-14: Inventory of Township-Owned Parks and Recreational Facilities

Name and Location	Facility Classification	Site Size	Description
CAI Building 5640 N Williams Lake Rd	Special Use	8.5 acres	Activity center for the Golden Age Club and youth programs, room rentals, enrichment classes, Branch Library.
Civic Center Park 5200 Civic Center Drive	Community	15 acres	Monteith Parks and Recreation Administrative Offices and Activity Center with gymnasium, four regulation soccer fields, natural pond used for winter skating, exercise trail/fitness stations, picnic shelter with fireplace/warming house for winter skating and 35 person meeting room with kitchenette, restrooms.
Clinton River Canoe Site 5971 Elizabeth Lake Rd	Special Use	2.5 acres	Public canoe landing, children's play apparatus area, picnic shelter, grill, and tables.
Clinton River Park South	Natural Resource Area	34 acres	Undeveloped passive parkland, nature preserve, canoeing in section 33 of the Township (adjacent to Haviland Elementary School).
Elizabeth Lake Woods Park	Natural Resource Area	205 acres	Undeveloped passive parkland, nature preserve, canoeing in sections 28, 29, 32, and 33 of the Township.
Fish Hatchery Park 4490 Hatchery Rd	Special Use	7 acres	Renovated historic farmhouse, office and museum of the Waterford Historical Society, restrooms, boardwalk, fishing, canoe docks.
Herrington Park 1216 Lochaven Road	Community	32 acres	Concessions, restrooms, two lighted ball fields, picnic area, picnic shelter, children's play apparatus, nature trail.
Hess-Hathaway Farm Park 825 S Williams Lake Rd	Community	149 acres	Restored 1860's farmhouse, animal exhibit barn, one ball field, two volleyball courts, two horseshoe courts, picnic shelters, gazebo, playground area, handicap-accessible children's "boundless" playscape, restrooms, community meeting room, nature trails for hiking and cross country skiing, group hayrides, farm animal tours.
Lions Park 4250 Fenmore	Community	26.5 acres	Picnic shelter, restrooms, one lighted ball field, picnic area, children's play apparatus area.
Marion Street Park Northern end of Marion Street	Natural Resource Area	17 acres	Nature trails, handicap-accessible trail, observation decks.
Mill Pond Park 5860 Andersonville Rd	Community	1 acre	Waterford Cultural Center offices and gallery, small banquet/meeting rooms, picnic area, fishing, canoeing.
Optimist Park 5320 Elizabeth Lake Rd	Community	10 acres	Concession stand, restrooms, three ball fields, children's play area, picnic shelter, picnic area, lighted basketball court.
Rotary Park 5485 Tubbs Road	Community	8 acres	Picnic shelter, restrooms, concession stand, two ball fields, play area, five soccer fields.
Shell Park 4373 Dixie Hwy	Community	13 acres	Three ball fields, picnic shelter, grills, and tables, play area, concession stand, restrooms.

Source: Waterford Township Parks and Recreation Department, Community Planning and Development Department

