

Northfield Township WWTP Capacity Evaluation Report

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviations	Definition
gpd	gallons per day
I/I	infiltration and inflow
MDEQ	Michigan Department of Environmental Quality
MG	million gallons
MGD	million gallons per day
NPDES	National Pollution Discharge Elimination System
REU	residential equivalent unit
SAD	special assessment district
SRF	State Revolving Fund
SSES	Sewer System Evaluation Survey
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

Northfield Township owns and operates a wastewater treatment plant and sanitary collection system, which has an average flow rate of 0.7 MGD and can be as high as 0.9 MGD during the spring season. This is less than the treatment capacity of 1.3 MGD, but with potential future development, improvements will be necessary. The Township engaged Tetra Tech to define the potential growth within the existing wastewater service area and identify improvements necessary at the wastewater treatment plant to meet the growth. Tetra Tech used flow data measured at the influent of the wastewater treatment plant as a basis point to estimate the magnitude and timeline for the improvements. The purpose of this report is to document the level of projected growth, summarize the analysis used to develop recommendations, and summarize the recommendations.

In addition to service areas within Northfield Township, flows from neighboring Green Oak Township are also treated at the Northfield Township wastewater treatment plant. Two service agreements between the two townships specifies that Green Oak Township can discharge an additional 227,000 gallons per day (equivalent to 873 REUs) to Northfield Township than it does currently.

The four sanitary sewer special assessment districts in Northfield Township have a potential to include an additional 1,865 REUs with a design average day flow of 485,000 gallons per day. Three of these SADs have been in place several years with only modest recent interest in development and in new connections being made.

However, should this development occur, improvements will be needed to meet both the additional daily flow and to meet the requirements of the state for wet weather flows up to the 25-year, 24-hour design storm. An increase in treatment capacity will address dry weather flow requirements, while a long-planned storage basin at the wastewater treatment plant will address wet weather flow requirements.

The initial recommendation is to construct a storage basin large enough to meet future needs up to the next expansion in treatment capacity because the cost of the storage will be less than the cost of the facilities required to increase the treatment rate. A 1.7 million gallon storage basin is recommended in the near term before much growth occurs. The basin size may be able to be made smaller through a more detailed analysis during the preliminary design of the facility. Previous analysis of the WWTP indicated the basin will equalize peak flows and allow an even higher rate of flow to be treated. When between 800 and 1,500 REUs of growth occurs (the lower end corresponding to no storage basin and the upper end corresponding to a condition where the storage basin is in place), a commitment to increase the WWTP capacity will need to be made.

If the Township decides to construct the recommended storage and wants to pursue construction funding through the State Revolving Fund Loan Program, additional intermediate studies are required to secure the funding. These intermediate studies will take multiple years to complete; therefore, pursuit of funds through the state's loan program will likely mean that funding will not be available until at least July 2017. Should the Township desire to initiate construction earlier, the Township will need to arrange its funding through another source.

1.0 INTRODUCTION

Northfield Township owns and operates a wastewater collection and treatment system that serves portions of Northfield and Green Oak Townships, but has not previously adopted a defined sanitary sewer service area. The Township has evaluated developments on a case-by-case basis. A formal sanitary sewer master plan has been discussed but is yet to be completed. Developing a wastewater master plan for Northfield Township is a large undertaking. As an initial step in better understanding the sewer system needs, the Board of Trustees elected to initiate this study of the sewer system to better understand the Township's wastewater treatment needs. This study has the following objectives:

- Update the Township's sanitary sewer map to include changes since the last map was created in 1996
- Identify potential development in the existing special assessment districts within Northfield Township and the likely flow impact on the Township's wastewater treatment plant (WWTP)
- Understand the commitment to provide sewer service to Green Oak Township and the likely flow impact at the WWTP
- Conceptually size a wet weather storage tank (also referred to as an equalization basin) at the Township's WWTP

A smaller scale revised sewer map is included in this document, and a full scale map will be delivered to the Township separately.

Two other components that are commonly included in a master plan have been deferred to a later time, including the detailed analysis of wastewater treatment plant expansion(s) and impacts to the collection system caused by potential growth. Impacts to the collection system generally require flow monitoring and detailed calculations to fully understand.

2.0 EXISTING WASTEWATER INFRASTRUCTURE

2.1 INFRASTRUCTURE HISTORY AND CONFIGURATION

The Township's WWTP was originally constructed in 1961 to serve a State of Michigan correctional facility. The WWTP was then purchased by Northfield Township and sewer systems were constructed through the 1970s to initially serve portions of Green Oak Township and Northfield Township around Whitmore Lake and portions of Northfield Township around Horseshoe Lake. Expansion of the system continued in the 1980s and 1990s to serve growing residential development.

The Township's existing wastewater treatment plant has a National Pollution Discharge Elimination System (NPDES) permit limit of 1.3 MGD. This is a nominal limit on the average daily flow that the WWTP may accept, treat and discharge. Peak flows into the WWTP may be higher than this and are allowed as long as the WWTP can acceptably process and treat the water. Calculations by Tetra Tech in 2005 suggest that the WWTP may be able to treat up to 1.5 MGD on average and meet limits if the peak flows into the WWTP are controlled through the use of a storage basin.

The WWTP has been expanded and upgraded numerous times since its 1961 construction. In its current configuration, the plant provides primary treatment (clarification), secondary treatment with a trickling filter and a second stage activated sludge process, and tertiary treatment with travelling bridge sand filters. The wastewater is disinfected with chlorine gas and receives post aeration by a cascade before being discharged to the Horseshoe Lake Drain.

WWTP operations staff indicate that they can routinely treat a peak flow rate of 2.5 to 3.0 MGD. However, they also indicate that the sand filters have reduced capacity due to suspected biological fouling of the underplates. These plates are due to be refurbished in the next few years. In its present configuration, the sand filters can only process a peak flow rate of approximately 2 MGD.

2.2 WWTP FLOW RATES

Average flows to the WWTP are lower than the permit limit of 1.3 MGD. Between 2011 and 2014, the WWTP averaged 0.7 MGD of influent flow. In the spring, when more precipitation and a higher groundwater table typically occur, the average flow was 0.9 MGD.

During wet weather, influent flows to the WWTP increase. On several occasions the Township has observed the peak flow into the WWTP reaching 3 MGD, which is the limit that can be measured at the WWTP. This increase in flows with wet weather is typical of older systems and is due to stormwater and groundwater being allowed to enter the sewer system. This water is referred to as infiltration/inflow (I/I) and can occur due to leaks in the public sewer, leaks in the privately-owned laterals, and improper connections made to either the publicly-owned system (such as storm drains) or to privately-owned parts of the system (such as basement sump pumps).

The Township has not previously conducted a comprehensive evaluation of I/I. However, in 1999, a brief flow monitoring program was conducted that showed that most parts of the Township's sewer system experienced flow increases with rainfall. Thus, the I/I was not isolated to a single part of the system. The Township also conducted a survey that showed that several homeowners had sump pumps connected to the sanitary sewer. While these connections are in violation of the Township's sewer use ordinance, there is no record that the Township followed up on removing these sources of I/I. It is also known that high water levels in Horseshoe Lake have submerged toilets and other sewer inlets creating lake inflow.

3.0 WASTEWATER SERVICE TO GREEN OAK TOWNSHIP

Wastewater service to Green Oak Township originated in the 1960s and 1970s concurrently with service to Northfield Township. The majority of this early service area occurred around the perimeter of Whitmore Lake.

A 2001 agreement between the Townships allows an additional 124 REUs to be connected within the existing service area around Whitmore Lake. Mr. St. Charles, Green Oak Township Supervisor, indicated in a telephone call that Green Oak Township's records show that 20 REUs around the lake have been connected since the 2001 agreement. Therefore, 104 REUs remain to be connected from Green Oak Township around Whitmore Lake. At 260 gallons/day, these 104 REUs produce an average daily flow of 27,040 gallons/day.

Sometime after 2001, Green Oak Township approached Northfield Township about serving an additional area in Green Oak Township. Northfield and Green Oak Township entered into a sewer service agreement dated November 11, 2004, to serve development in a designated area west of US-23 and north of 8 Mile Road. This agreement specifies that an additional 200,000 gallons of average daily flow will be allowed from Green Oak Township equivalent to 1,600 residential equivalent units (REUs). These agreements with Green Oak Township are presented in Appendix A.

Recent discussions with Green Oak Township resulted in a determination that a negligible amount of development has occurred in this new service area, so Northfield Township has a remaining obligation of approximately 200,000 gallons per day (gpd) to Green Oak Township. The discussions with Green Oak Township also addressed the 1,600 REUs mentioned in the agreement. Northfield Township's engineering standards define one REU equal to 260 gpd of average daily flow. Thus, 200,000 gallons equates to 769 REUs, not the 1,600 REUs listed in the agreement. Green Oak Township Supervisor Mark St. Charles indicated that Green Oak Township was likely to honor the 769 REU allocation.

In summary, the agreement with Green Oak Township suggests that Northfield Township is obligated to provide an additional 873 REUs, or an equivalent average daily flow rate of 227,040 gpd.

4.0 FUTURE WASTEWATER SERVICE IN NORTHFIELD TOWNSHIP

Northfield Township has existing obligations to provide wastewater service to four special assessment districts (SADs). The SADs were created specifically to provide wastewater service. The four SADs include the Lake Point SAD, North Territorial SAD, Seven Mile Road SAD, and Whitmore Lake Road SAD, and are shown on Figure 1.

Northfield Township’s design standard for average daily wastewater flow is 260 gpd per REU. The density of REUs for a particular zoning type is an estimate based on minimum lot size in the Township’s zoning ordinance and values used on past planning projects.

4.1 LAKE POINT SAD

The Lake Point SAD was established in 2003. The SAD is small, consisting of four parcels along Lake Point Drive on a peninsula extending into Whitmore Lake. All of the parcels are zoned single family residential or low density residential and appear to be developed and understood to be already connected to the WWTP. There are four total REUs in this SAD, all of which are currently connected to the WWTP.

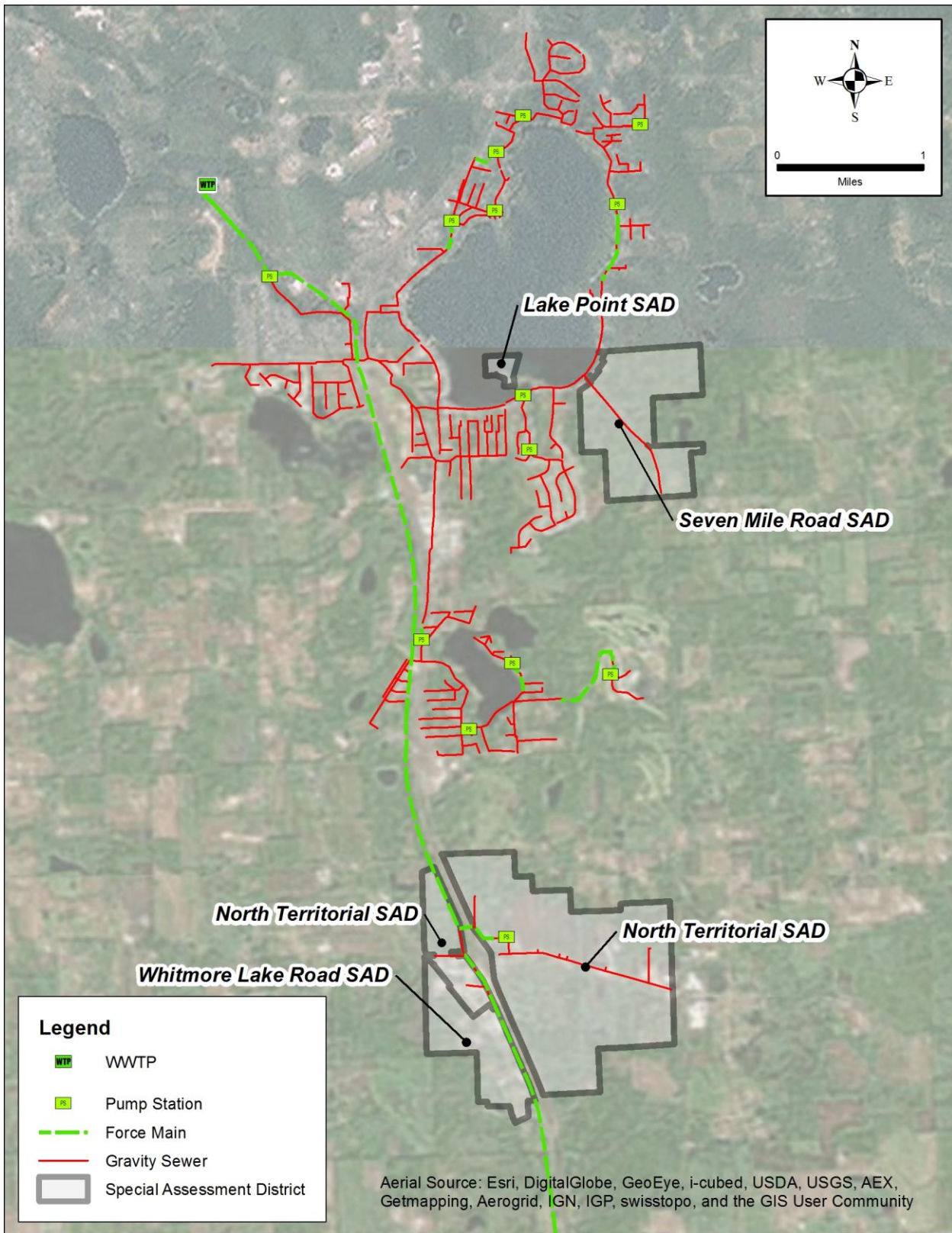
4.2 NORTH TERRITORIAL SAD

The North Territorial SAD was established around 2000 to provide wastewater service to a planned commercial area. A trunk sewer, pump, station, and force main were constructed. The force main discharges to the Township’s Eight Mile Road Pump Station. To date, only a few parcels within the SAD have connected to the trunk sewer representing about 49 REUs. The concept for this SAD was that the area could be expanded both west and east as development demanded more wastewater service. Only the area within the current SAD is depicted on Figure 1. Table 1 shows the estimated wastewater demand for parcels within the current district limits.

Table 1: REUs and Average Daily Wastewater Flow in the North Territorial SAD

Zoning	Parcel Density, REUs / acre	Current Parcels	Total Area, acres	Ultimate REUs	Average Daily Wastewater Flow, gpd
Local commercial	3.0	3	16.59	50	13,000
General commercial	3.0	14	167.95	504	131,040
Planned shopping center	3.5	4	87.29	306	79,560
Research, technology, manufacturing	2.5	18	323.58	809	210,340
Total	-	39	595.41	1,669	433,940

Figure 1: Map of Special Assessment Districts



4.3 SEVEN MILE ROAD SAD

The Seven Mile Road SAD was established in approximately 2003 to serve the area along Seven Mile Road southeast of Whitmore Lake. The sewer has been constructed but only three connections have been made consisting of three REUs. Table 2 shows the estimated wastewater demand for the SAD.

Table 2: REUs and Average Daily Wastewater Flow in the Seven Mile Road SAD

Zoning	Parcel Density, REUs / acre	Current Parcels	Total Area, acres	Ultimate REUs	Average Daily Wastewater Flow, gpd	Notes
Agricultural	0.2	5	43.89	8	2,080	Assumes 3 parcels are split into two parcels each
Low density residential	0.5	10	21.60	13	3,380	Assumes 1 parcel is split
Recreational conservation	0.1	5	108.80	11	2,860	Assumes 1 parcel is split
Single family residential	4.0	2	45.14	140	36,400	20 percent of area allotted for right-of-ways. Remaining area developed at 4 parcels per acre
Total	-	22	219.43	172	44,720	-

4.4 WHITMORE LAKE ROAD SAD

The Whitmore Lake Road SAD was established in 2013 to provide sewer service to 24 parcels along Whitmore Lake Road south of North Territorial Road. The Whitmore Lake SAD is tributary to the sewer improvements funded by the North Territorial SAD. No sewers have yet been constructed. Table 3 shows the estimated wastewater demand for the SAD. The basis of design for the Whitmore Lake Road district estimated a total of 76 REUs to be served.

Table 3: REUs and Average Daily Wastewater Flow in the Whitmore Lake Road SAD

Zoning	Parcel Density, REUs / acre	Current Parcels	Total Area, acres	Ultimate REUs	Average Daily Wastewater Flow, gpd
Agricultural	0.2	14	64.61	14	3,640
Limited industrial	1.0	8	45.27	43	11,180
Local commercial	3.0	2	6.52	19	4,940
Total	-	24	116.40	76	19,760

5.0 SUMMARY OF ADDITIONAL FLOWS TRIBUTARY TO THE WWTP

In the build-out condition, a total of 2,794 REUs were estimated to be served by the WWTP within the current SAD boundaries and growth areas within Green Oak Township. Of these 2,794 REUs, 56 are already connected to the sewer system leaving 2,738 to potentially connect. These REUs would increase the average daily flow beyond the existing WWTP capacity. Furthermore, as the existing treatment capacity is approached, there will be a greater need to provide storage for both daily fluctuations in the flow and wet weather peaks. A summary of the growth is provided in Table 4.