Table N-15: Inventory of Non-Township-Owned Parks and Recreational Facilities

Name and Location	Classification	Size	Description
Waterford School District			
Jayno W. Adams Elementary 3810 Clintonville Road	School-Park	12 acres	Playground equipment and fields, two tennis courts, one basketball court, indoor gymnasium.
William Beaumont Elementary 6532 Elizabeth Lake Road	School-Park	10 acres	Playground equipment and fields, one basketball court, indoor gymnasium.
William Austin Burt Elementary 581 S. Winding	School-Park	10 acres	Playground equipment and fields, one basketball court, indoor gymnasium.
Thomas M. Cooley Elementary 2000 Highland Street	School-Park	10 acres	Playground equipment, one basketball court, indoor gymnasium.
David Grayson Elementary 3800 W. Walton Blvd.	School-Park	5.5 acres	Playground equipment and fields, one basketball court, indoor gymnasium.
Laura Smith Haviland Elementary 5305 Cass Elizabeth Road	School-Park	11 acres	Playground equipment and fields, two tennis courts, one basketball court, indoor gymnasium.
Donelson Hills Elementary 2690 Wewoka	School-Park	11 acres	Playground equipment and fields, one basketball court, indoor gymnasium.
Douglass Houghton Elementary 8080 Elizabeth Lake Road (White Lake Twp)	School-Park	13 acres	Playground equipment and fields, two basketball courts, indoor gymnasium.
Patricia E. Knudsen Elementary 5449 Crescent Road	School-Park	17 acres	Playground equipment and fields, one basketball court, indoor gymnasium.
Eliza Seaman Leggett Elementary 3621 Pontiac Lake Road	School-Park	9 acres	Playground equipment and fields, one basketball court, indoor gymnasium.
Della Lutes Elementary 5195 Pontiac Lake Road	School-Park	9 acres	Playground equipment and fields, one basketball court, indoor gymnasium.
Kingsley Montgomery Training 4265 Halkirk	School-Park	5 acres	Playground equipment and indoor gymnasium.
Riverside Elementary 5280 Farm Road	School-Park	10 acres	Playground equipment and indoor gymnasium.
Carl Sandburg Elementary 1355 Merry	School-Park	6 acres	Playground equipment and fields, one basketball court, indoor gymnasium.
Henry R. Schoolcraft Elementary 6400 Maceday Drive	School-Park	11 acres	Playground equipment and fields, one basketball court, indoor gymnasium.

Name and Location	Classification	Size	Description
Stepanski Early Childhood Center 6010 Hatchery Road	School-Park	10.5 acres	Playground equipment, one soccer field.
Waterford Village Elementary 4241 Steffens	School-Park	7.5 acres	Playground equipment and fields, two tennis courts, two basketball courts, indoor gymnasium.
Isaac E. Crary Middle 501 N. Cass Lake Road	Sports Complex	37 acres	Two ball fields, four tennis courts, one basketball court, one unlighted football/soccer field, indoor gymnasium.
Steven T. Mason Middle 3835 W. Walton	Sports Complex	35 acres	Outdoor running track, four ball fields, one basketball court, one unlighted football/soccer field, four tennis courts, indoor gymnasium.
John D. Pierce Middle 5145 Hatchery Road	Sports Complex	24 acres	One running track, two ball fields, one unlighted football/soccer field, four tennis courts, one basketball court, two indoor gymnasiums.
Four Towns Discovery 6370 Cooley Lake Road	School-Park	5 acres	Playground field, one basketball court, indoor gymnasium.
Manley Voyager Alternative 2989 Van Zandt	School-Park	11 acres	Playground equipment, one basketball court, indoor gymnasium.
Waterford Kettering High 2800 Kettering Drive	Sports Complex	49 acres	One running track, six tennis courts, three ball fields, two football/soccer fields, one lighted football field, two indoor gymnasiums.
Waterford Mott High 1151 Scott Lake Road	Sports Complex	70 acres	One running track, six tennis courts, one basketball court, three ball fields, two football/soccer fields, one sand volleyball court, one lighted football field, one indoor gymnasium.
Waterford Senior Center 6455 Harper	Special Use	9 acres	Activity rooms for senior citizens, full kitchen and dining facility, library mini-branch
Oakland Community College			
Highland Lakes Campus S. Hospital Road	Community	18 acres (on 137 acre site)	Four tennis courts, one ball field
Oakland County Parks			
Waterford Oaks County Park 1702 Scott Lake Road	Regional	155 acres	Water Park including; wave pool, water slide, the "Big Bucket" (children under 43"), Ragin' Rapids, picnic shelters, beach volleyball, BMX, refrigerated toboggan run and Lookout Lodge. Court Games Complex to include, shuffleboard, sand volleyball, tennis and horseshoes.
State Parks			
Cass-Dodge Park #4	Regional	139 acres	Public beach, one-mile Cass Lake shoreline, public access boat ramp, restrooms, courtesy pier, ADA accessible.
Crescent Lake Boat Launch	Regional	2 acres	Public access boat ramp
Lake Oakland Boat Launch	Regional	7 acres	Public access boat ramp, restrooms, courtesy pier.
Loon Lake Boat Launch	Regional	4 acres	Public access boat ramp, restrooms, courtesy pier.
Maceday Lake Boat Launch	Regional	1 acre	Public access boat ramp, restrooms, courtesy pier, ADA accessible.