Table 4: Summary of Additional Flows Tributary to the Northfield Township WWTP

Community	Location	Additional REUs	Additional Average Daily Wastewater Flow, gpd
Green Oak Township	around Whitmore Lake (2001 agreement)	104	27,040
	west of US-23 (2004 agreement)	769	200,000
	Subtotal	873	227,040
Northfield Township	Lake Point SAD ¹	0	0
	North Territorial SAD	1,620	421,200
	Seven Mile Road SAD	169	43,940
	Whitmore Lake Road SAD	76	19,760
	Subtotal	1,865	484,900
Total		2,738	711,940

¹ These properties are already developed and connected to the WWTP.

6.0 ALTERNATIVES TO MANAGE NEW CONNECTIONS

Determining available capacity is not a straightforward determination. A wastewater utility must consider treatment capacity during dry weather, treatment capacity during wet weather, and sewer system capacity. Analysis of the sewer system capacity was not an objective of this evaluation, however, average and wet weather conditions are discussed below.

6.1 AVERAGE FLOWS

The average flow for existing conditions is approximately 0.7 MGD and 0.9 MGD during springtime highs. The WWTP’s rated capacity is presently 1.3 MGD with the potential of 1.5 MGD if storage is provided. Thus, there is existing WWTP capacity during average conditions to accommodate new connections.

The Michigan Department of Environmental Quality (MDEQ) is generally reluctant to allow new connections to a WWTP when the flow approaches 85 percent of the facility’s rated capacity. Assuming a treatment capacity of 1.3 MGD, this necessitates a decision on an expansion when rates reach 1.1 MGD (1.3 x 0.85). Assuming a treatment capacity of 1.5 MGD, this necessitates a decision on an expansion when rates reach 1.3 MGD (1.5 x 0.85).

In 2005, Northfield Township explored a WWTP expansion to address the new connections it committed to in the 2004 agreement with Green Oak Township. That expansion was conceived to construct a storage basin and expand the treatment capacity to 2.25 MGD. Development did not occur and this expansion was not implemented.

Available capacity calculations are found below for various scenarios. The first two calculations consider growth without differentiating new connections between Green Oak Township and Northfield Township. The last two scenarios were calculated assuming the capacity in the Green Oak contract is reserved.

A summary of potential capacity available during average conditions without reserving capacity for Green Oak Township follows (assuming no storage provided):

Allowable Rate before Expansion (MGD)	Springtime Rates (MGD)	Allowable Increase (MGD)	Allowable Increase (REU)
1.1	0.9	0.2	800

The summary of potential capacity available during average conditions without reserving capacity for Green Oak Township follows (assuming storage provided):

Allowable Rate before Expansion (MGD)	Springtime Rates (MGD)	Allowable Increase (MGD)	Allowable Increase (REU)
1.3	0.9	0.4	1,500

The summary of potential capacity available during average conditions and reserving 0.227 MGD for Green Oak Township follows (assuming no storage provided):

Allowable Rate before Expansion (MGD)	Springtime Rates (MGD)	Allowable Increase (MGD)	Allowable Increase (REU)
1.1	0.9	0	0

The summary of potential capacity available during average conditions and reserving 0.227 MGD for Green Oak Township follows (assuming storage provided):

Allowable Rate before Expansion (MGD)	Springtime Rates (MGD)	Allowable Increase (MGD)	Allowable Increase (REU)
1.3	0.9	0.173	700

6.2 WET WEATHER FLOWS

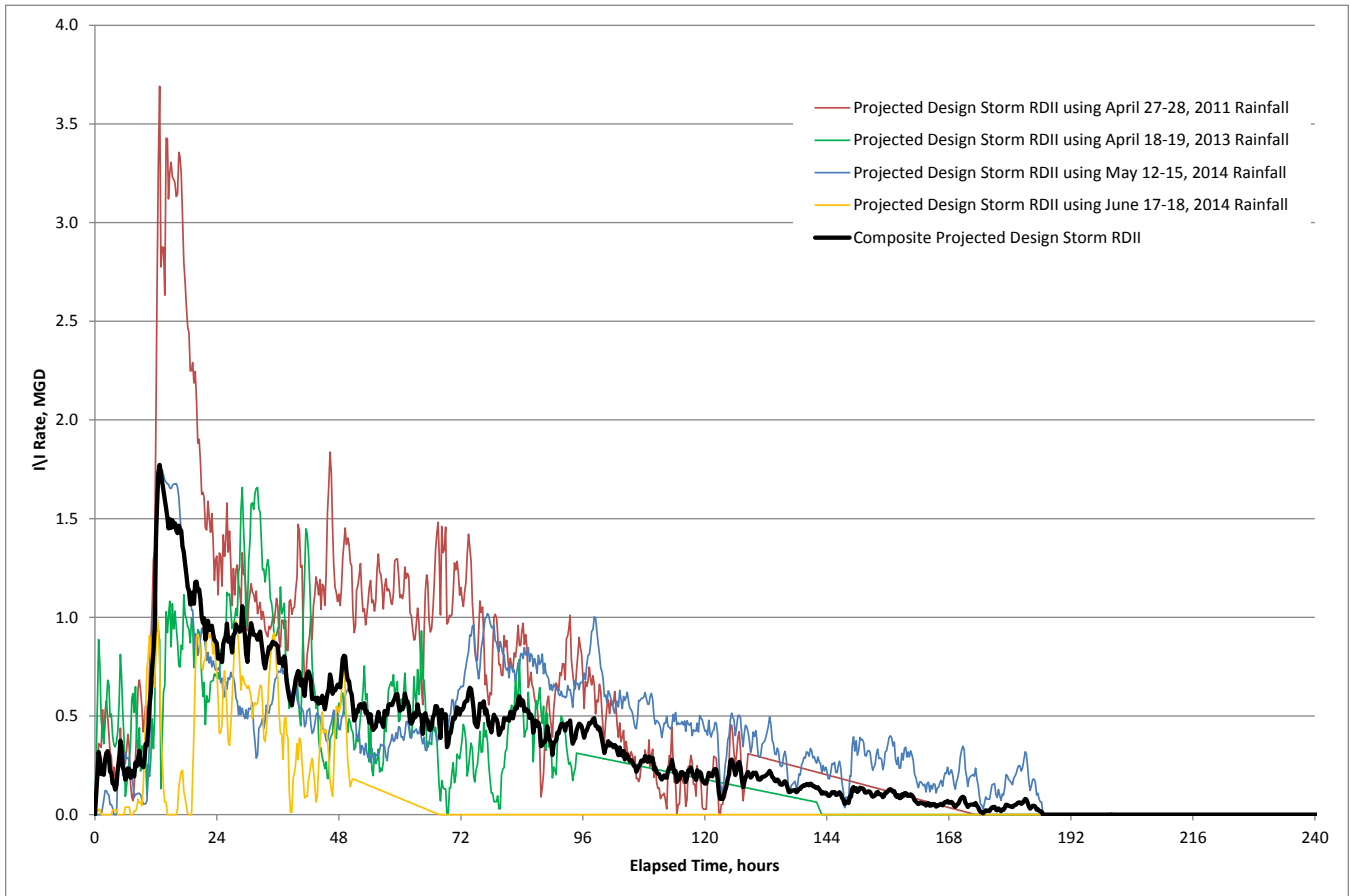
Storing wastewater during peak flow rates is a proven technique for managing flows in excess of the treatment capacity. Flows in excess of the treatment capacity are temporarily stored and returned to the system after the peak flows abate. Many, and perhaps most, wastewater treatment plants have storage tanks. The existing Northfield WWTP does not have any storage capacity. However, storage has been discussed for the WWTP since at least 1988 without the construction occurring.

In 2002, the State of Michigan adopted a policy on controlling untreated overflows from sewer systems. This policy requires that sewer systems control overflows for storms up to and including the 25-year, 24-hour storm. This storm is defined as 3.9 inches of rainfall in 24 hours throughout the state.

Flows measured at the WWTP for four severe storms between 2011 and 2014 were used to project a hydrograph for the 25-year, 24-hour storm, which can be added to a base flow to estimate the storage volume that would be necessary to eliminate overflows at the WWTP for events up to that size. The procedure used to create the hydrograph used for the 25-year, 24-hour storm followed these steps:

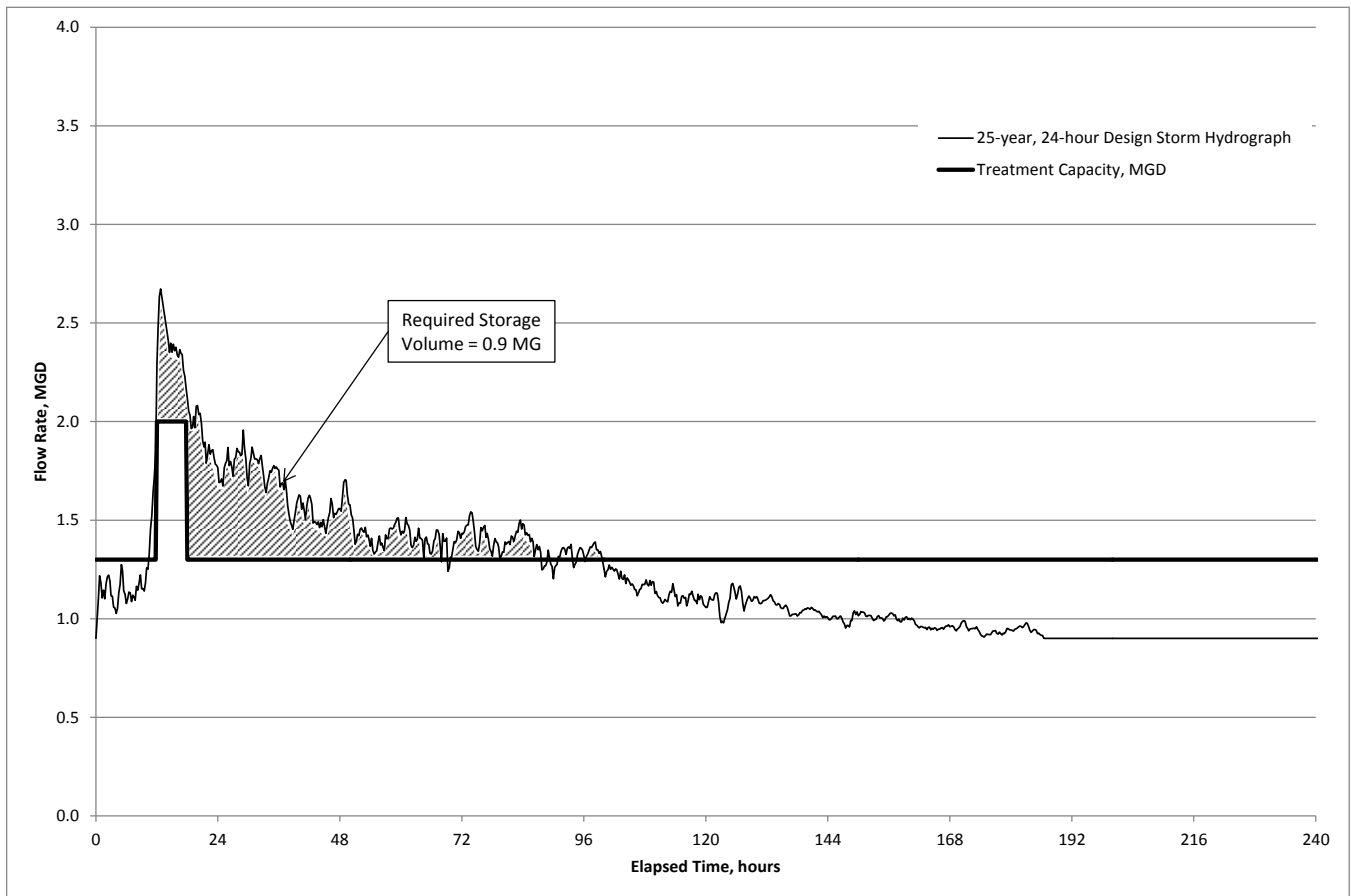
- The second through fifth most extreme events from 2011 to 2014 between April and October of each of those years, in terms of volume measured at the WWTP, were identified. The most extreme event, beginning on May 25, 2011, was excluded because it is known that inflow from Horseshoe Lake was occurring during and following this rainfall. The four rainfalls used in the analysis included:
 - April 27-28, 2011, 2.17 inches of rain, 3.0 million gallons (MG) of I/I estimated at the WWTP
 - April 18-19, 2013, 2.43 inches of rain, 1.7 MG of I/I
 - May 12-15, 2014, 4.30 inches of rain, 4.3 MG of I/I
 - June 17-18, 2014, 2.03 inches of rain, 0.5 MG of I/I
- The I/I and base flow components of the hydrograph were estimated. Plots of the components for each of the events are shown in Appendix B.
- The I/I component of the flow was projected to the 25-year, 24-hour design storm using a ratio of the design storm rainfall to the actual rainfall.
- The individual projections were averaged over an hourly period to smooth the peaks and valleys in the hydrograph using the 15-minute data from the WWTP.
- A composite of the four individual projections was created by averaging the four individual event projections. The composite projection is similar to the projection made for the May 12, 2014 event, which had the closest rainfall volume to the design storm. The individual and composite projections (with base flow removed) for the 25-year, 24-hour design storm is shown in Figure 2. The composite hydrograph was used for all analyses in this report. The tail of the hydrograph extends well beyond the end of the rainfall because of infiltration following the rainfall.

Figure 2: Composite 25-year, 24-hour I/I Hydrograph Constructed from Individual Event Projections



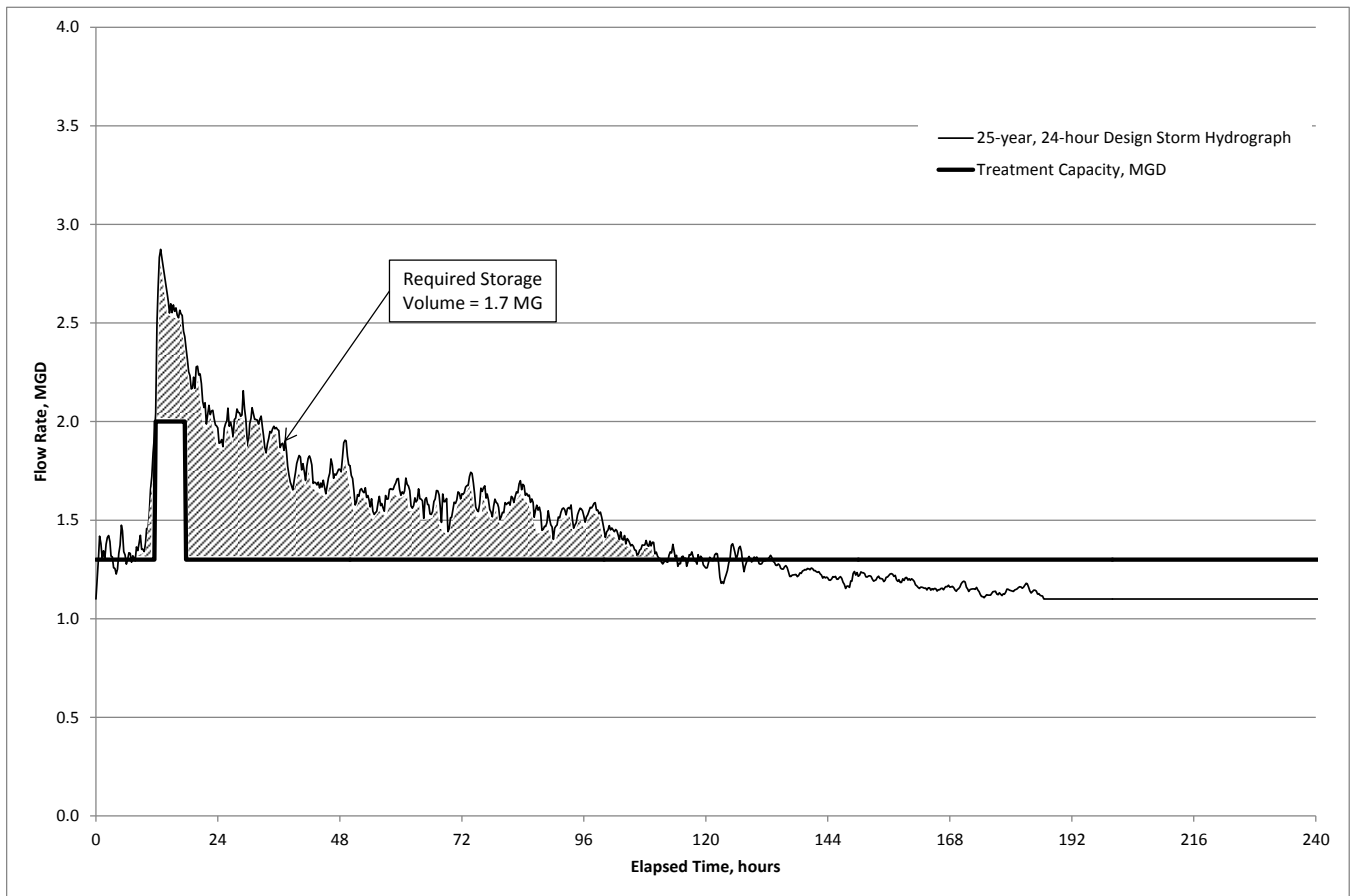
The required storage volume can now be estimated by adding the design storm I/I flows onto a base flow. For all the storage calculations it was assumed that the WWTP could treat 150 percent of its sustained treatment capacity for up to 6 hours and still meet its effluent limits. The remaining time, the WWTP could only treat its sustained capacity. For example, for the existing conditions, the WWTP could treat 2.0 MGD for 6 hours and 1.3 MGD for the remaining time. For existing conditions, we project that the required storage volume is 0.9 MG during spring (April and May) conditions. This is visually depicted in the hydrograph shown in Figure 3.