Name and Location	Classification	Size	Description
Pontiac Lake Recreation Area	Regional	416 acres in Waterford (on 3,800 acre site)	Three campgrounds with total of 176 campsites, 1/3-mile long beach, public access boat ramp, restrooms, courtesy pier, one ball field, hunting area, rifle range, 17 miles of horse-riding trails, 11 miles of mountain bike trails, 1.9 miles of hiking trails, cross-country skiing, snowmobiling.
Private Non-Profit			
Drayton Plains Nature Center 2125 Denby	Natural Resource Area	148 acres	Interpretive nature center, meeting rooms, nature tours, bird and tree identification, hiking, birding, gift center.
Private For-Profit			
Airway Lanes 4825 Highland Road	Special Use	One facility on 5 acre site	32 lane bowling alley, banquet room
American Fitness 5806 Dixie Highway	Special Use	One facility on 2 acre site	Aerobic and weight fitness equipment
Bally Total Fitness 1490 North Oakland Blvd.	Special Use	One facility on 2 acre site	Aerobic and weight fitness equipment, indoor jogging track, indoor pool.
Century Bowl 7345 Highland Road	Special Use	One facility on 7 acre site	52 lane bowling alley,
Concorde Inn 7076 Highland Road	Special Use	One facility on 3 acre site	Limited access indoor recreational pool inside hotel facility
Holiday Inn Express 4350 Pontiac Lake Road	Special Use	One facility on 10 acre site	Limited access indoor recreational pool inside hotel facility
Lakeland Ice Arena 7330 Highland Road	Special Use	One facility on 5.5 acre site	Three indoor ice hockey rinks.
Lakewood Lanes 3121 West Huron	Special Use	One facility on 1 acre site	14 lane bowling alley,
Oakland Yard Athletics 5328 Highland Road	Special Use	10 acres	Golf driving range (domed in the winter), sand volleyball courts.
Pontiac Lake County Club Golf Course 4335 Elizabeth Lake Road	Special Use	100 acres	18 hole golf course, clubhouse, restaurant.

Name and Location	Classification	Size	Description
Powerhouse Gym 2529 Elizabeth Lake Road	Special Use	One facility on 4 acre retail center site	Aerobic and weight fitness equipment
Premier West Lanes 7102 Cooley Lake Road	Special Use	One facility on 8 acre site	40 lane bowling alley, restaurant
Prescription Fitness 5210 Highland Road	Special Use	3 acres	Aerobic and weight fitness equipment, indoor lap pool, outdoor fitness trail
Silver Lake Golf Course 2602 W. Walton Blvd.	Special Use	47 acres	9 hole golf course, clubhouse, restaurant.
Sport-Way Miniature Golf 4355 Highland Road	Special Use	4.5 acres	Go-kart track, miniature golf, batting cages
300 Bowl 100 S. Cass Lake Road	Special Use	One facility on 5 acre site	52 lane bowling alley, banquet facilities
World Gym 5064 Highland Road	Special Use	One facility on 9 acre retail center site	Aerobic and weight fitness equipment
Zero Gravity Skate Park 1585 Crescent Lake Road	Special Use	One facility on 6 acre site	Indoor skate park, 17,000 square feet of skate floor with ramps, ledges, fly boxes, real street obstacles, and a wall ride.