Figure 3: Spring Design Storm Hydrograph with Treatment Capacity of 1.3 MGD and No Growth



As growth occurs, the daily flow will increase and use more of the WWTP capacity. This will require that more of the flow during wet weather be stored. We project that the necessary storage volume will be 1.7 MG for an increase of 800 REUs or 0.2 MGD within the service area. This is visually depicted in the hydrograph shown in Figure 4.

Figure 4: Spring Design Storm Hydrograph with Treatment Capacity of 1.3 MGD, and 800 REUs Growth



Above this level of growth, the treatment capacity should be increased (see the *Average Flows* section), which will lessen the need for storage.

The MDEQ policy also provides an alternative methodology to demonstrate that the system will not overflow more than once every ten years. This analysis generally shows that a smaller basin size will meet the state’s requirements, but requires a much more detailed approach and is best deferred as a preliminary design step if a storage project proceeds.

The cost for a storage tank will be dependent upon the type of construction (steel versus concrete) and features desired for the tank such as flushing or aeration. We suggest the Township budget \$2.5 million to \$3.0 million for a glass-lined steel tank. A concrete tank would have a higher initial cost but may also have a longer useful life.

7.0 GROWTH POLICY

Policy decisions on when to allow or deny new connections to the sewer system rest solely with the Northfield Township Board of Trustees. The MDEQ will occasionally deny new connections when there are obvious capacity problems with a sewer system (not presently the case with Northfield Township’s system).

One important consideration is the SAD parcels. The Township has facilitated the construction of sewers in these areas. The property owners are paying an assessment for the construction of the sewers. However, these parcels are largely undeveloped and as such, have not connected to the sewer and have not paid the Township’s system development charge (connection fee). This connection fee is established to recover the prorated share of the parcel’s use of the treatment plant and downstream sewers.

A conservative policy decision could consider the 0.227 MGD commitment to Green Oak Township, the future SAD demands, and the higher springtime flows and determine that no other connections should be allowed until the wastewater plant is expanded. An alternate policy would be to consider that no significant development in Green Oak and the SADs has occurred in the last ten years, that new connections can be allowed and the WWTP will be expanded prior to the plant being overloaded.

Tetra Tech can appear at a future board meeting to answer any technical questions that will better allow the Board of Trustees to determine their policy regarding new connections.

8.0 PROJECT FUNDING

Wastewater utilities have the choice of financing capital projects with local funds (such as from reserves, connection fees and/or bonds) or from a state-funded loan. A self-financed project has few prerequisites and construction could be initiated within a few months of beginning.

The MDEQ administers a low interest, state funded loan program for wastewater improvements. This program is entitled the State Revolving Fund loan and abbreviated as SRF. A condition of receipt of the loan is that the loan monies are used to construct the cost-effective solution. This requires a series of studies to demonstrate that building storage is cost effective over removing the I/I at its source. Loan applications are due by July 1 each year and the prerequisite studies need to be completed ahead of this application date. Should Northfield Township begin the studies in the spring of 2015, it is likely that the loan could not be applied for until July 1, 2017, or later.

The first study that would be needed is termed an Infiltration/Inflow Study which measures flow throughout the system and makes projections regarding its likely sources and costs to remove. This study may cost \$150,000 to \$200,000 to complete. This study makes a recommendation that looking for I/I sources will likely be fruitful, but generally concludes that some level of detailed investigation is needed.

The second study is referred to as a Sewer System Evaluation Survey (SSES). It includes detailed investigations within the system to locate specific sources of I/I. This may involve inspecting manholes, sewer pipes, and quantifying illicit sump pumps among many other tasks. The cost of an SSES of Northfield Township's collection system cannot be determined until after completion of the I/I Study, but could range from \$150,000 to \$300,000.

9.0 SUMMARY AND RECOMMENDATIONS

9.1 SUMMARY

A capacity summary was completed that shows that Northfield Township has significant wastewater treatment obligations to both Green Oak Township and special assessment districts within Northfield Township. An additional 712,000 gallons per day (0.712 MGD) could be added to the system from these obligations.

Capacity determination in a wastewater system involves more than comparing a single set of numbers. An evaluation must be conducted that looks at the WWTP performance during average (dry weather), during wet weather, and in the sewer systems. This report evaluated conditions during average and wet weather conditions and deferred sewer analysis to a later time.

The Township has sufficient treatment capacity available to continue to accept new connections during average conditions (dry weather). Our analysis shows that approximately 800 REUs can be added until the WWTP flows will reach 1.1 MGD during the spring conditions and approximately 1,500 REUs until the WWTP reaches 1.3 MGD during these same spring conditions. A growth of 800 REUs is estimated to increase flows to 85 percent of the WWTP's permit limit during spring conditions, which is a typical threshold upon which the MDEQ may request

a WWTP expansion be considered. Past calculations suggest the WWTP may be able to treat 1.5 MGD if storage is built and thus the higher number of 1,500 REUs may be achievable.

However, during large storms, the Township’s WWTP will struggle to treat the peak flow that arrives and meet permit limits. The Township has long discussed a storage basin to be constructed at the WWTP. The size of this basin is dependent upon the level of growth and the available WWTP capacity. A basin is significantly less expensive than a plant expansion. Therefore, the basin should be sized for a future flow condition to postpone a WWTP expansion as long as possible. The MDEQ requires that the basin be sized to contain wastewater for the 25-year, 24-hour storm of 3.9 inches. This condition suggests the basin be sized for 1.7 MG. As discussed in the report, a more sophisticated statistical analysis may show this size can be slightly reduced before it is built.

The basin will assist with existing WWTP operations and be even more critical as growth occurs. It is recommended that the basin be constructed prior to any large developments occurring. For the purpose of quantifying a threshold, it is suggested that the basin be constructed prior to allowing more than 100 REUs to connect.

Table 5 provides a timeline for recommended improvements to summarize the number of new connections (expressed as REUs) and thresholds that initiate new projects.

Table 5: Timeline of Recommended Improvements

Number of Additional REUs	Average Dry Weather Flow, MGD	Average Dry Weather Flow during Peak Months, MGD	Recommended Improvement
0 – 100	0.7	0.9	Construct 1.7 MG storage basin
800 – 1,500	0.9 – 1.1	1.1 – 1.3	Expand WWTP

The REUs in Table 5 must consider new connections made from Green Oak Township and the 873 REUs committed to Green Oak. If Green Oak develops to the amounts included in the intergovernmental agreements, most or all of the surplus capacity in the existing wastewater treatment plant would be utilized.

9.2 RECOMMENDATIONS

The Township should begin planning for the storage basin that has long been identified for the WWTP. The Township may also wish to revisit its 2005 thoughts about expanding the WWTP to confirm the size and cost of the expansion. The next step toward implementing the storage basin or WWTP expansion is to consider how these projects will be financed, because the method of financing may determine additional steps necessary. At a minimum, we recommend Northfield Township evaluate its system development charge (also referred to as connection fee) so that some of the cost of the basin and WWTP expansion is recovered through fees charged to new connections.

APPENDIX A: GREEN OAK TOWNSHIP AGREEMENTS

COPY

TOWNSHIP OF NORTHFIELD/TOWNSHIP OF GREEN OAK
WASTEWATER TREATMENT CONTRACT

THIS AGREEMENT made this 25th day of June, 2001 between the TOWNSHIP OF NORTHFIELD, a general law township with offices at 75 Barker Road, Post Office Box 576, Whitmore Lake, Michigan 48189 (hereinafter "Northfield"), and the TOWNSHIP OF GREEN OAK, a general law township with offices at 10789 Silver Lake Road, South Lyon, Michigan 48178 (hereinafter "Green Oak").