Source: Waterford Township Parks and Recreation Department, Community Planning and Development Department

Current and Projected Park and Recreation Needs

The inventory of Waterford's park and recreational facilities described in Tables N-14 and N-15 provide the following summary inventory of recreation facility classifications:

Neighborhood Parks

No acreage

School-Parks

176 acres 100% Waterford School District properties

Community Parks

254.5 acres 100% Township properties

Sports Complexes

215 acres 100% Waterford School District properties

Regional Parks

724 acres 21% County properties, 79% State properties

Natural Resource Areas

404 acres 63% Township properties, 37% Private Nonprofit properties

Special Uses

27 acres for community/senior/historic/special park activities
67% Township properties, 33% Waterford School District properties

14.5 acres for outdoor activities	100% Private For-profit
147 acres for golf courses	100% Private For-profit
1 indoor skate park	100% Private For-profit
1 ice arena	100% Private For-profit
2 limited access indoor recreation pools	100% Private For-profit
5 bowling centers with a total of 190 lanes	100% Private For-profit
5 physical fitness facilities	100% Private For-profit

As stated earlier, the evaluation of Waterford's recreation facilities inventory is based upon standards relating the amount of recreational facilities in each classification to the population served. Standards published by the Michigan Department of Natural Resources provide a variety of alternatives, which communities can tailor to their particular needs. The totals above have been calculated for the number of recreation acres per 1,000 persons for the Neighborhood Park, Community Park, and Regional Park classifications and are shown in Table N-16. From the totals, Waterford is currently not deficient in parkland in any of the three categories. Furthermore this capacity is expected to be maintained during the next twenty years; even if the population increases as projected and no further parkland is purchased. Evaluation of more specific items such as the number, types, ages, and conditions of recreational facilities like gymnasiums, ball fields, playground equipment will be covered in the 2003 Recreation Plan.

Table N-16 Projected Recreation Facilities Service Levels by Classification – 2003-2020

Recreation Facility Classification	Optimum Recreation Acres per 1,000 persons	Current Total Recreation Acres Available	2003 Recreation Acres per 1,000 persons *(current based on 2000 population of 73,150)*	2005 Recreation Acres per 1,000 persons *(based on projected population of 74,500 and no additional acquisitions)*	2010 Recreation Acres per 1,000 persons *(based on projected population of 76,576 and no additional acquisitions)*	2020 Recreation Acres per 1,000 persons *(based on projected population of 79,848 and no additional acquisitions*
Neighborhood Parks *(includes School-Parks)*	1 - 2	176	2.4	2.4	2.3	2.2
Community Parks *(includes Sports Complexes)*	5 - 8	469.5	6.4	6.3	6.1	5.9
Regional Parks	5 - 10	724	9.9	9.7	9.4	9.1

Source: Waterford Township Parks and Recreation Department, Community Planning and Development Department, David N. Ammons, Municipal Benchmarks, SAGE 1996

A few things must be noted however. First, the Township's complete current inventory of Neighborhood Parks is supplied by the School District through the established School-Parks. The Township may want to evaluate the addition of some Neighborhood Parks owned by the Township, in particular in those areas where an elementary school is not readily accessible. One alternative to the public acquisition of Neighborhood Parks is the development of smaller, private parks in individual subdivisions. These private parks would be owned and maintained by homeowner or condominium associations and may include playground or playscape equipment for children and other amenities intended to meet the recreation needs of the intended occupants of the project.

Another item of note is that there is no public indoor swimming pools readily accessible to the general public, students, and scholastic swim athletes in Waterford Township. This is a serious deficiency from the safety point of view in a township which contains such an abundance of water bodies. It is recommended that the Township consider the construction of an indoor community pool as part of a new full-service community center or if Township funds cannot be raised to achieve the goal in this manner, consideration might be given to adopting the common practice in urban communities where public swimming pools are constructed as additions to the high schools. While such a program would make pools available for daytime use for school activities such as physical education programs and athletic programs, community programs would be limited to evening hours. Another option might be to consider Township construction of a single community pool at a new community center for general community use while the School District constructs the competitive pools for its physical education programs and athletic programs.

The Township should continue to preserve its existing limited natural open space areas to guarantee the availability of open space and nature study areas as integral elements in the local recreation programs. It is evident through the master planning process that such areas be protected, expanded, continue to provide usable sites characteristic of the local natural environment, and offer only limited access to fragile environmental areas.
There continues to be two senior centers operating in the Township. The Senior Drop-In Center is

located in the northwest quadrant of the Township and offers meals and social services throughout the School District. The Township provides the other center at the CAI Building, offering arts, crafts, educational, and recreational activities; no meals are furnished. A new senior center/community center has been proposed for the Township to provide a permanent long-term solution to fulfilling all of the needs of senior citizens. There is a question as to how long the Senior Drop-In Center will continue. The Township facility is inadequate in terms of meeting senior needs. Therefore, a centralized facility is proposed at the Township Civic Center. Based upon the master planning process and Master Plan Goals, a new community center facility remains as a viable proposal. Usage of the building would include: administrative offices, a senior wing, a community center wing, dual-use classrooms, kitchen, dining room, gymnasium, and potentially a community pool as described above. These needs must be coordinated into the site planning process to ensure that whichever site and building design is chosen, it accommodates the need for current services and allows for the expansion of services.

LIBRARY

Library facilities and services provide another essential quality of life element within a viable community structure. Library facilities combine elements of recreation, education, and cultural enrichment. There are a variety of individual, family and group functions which are enhanced through library services. The American Library Association recognizes that library services focus on five basic objectives - education, information, research, aesthetic appreciation, and recreation. The staff of the Waterford Township Public Library is committed to providing these quality of life services to Waterford residents. The mission of the Waterford Township Public Library is to:

- Provide current, high-demand, high interest materials in a variety of formats for persons of all ages
- Encourage young children to develop an interest in reading and learning through its services for children and its services for parents and children together
- Provide timely, accurate and useful information for Waterford residents in pursuit of personal and work-related interests
- Assist students of all ages and in all educational settings to meet their general information and research needs
- Provide access to the Library collection and facilities for all community residents on an equal, publicly funded basis.

Since libraries play an important role in both educational and recreational functions of government, their proper site location is important from a community planning perspective. Convenience is one of the primary site location considerations. It is desirable to have the central library located within a block or so of the main business district or civic center and possess convenient access to major traffic arteries and transportation facilities. There should also be adequate off-street parking facilities. The Waterford Township Public Library offices and Main Library building are strategically located near the center of the Township, at 5168 Civic Center Drive on the Civic Center Campus. The Waterford Township Public Library was established as a private library in 1945. It was funded and operated by the Waterford Mothers Club. Originally located in the Community Activities, Inc., building, the Township Board passed a resolution in 1963 declaring this library to be a public library. The Library's original Main Library building was constructed as one of the first buildings on the Civic Center Campus in 1964. The original building experienced several expansions since 1964, with a major expansion and modernization in 1995 increasing the size of the building from 6,500 square feet to 21,000 square feet. The 1995 expansion was the result of the support of the Township's citizens by voting for the

passage of the first library millage passed in 1992. This millage was renewed with the voters continued support in 2002. Additional building improvements and a small expansion are planned to take place during the next two years, increasing the building size to just over 27,000 square feet.

Currently the Main Library's holdings total 121,580 materials. The number of holdings in circulation is 1.7 items per capita (the service population also includes the City of Lake Angelus). The current shelving capacities for the various branches are found in Table N-17. The Library plans continued improvements in the services it provides Township residents through the provision of more story times and reading programs and adding greater depth and breadth to the library collection. The Library has also been a strong advocate in establishing collections of new non-print formats of materials as well as providing citizens the capabilities of computers and internet access as new and effective ways of finding data and information. Over 36% of residents, or 27,030, possess a Waterford Township Library card. Visits to the library have increased during the past three years, 204,560 visits in 2000, 206,689 visits in 2001, and 211,057 visits in 2002. Also in 2002, nearly 384,000 items were borrowed from the Library.