WITNESSETH:

WHEREAS, Northfield is the owner and operator of a wastewater treatment plant (hereinafter "plant") located in the Township of Green Oak, County of Livingston, State of Michigan; and

WHEREAS, Act 129 of Public Acts of 1943, the Sewers and Sewer Disposal Contracts Act, provides that any two or more political subdivisions may contract relative to the furnishing of sewage disposal services by one or more of such political subdivisions to another political subdivision; and

WHEREAS, Northfield and Green Oak agree that because of the proximity of the service area to the plant and the environmentally sensitive nature of the service area, it is in the best interests of Northfield and Green Oak to make available to the service area centralized sewage disposal services; and

WHEREAS, Northfield and Green Oak agree that Green Oak shall only have the right to purchase sewage disposal service from Northfield pursuant to the terms and conditions of this Agreement; and

WHEREAS, Northfield and Green Oak are desirous of entering into an agreement whereby the sanitary sewage generated in the service area described in

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Exhibit "A" would be transmitted to and treated in Northfield's sewage disposal plant;
and

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

1. **SEWAGE DISPOSAL SERVICE BY NORTHFIELD**

Northfield agrees to receive the effluent from Green Oak which shall emanate only from an area of Green Oak outlined in Exhibit "A", attached hereto. The effluent emanating from Green Oak in the area outlined in Exhibit "A" shall not exceed an additional one hundred twenty four (124) residential equivalent units than the number of residential equivalent units previously designated for special assessment districts by Green Oak Township for the property outlined in Exhibit "A". Further, Green Oak Township shall not create any additional special assessment districts within the area outlined in Exhibit "A" without Northfield's prior written approval.

2. **PURCHASE OF SEWAGE DISPOSAL SERVICE**

Green Oak shall require, by Ordinance, all potential users in the area of Green Oak outlined in Exhibit "A" to connect and purchase sewer services from Green Oak which are provided by Northfield under the terms of this Agreement.

3. **COMPENSATION**

A. **CONNECTION PERMIT CHARGE – SEWAGE DISPOSAL SERVICE**

Northfield and Green Oak agree that a payment shall be made by each user for each individual Sewer Connection Permit Charge. The initial charge shall be Three Thousand Five Hundred Dollars and No/100 (\$3,500.00) for each Sewer Connection Permit Charge and the fee shall be paid to Northfield by each user at the time of each request for a land use permit from Green Oak. Green Oak shall monthly provide a written

report to Northfield of land use permits issued by Green Oak within the service area described in Exhibit "A". The Sewer Connection Permit Charge shall be modified from time to time and become equal to the prevailing Sewer Connection Permit Charge paid by Northfield residents. All computations regarding the number of residential equivalent units for each Sewer Connection Permit Charge shall be computed by utilizing Northfield's then prevailing ordinances as adopted by the Northfield Township Board for all Northfield residents from time to time. If said permits are not utilized within one year of the date of the purchase of said permit, the permit may be revoked at Northfield's option by the repayment of the original permit amount. Northfield and Green Oak agree that no interest shall be paid on any repayment by Northfield.

B. OPERATION, MAINTENANCE AND EQUIPMENT REPLACEMENT CHARGE - SEWAGE DISPOSAL SERVICE

Green Oak shall require, by ordinance, that each user pay to Northfield a bi-monthly charge for the operation, maintenance and equipment replacement of the sewage disposal system as adopted by the Northfield Township Board, by ordinance, from time to time.

4. DEFAULT

Green Oak pledges its full faith and credit for all of the charges set forth in this Agreement. Northfield reserves the right to discontinue service to Green Oak in the event that Green Oak is in default of this Agreement. Additionally, Northfield may charge interest for any overdue payments. The interest rate charged shall be the maximum permitted by law, but in no event shall the interest charges exceed twenty-five (25%) percent per annum on the unpaid balance of the debt.

The payments shall be considered overdue if not paid pursuant to the times prescribed by this Agreement or by Northfield Township ordinances whichever may be applicable. Default includes, but is not limited to, either nonpayment or late payment.

5. **CONSTRUCTION OF SEWERS TO SERVE GREEN OAK**

- A. Northfield shall have no responsibility to pay for the cost of designing and constructing sewage facilities located in the area of Green Oak outlined in Exhibit "A" attached hereto;
- B. All design and construction of sewage facilities in Green Oak shall be supervised and approved by the Northfield's Engineer and wastewater treatment plant personnel;
- C. Within thirty (30) days of completion of the construction of all of the sewage facilities located in Green Oak, the sewage facilities shall be dedicated to Northfield free of charge. Should Northfield permanently discontinue sewer service to Green Oak for any reason, Green Oak shall, at its option, upon giving written notice to Northfield, become the owner of all the sewage facilities including meters located on the property located in the area of Green Oak outlined in Exhibit "A" subject only to Northfield's right to use the sewage facilities for transmission of sewage to other areas which are then serviced by the use of such facilities. In the event Green Oak becomes the owner of the sewage facilities located within the area defined in Exhibit "A", Green Oak shall reimburse Northfield for all costs and/or expenditures incurred by Northfield, excepting therefrom only routine maintenance costs and/or expenditures;

- D. Detailed records including drawn plans of any construction, alteration, addition or relocation of sewage facilities located in Green Oak shall be kept on file by Green Oak and copies shall be delivered and retained by Northfield for review;
- E. Green Oak shall grant Northfield permission to use streets, highways, alleys and other rights of way within Green Oak under its control for the purpose of maintaining and repairing sewage facilities located within Green Oak. After initial construction, Northfield shall restore all existing structures or improvements lying in said rights of way of construction to as good a condition as before the construction took place.

All easements granted to Green Oak for the purpose of maintaining and repairing sewage facilities located within Green Oak shall be assigned to Northfield; and

- F. Green Oak, by ordinance, shall provide that the homeowner shall install and maintain all service leads to individual premises, including meters and valves and bear the cost of connecting said service leads to and severing from Northfield's sewage facilities located within Green Oak. Northfield's responsibility and liability shall end at the property line of the homeowner. Specifications for services leads, meters and valves shall be determined by Northfield. Copies of specifications for service leads, meters and valves shall be delivered by Northfield to Green Oak.

6. **MAINTENANCE AND REPAIR OF SEWER TO SERVE GREEN OAK**

- A. All maintenance and repair costs associated with the sewage facilities located within Green Oak shall be borne by Northfield excepting those obligations of Green Oak as set forth in Paragraph 5(F) of this Contract.

B. Green Oak shall provide to Northfield the legal right of access to the service area for the purposes of construction, maintenance and repair.

7. **TERM**

The term of this Contract shall commence on the date hereto and terminate thirty (30) years hence, unless Green Oak fails to exercise its option pursuant to Paragraph 1A (iv) of this Contract and/or the sewage disposal system permanently discontinues operation during this term; under such circumstances the agreement shall expire. Northfield and Green Oak agree that this Contract may be extended if mutually agreeable terms are agreed upon by Northfield and Green Oak at the time of the expiration of this Contract.

8. **TOXIC OR UNACCEPTABLE WASTES**

In cases where the character of sanitary sewage emanating from Green Oak is such that it imposes an unreasonable or additional burden upon Northfield's sewage disposal system, above that imposed by the average domestic sewage entering Northfield's sewage disposal system, Green Oak shall cause such entity to treat such sanitary sewage in such a manner accepted by the United States Environmental Protection Agency (A.S.A.P.) and State of Michigan Department of Environmental Quality or their successors. The average domestic sewage standard shall be defined as influent which shall not exceed the following parameters: 5 - day EQUIVALENT above 300 mg/1, suspended solids above 300 mg/1, phosphorus above 6 mg/1, total ammonia nitrogen above 35 mg/1. Green Oak or Northfield shall terminate service to any premise within their respective jurisdictions, after due notice, which fails to comply with all rules, regulations, orders and standards promulgated by the U.S.E.P.A., the Michigan Department of Environmental Quality and Northfield. It is recognized by both

parties that the average domestic sewage standard and rules, regulations, orders and standards promulgated by the U.S.E.P.A., the Michigan Department of Environmental Quality and Northfield or their successors are subject to revision. Green Oak also shall require, by ordinance, that all users in Green Oak comply with the requirements of Exhibit "B" attached.

9. **EXCLUSIVE SERVICE AND FRANCHISE**

During the term of this Agreement, Northfield shall have the exclusive right and franchise to treat sanitary sewage originating in the service area outlined in Exhibit "A".