Table N-17 Library Shelving Capacities - 2003

Facility	Shelving Capacity
Main Library	85,000
Branch	9,000
Each Mini Branch	400

Source: Waterford Township Library

The Branch Library is located in 600 square feet of space in the CAI Building on Williams Lake Road, east of Airport Road. The Branch Library houses a collection of 13,844 materials. The Library has also established Mini Branch Libraries in eight locations: the Waterford Senior Center and seven senior housing developments, Lakeland Place, the Inn at Cass Lake, Canterbury on the Lake, Whispering Woods, Fox Manor (Lourdes), Mendelson House (Lourdes), and Lockwood of Waterford. Beginning in 1995 the Library also began administering the Waterford School District library system, creating an efficient and integrated Township-wide library services.

EDUCATION FACILITIES

While the Township has no control over school operations or functions, the infrastructure needs of the school system impacts the community's overall land use plan, particularly with the location of school buildings. Schools are, therefore, considered as part of this analysis for coordination purposes in addition to their contribution to the recreation facilities inventory described earlier in this Appendix.

The educational needs of Waterford Township residents are primarily served through the Waterford School District. There is a small section of the Township along its eastern border served by the Pontiac School District and a small section of the Township along its northern border served by the Clarkston School District. Since the 1991 Master Plan was prepared, a continued decline in family sizes and birth rates have prompted the Waterford School District to reduce the number of elementary schools from 17 to 15. The number of middle schools remains at three and the number of high schools at two. The School District has also undertaken efforts to utilize some of its buildings for the education of target populations. There is one early childhood learning facility, one facility to address the District's special education needs, and two alternative high schools. The School District's administrative building and service facilities are located within Waterford

Township. The characteristics of these schools, including the date of original construction, building additions, the number of classrooms, estimated classroom capacity and current enrollment levels, are reflected in Tables N-18 and N-19.

The School District still retains near 100 acres at two vacant property sites in the southwest section of the Township to provide for potential future enrollment increases in that part of the Township. Overall, it appears that a degree of stabilization has been achieved regarding enrollments and trends indicate that no change is anticipated during the next 20 years. Today, all schools appear to be operating at enrollments somewhat below their maximum capacity. Based on these findings, it is not anticipated that site expansions or additions will be necessary to accommodate an increase in the student population. However, the School District continues to undertake a program of additions to existing school facilities to provide current computer and communication technologies to Waterford students, as well as modernized physical fitness facilities.

In addition to the public school system, there are several private elementary schools and one private high school, Our Lady of the Lakes, located within the Township.

OAKLAND COMMUNITY COLLEGE

The Oakland Community College system comprises five campuses throughout Oakland County and is the largest community college in the state. The Highland Lakes campus, located in the southwest section of the Township, contains buildings totalling approximately square feet on a total of acres. The college has been located in Waterford since 1980. The site is the former location of the County sanitarium. The majority of students come from lakes area communities such as Waterford, White Lake, West Bloomfield, Commerce, Highland, and Milford.

Table N-18 Waterford School District Elementary School Building Inventory - 2003

Name of Elementary School	Location	Number of Classrooms	2001-2002 Enrollment	Optimum Student Capacity	Date Built	Additions	Site Size (in acres)
Jayno W. Adams	3810 Clintonville Road	13	370	430	1951	1955, 1957	8.0
William Beaumont	6532 Elizabeth Lake Road	16	315	520	1957		10.0
William Austin Burt	581 S. Winding	18	390	540	1956		11.5
Thomas M. Cooley	2000 Highland Street		479				
David Grayson	3800 W. Walton Blvd.	22	335	600	1960		5.5
Laura Smith Haviland	5305 Cass Elizabeth Road	12	338	380	1959		10.9
Donelson Hills	2690 Wewoka		330				
Douglass Houghton	8080 Elizabeth Lake Road in White Lake Township	12	422	380	1961		12.2
Patricia E. Knudsen	5449 Crescent Road	14	265	400	1967		17.0
Eliza Seaman Leggett	3621 Pontiac Lake Road	16	329	500	1956		9.3
Della Lutes	5195 Pontiac Lake Road	14	312	425	1960		6.9
Kingsley Montgomery	4265 Halkirk		0				
Riverside	5280 Farm Road	20	348	630	1964		9.8
Carl Sandburg	1355 Merry	12	282	375	1960		7.7
Henry R. Schoolcraft	6400 Maceday Drive	21	422	700	1957	1959	11.5
A. J. Stepanski Early Childhood Center	6010 Hatchery Road		110				
Waterford Village	4241 Steffens	14	388	414	1915	1961	7.0
Total Elementary Schools							

Source: Waterford School District, Michigan State Department of Education

Table N-19 Waterford School District Secondary School Building Inventory - 2003

Name of Secondary School	Location	Number of Classrooms	2001-2002 Enrollment	Optimum Student Capacity	Date Built	Additions	Site Size (in acres)
Isaac E. Crary Middle	501 N. Cass Lake Road	39	736	1,084	1953		37.1
Steven T. Mason Middle	W. Walton	50	960	1,598	1965		52.3
John D. Pierce Middle	Hatchery Road	49	943	1,318	1958		30.5
Four Towns Discovery	6370 Cooley Lake Road	14		500	1928	1955	4.0
Manley Voyager Alternative	2989 Van Zandt	14		425	1966		11.0
Waterford Kettering High	2800 Kettering Drive	48	1,416	1,262	1961		49.1
Waterford Mott	1151 Scott Lake Road	56	1,750	1,540	1969		71.1
Total Secondary Schools							

Source: Waterford School District, Michigan State Department of Education

APPENDIX O: CAPITAL IMPROVEMENTS PLAN

NOTE: During the period in which this Master Plan is effective, capital improvements plans will be incorporated into this Appendix. The intent of this Appendix is to serve as a collection point for the capital improvements plan and future amendments. Therefore, Appendix O is adopted as part of this Master Plan by reference to the forthcoming capital improvements planning content prepared by Township staff and approved by the Planning Commission.

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APPENDIX P: NEIGHBORHOOD NODE AND AREA CONCEPT PLANS

NOTE: During the period in which this Master Plan is effective, all neighborhood node and area concept plans approved as completed Master Plan implementation action items by the Planning Commission are incorporated into this Appendix. The intent of this Appendix is to serve as a collection point for plans developed and approved as part of the Master Plan implementation efforts. Therefore, Appendix P is adopted as part of this Master Plan by reference to the forthcoming content, as prepared by Township staff and when approved by the Planning Commission.

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APPENDIX Q: ZONING ORDINANCE AND LANDSCAPE AESTHETICS SUBCOMMITTEE DRAFT ORDINANCE REPORT

NOTE: The intent of this Appendix is to serve as the collection point for the final draft Zoning Ordinance Report prepared by the Zoning Ordinance and Landscape Aesthetics Subcommittee and submitted to the Planning Commission as part of the Master Plan implementation efforts. Therefore, Appendix Q is adopted as part of this Master Plan by reference to the forthcoming content, as prepared by the Subcommittee and Township staff, and when approved by the Planning Commission.

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APPENDIX R: WATERFORD RECREATION PLAN

NOTE: The Waterford Parks and Recreation Department is required to conduct a five year Recreation Plan in order to qualify for receipt of state grant funding to address the recreation needs established in the plan. The last Recreation Plan was adopted in 1997 and remained effective through early 2002. The next version of the Recreation Plan is being prepared concurrently with this Master Plan, and should be ready for adoption sometime in early 2003. Once adopted, this version of the Recreation Plan will remain in force for five years. During the period in which this Master Plan is effective, the operative Recreation Plan is adopted as this Appendix of the Master Plan, by reference.

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APPENDIX S: WALKABILITY STUDY

NOTE: The Walkability Study was prepared by Beckett & Raeder, Inc. of Ann Arbor, Michigan with the objective of presenting the Township with a document that could be used to implement the walkability projects identified in the study. Because the implementation of this study achieves Master Plan Goal Three, *To Enhance the Walkability of Waterford*, the May 2001 Waterford Walkability Study is adopted as this Appendix of the Master Plan by reference.