10. **PLANNED INTERRUPTION OF SERVICE**

In the event the proper operation of the sewage disposal system requires Northfield to discontinue temporarily all or part of the sewage disposal system servicing Green Oak, no claims for damages for such discontinuance shall be made by Green Oak against Northfield. Northfield shall immediately notify by telephone Green Oak Township upon learning of any points of connection which will be intentionally interrupted temporarily by Northfield to facilitate repair, modification or connection to Northfield's sewage disposal system, Northfield, prior to such interruption, shall give Green Oak reasonable notice of the time, duration and area affected by the interruption of service.

11. **FAILURE OF PERFORMANCE**

No failure or delay in the performance of the executed Agreement by the parties shall be deemed to be a breach thereof when such failure or delay is occasioned by or due to any Act of God, strikes or lockouts, wars, riots, epidemics, explosions, sabotage, breakage, or accidents to machinery or lines of pipe, the binding order of any court or governmental authority, or any other cause,

whether of the kind herein enumerated or otherwise not in the control of the party claiming suspension, provided that no cause or contingency shall relieve Green Oak of its obligation to make payment.

12. **INDEMNIFICATION**

Green Oak and Northfield agree to save each other harmless against and from any and all claims, costs, charges and expenses (including, without limitation, fees and expenses of attorneys, expert witnesses and other consultants) which may be imposed against the other by reason of any of the following occurring during the term of this Agreement:

- A. Any negligent or tortious acts, error or omission of Green Oak or Northfield of any of its personnel, employees, subcontractors, or consultants in the construction, operation, or maintenance of the sewage disposal system and facilities, notwithstanding any prior approval of Northfield of the plans and specifications relating to the construction of such system and facilities and inspections conducted thereof by Northfield; and,
- B. Any failure by Green Oak or Northfield or any of its personnel, employees, consultants, or sub-contractors, to perform its obligations, either express or implied, under this Agreement or any negligent or tortious act, error or omission of Green Oak, its personnel, employees, consultants or subcontractors.

13. **INSURANCE**

During the term of this Agreement, the parties shall maintain public liability insurance for the sewage disposal system. Evidence of such insurance in a form approved by Northfield Attorney for insurance obtained by Green Oak and by

Green Oak's attorney for insurance obtained by Northfield shall be provided prior to the treatment of sewage from Green Oak annually.

14. **TAXES**

Green Oak agrees not to assess any ad valorem taxes on any sewage disposal facilities situated within Green Oak and owned by Northfield.

15. **BOUND BY NORTHFIELD'S ORDINANCES**

Green Oak agrees to adopt ordinances which require all sewage disposal facility users situated within the area outlined in Exhibit "A", to be bound by all rules, regulations and ordinances of Northfield to the same extent that users within the corporate limits of Northfield are so bound. Northfield shall provide copies of any such rules, regulations and ordinances to Green Oak.

16. **RESOLUTION OF DISPUTES**

It is recognized by both parties that in the future certain disputes regarding the terms of this Agreement may arise between Northfield and Green Oak. In order to provide for the orderly resolution of these matters the following process is established:

- A. Within thirty (30) days after a grievance is noted, the offended legislative body shall inform the other legislative body of their disagreement in writing. The non-aggrieved legislative body shall have up to thirty (30) days in which to respond to the grievance. This response shall be in writing.
- B. Should the parties be unable to resolve their differences within sixty (60) days of the date of the written response to the grievance or be then unable to agree upon a method to mediate and resolve their differences,

either party may seek its lawful or equitable remedies in the Michigan Court having lawful jurisdiction over the subject matter of the dispute.

17. **CONDITIONAL APPROVAL**

The obligations of Northfield under this Agreement are specifically conditioned upon Northfield obtaining any and all necessary state and federal approval for the design and construction of the expansion to its wastewater treatment plant and other sanitary sewage disposal facilities and upon entry of an appropriate Order approved by Northfield's attorney in the Livingston County Circuit Court in the case of Lakeland Property Owners, et al v Township of Northfield, Livingston County Circuit Court case number 1453, vesting total jurisdiction of the Northfield wastewater treatment plant and collector system in the Michigan Department of Environmental Quality.

18. **NON-ASSIGNABILITY**

This Agreement is not assignable by Green Oak without written consent from Northfield.

19. **SUCCESSORS**

It is hereby agreed that this Agreement shall be binding upon all successor governmental units, which may assume jurisdiction over all or part of the areas now governed by the parties.

20. **SEVERABILITY**

Should any provision of this Agreement be found by a court of law to be unconstitutional it shall be severed from the Agreement and the remaining provisions shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have set their hands and seals the day and year first above written.

WITNESSES:

Maryanne A. Ely

Karen L. Doye

NORTHFIELD TOWNSHIP
a general law township

Michael D. McFarland
By: Michael D. McFarland
Its: Supervisor

Michelle K. Manning
By: Michelle K. Manning
Its: Clerk

WITNESSES:

William L. Deshard
WILLIAM L. DESHARD

Elizabeth Ann Campbell
ELIZABETH ANN CAMPBELL
Northfield-Green Oak 1

GREEN OAK TOWNSHIP
a general law township

Mark St. Charles
By: Mark St. Charles
Its: Supervisor

Michael Sedlak
By: Michael Sedlak
Its: Clerk

TOWNSHIP OF NORTHFIELD/TOWNSHIP OF GREEN OAK
WASTEWATER TREATMENT CONTRACT

COPY

November 18th 2004
THIS AGREEMENT made this 12 day of October, 2004, between the Township of Northfield, a general law township, with offices at 75 Barker Road, Post Office Box 576, Whitmore Lake, Michigan 48189 (hereinafter "Northfield"), and the Township of Green Oak, a general law township, with offices at 10001 Silver Lake Road, Brighton, Michigan 48116-8361 (hereinafter "Green Oak").

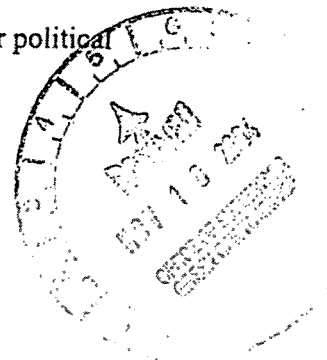
WITNESSETH:

WHEREAS, Northfield is the owner and operator of a wastewater treatment plant (hereinafter "plant") located in the Township of Green Oak, County of Livingston, State of Michigan; and

WHEREAS, Northfield has taken steps to expand its wastewater treatment plant located in Green Oak Township, County of Livingston, State of Michigan to service a capacity up to 225 million gallons per day; and

WHEREAS, Green Oak desires to have a portion of Green Oak Township served subject to the terms and conditions of a Consent Judgment (Lakeland Property Owners Association, et al v Portage, Base and Whitewood Owners Association, Livingston County Circuit Court Case No. 70-1453-CE) by Northfield's wastewater treatment plant; and

WHEREAS, Act 129 of Public Acts of 1943, being MCL 123.232, provides that any two or more political subdivisions may contract relative to the furnishing of sewage disposal services by one or more of such political subdivisions to another political subdivision; and



WHEREAS, Northfield and Green Oak agree that because of the proximity of the service area to the plant and the environmentally sensitive nature of the service area, it is in the best interests of Northfield and Green Oak to make available to the service area centralized sewage disposal services; and

WHEREAS, Northfield and Green Oak are desirous of entering into an arrangement whereby the sanitary sewage generated in the area described in Exhibit "A" would be transmitted to and treated in Northfield's sewage disposal plant; and

NOW, THEREFORE, it is hereby agreed by and between the parties as follows:

1. **SEWAGE DISPOSAL SERVICE BY NORTHFIELD**

Northfield agrees to receive into its plant and treat sanitary sewage from Green Oak, provided the average daily flow as determined on an annual basis does not exceed a total of 200,000 gallons per day calculated on an annual basis (being equal to 1600 REU's) for the term of the Contract. The effluent from Green Oak shall emanate only from an area of Green Oak outlined in Exhibit "A" attached hereto.

2. **PURCHASE OF SEWAGE DISPOSAL SERVICE**

Northfield and Green Oak agree that Green Oak shall require, by Ordinance, all potential users in the area of Green Oak outlined in Exhibit "A" to connect and purchase sewer services from Northfield.