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APPENDIX T: WELLHEAD PROTECTION PLAN

NOTE: In 1997, Waterford Township commenced organization of its Wellhead Protection Plan, expanding from the Oakland County Wellhead Protection Program, which they had joined in 1996. Enlisting the services of Snell Environmental Group, Inc. (now DLZ Michigan, Inc.), delineation studies of the first group of well sites was begun and the Wellhead Protection Team was formed.

The Waterford Township Wellhead Protection Team has met several times over the past two years, to develop the Waterford Township Wellhead Protection Plan. This plan is the result of the dedicated and cumulative effort on the part of the Waterford Township Wellhead Protection Team. The Team will continue to develop the Wellhead Protection Plan as it evolves in response to the ever-changing influence of social, economic, environmental and political impacts. Because the implementation of this study achieves Master Plan Goal One, *To Maintain, Improve, and Enhance Capital Infrastructure and Public Safety for the Health, Safety, and Welfare of Waterford Citizens*, and Master Plan Goal Six, *To Ensure and Enforce Land Use Development Practices that are Sensitive to Waterford's Natural Environment*, the Wellhead Protection Plan is adopted as this Appendix of the Master Plan by reference.

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APPENDIX U: OAKLAND COUNTY INTERNATIONAL AIRPORT MASTER PLAN

NOTE: **The Oakland County International Airport (OCIA) Master Plan has been prepared to assess and direct improvements that will be required to accommodate future aviation demands. One of the purposes of this plan is to document long-term development recommendations. These recommendations are, in part, summarized in the OCIA capital improvement project list that has been prepared as part of the master planning documentation. The Oakland County International Airport Master Plan is adopted as this Appendix of the Master Plan, by reference, because the implementation of this plan achieves Master Plan Goal One, *To Maintain, Improve, and Enhance Capital Infrastructure and Public Safety for the Health, Safety, and Welfare of Waterford Citizens*, Master Plan Goal Two, *To Improve and Enhance the Transportation Network within Waterford*, Master Plan Goal Four, *To Create an Economic Climate Conducive to the Attraction, Retention, and Expansion of Business*, Master Plan Goal Six, *To Ensure and Enforce Land Use Development Practices that are Sensitive to Waterford's Natural Environment*, and Master Plan Goal Seven, *To Retain, Enhance, and Promote Waterford's Unique Character, Sense of Community, and Identity*.**

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APPENDIX V: WATERFORD SCHOOL DISTRICT MASTER PLAN

NOTE: The Waterford School District (WSD), a governmental organization that derives its powers and responsibilities from the Michigan State Legislature, undergoes its own master planning process to assess and direct improvements that will be required to achieve its mission. The active Waterford School District Master Plan documents are adopted as this Appendix of the Master Plan, by reference, because the implementation of this plan achieves Master Plan Goal Four, *To Create an Economic Climate Conducive to the Attraction, Retention, and Expansion of Business*, Master Plan Goal Five, *To Provide Improved Recreational Opportunities to Waterford Citizens*, and Master Plan Goal Seven, *To Retain, Enhance, and Promote Waterford's Unique Character, Sense of Community, and Identity*.

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APPENDIX W: OAKLAND COUNTY SERVICE CENTER COMPLEX MASTER PLAN

NOTE: **Since a portion of the Oakland County Service Center Complex is located on nearly 200 acres of property in the eastern section of the Township, the active Oakland County Service Center Master Plan documents are adopted as this Appendix of the Master Plan, by reference, because the implementation of this plan achieves Master Plan Goal One, *To Maintain, Improve, and Enhance Capital Infrastructure and Public Safety for the Health, Safety, and Welfare of Waterford Citizens*, Master Plan Goal Two, *To Improve and Enhance the Transportation Network within Waterford*, Master Plan Goal Four, *To Create an Economic Climate Conducive to the Attraction, Retention, and Expansion of Business*, and Master Plan Goal Seven, *To Retain, Enhance, and Promote Waterford's Unique Character, Sense of Community, and Identity*.**

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