3. **COMPENSATION**

A. **OPERATION, MAINTENANCE AND EQUIPMENT**

REPLACEMENT CHARGE – SEWAGE DISPOSAL SERVICE

i. Green Oak agrees to require all users in Exhibit "A", by ordinance, to pay to Northfield a rate to be charged for the operation, maintenance and equipment replacement of the wastewater disposal system equal to the prevailing per-gallon rate established by resolution or ordinance of the Northfield Township Board, for Northfield Users.

ii. Wastewater treatment service charges shall begin on the date of connection to Northfield's wastewater treatment system or upon the issuance of an approved rough plumbing inspection for the property under construction. Green Oak shall promptly notify Northfield in writing of such information necessary to begin billing.

iii. Annually and prior to September 1, Northfield shall certify to the Green Oak assessing officer all the rights, charges and fees, together with interest and penalties, owing by Green Oak users delinquent at the end of the fiscal year, and such assessing officer shall enter the same on the appropriate tax roll as a lien against the premises for which the services have been rendered and Green Oak shall enforce the lien and shall collect said sums as provided by law. Green Oak shall remit to Northfield all sums so collected. If Green Oak fails or neglects to so enter such delinquent charges on its next tax roll, Green Oak shall pay to Northfield such charges not later than December 1 of the year of such certification.

**B. CHARGES FOR FUTURE CONNECTIONS TO NORTHFIELD'S
WASTEWATER SEWAGE DISPOSAL SERVICE**

Northfield and Green Oak agree that users currently connected to the Northfield sewage disposal system will not be charged a connection fee pursuant to this contract. Northfield and Green Oak also agree that those property owners which are not currently connected to the Northfield sewage disposal system will be assessed a connection fee at such time as they indicate a willingness to connect to Northfield's sewage disposal system pursuant to this contract. The connection fee will be calculated based on Northfield's then prevailing rate per residential equivalent unit. Northfield's engineers shall determine the number of residential equivalent units applicable to the property requesting to connect to Northfield's sewage disposal system. The number of residential equivalent units shall be determined based on Northfield's ordinances then in effect. Green Oak agrees to be bound by Northfield's ordinances as to the calculations and charges for residential equivalent units. All requests by those property owners who desire to connect to Northfield's sewage disposal service shall request, in writing, service from Northfield.

4. **DEFAULT**

Green Oak pledges its full faith and credit for all of the charges set forth in this Contract. Northfield reserves the right to discontinue service to Green Oak in the event that Green Oak is in default of this Contract. Additionally, Northfield may charge interest for any overdue payments. The interest rate charged shall be the maximum permitted by law, but in no event shall the interest charges exceed twenty-five (25%) percent per annum on the unpaid balance of the debt. The

payments shall be considered overdue or not paid pursuant to the times prescribed by this Contract or by Northfield Township Ordinances, whichever may be applicable. Default includes, but is not limited to, either nonpayment or late payment.

5. CONSTRUCTION OF SEWERS TO SERVE GREEN OAK

- A. Northfield shall have no responsibility to pay for cost of designing and constructing sewage facilities located in the area of Green Oak outlined in Exhibit "A" attached hereto.
- B. All design and construction of sewage facilities in Green Oak shall be supervised and approved by Northfield's Engineer.
- C. Upon completion of the construction of all of the sewage facilities located in Green Oak, the sewage facilities shall be dedicated to Northfield free of charge. Should Northfield permanently discontinue sewer service to Green Oak for any reason, Green Oak shall, at its option, upon giving written notice to Northfield, become the owner of all the sewage facilities including meters located on the property in the area of Green Oak outlined in Exhibit "A". Such ownership shall be subject only to Northfield's right to use the sewage facilities for transmission of sewage to other areas which are then serviced by the facilities located within the area of Green Oak outlined in Exhibit "A". In the event Green Oak becomes the owner of the sewage facilities located within the area defined in Exhibit "A", Green Oak shall reimburse Northfield for all costs and/or expenditures

incurred by Northfield, with the exception of routine maintenance costs and/or expenditures.

- D. Detailed records including drawn plans of any construction, alteration, addition or relocation of sewage facilities located in Green Oak shall be kept on file by Green Oak and copies shall be delivered and retained by Northfield for review.
- E. Green Oak shall grant Northfield permission to use streets, highways, alleys and other rights of way within Green Oak under its control for the purpose of maintaining and repairing sewage facilities located within Green Oak. After initial construction, Green Oak shall restore all existing structures or improvements lying in said rights of way of construction to as good a condition as before the construction took place and shall save harmless Northfield from any and all liability, claims, suits, actions or causes of action for damages, for injuries or otherwise by reason of the construction work provided for herein.
- F. Green Oak, by ordinance, shall provide that the homeowner shall install and maintain all service leads to individual premises, including meters, grinder pumps and valves and bear the cost of connecting said service leads to, and severing from, Northfield's sewage facilities located within Green Oak. Northfield's responsibility and liability shall end at the property line of the homeowner.

6. **MAINTENANCE AND REPAIR OF SEWER**

- A. All maintenance and repair costs associated with the sewage facilities located within Green Oak shall be borne by Northfield excepting those obligations of Green Oak as set forth in Paragraph 5(F) of this Contract.
- B. Green Oak shall provide to Northfield the legal right of access to the service area for the purposes of construction, maintenance and repair.

7. **TERM**

The term of this Contract shall commence on the date hereto and terminate twenty (20) years hence, unless the Sewage Disposal System permanently discontinues operation during this term, then under such circumstances the agreement shall expire. Northfield and Green Oak agree that this contract may be extended if mutually agreeable terms are entered into by Northfield and Green Oak at the time of the expiration of this Contract.

8. **TOXIC OR UNACCEPTABLE WASTES**

In cases where the character of sanitary sewage emanating from Green Oak is such that it imposes an unreasonable or additional burden upon Northfield's Sewage Disposal System, above that imposed by the average domestic sewage entering Northfield's Sewage Disposal System, Green Oak shall cause such entity to treat such sanitary sewage in such a manner accepted by the United States Environmental Protection Agency (USEPA) and State of Michigan Department of Environmental Quality (MDEQ) or their successors. The average domestic sewage shall contain the following parameters: 5-day BOD above 300 mg/l, suspended solids above 300 mg/l, phosphorus above 6mg/l, total ammonia nitrogen above 35 mg/l. Green Oak or Northfield shall terminate service, after

due notice to any party which fails to comply with all rules, regulations, orders and standards promulgated by the USEPA and/or the MDEQ.

9. **EXCLUSIVE SERVICE AND FRANCHISE**

During the term of this Contract, Northfield shall have the exclusive right and franchise to treat sanitary sewage originating in the service area outlined in Exhibit "A".

10. **PLANNED INTERRUPTION OF SERVICE**

In the event the proper operation of the sewage disposal system requires Northfield to discontinue temporarily all or part of the sewage disposal system servicing Green Oak, no claims for damages for such discontinuance shall be made by Green Oak. Northfield shall notify, in writing, Green Oak upon learning of any points of connection which will be intentionally, temporarily interrupted by Northfield to facilitate repair, modification or connection to Northfield's Sewage Disposal System. Northfield, prior to such interruption, shall give Green Oak reasonable notice of the time, duration and area affected by the interruption of service.

11. **FAILURE OF PERFORMANCE**

No failure or delay in the performance of the executed Wastewater Treatment Contract by the parties shall be deemed to be a breach thereof when such failure or delay is occasioned by or due to any Act of God, strikes or lockouts, wars, riots, epidemics, explosions, sabotage, breakage, or accidents to machinery or lines of pipe, the binding order of any court or governmental authority, or any other cause, whether of the kind herein enumerated or otherwise not in control of

the party claiming suspension, provided that no cause or contingency shall relieve Green Oak of its obligation to make payment.

12. INDEMNIFICATION

Green Oak agrees to hold Northfield harmless against and from any and all claims, costs, charges and expenses (including, without limitation, fees and expenses of attorneys, expert witnesses and other consultants) which may be imposed against Northfield by reason of any of the following occurring during the term of this Contract:

- A. Any negligent or tortuous acts, error or omission of Green Oak of any of its personnel, employees, subcontractors, or consultants in the construction, operation, or maintenance of the Sewage Disposal System and facilities, notwithstanding any prior approval of Northfield of the plans and specifications relating to the construction of such system and facilities and inspections conducted thereof by Northfield; and
- B. Any failure by Green Oak or any of its personnel, employees, consultants, or sub-contractors, to perform its obligations, either expressed or implied, under this Contract or any negligent or tortuous act, error or omission of Green Oak, its personnel, employees, consultants or subcontractors.

13. INSURANCE

During the term of this Contract, the parties shall maintain public liability insurance for the sewage disposal system. Evidence of such insurance in a form approved by Northfield Township's attorney for insurance obtained by Green Oak

and by Green Oak's attorney for insurance obtained by Northfield shall be provided prior to the treatment of sewage from Green Oak annually.

14. **TAXES**

Green Oak agrees not to assess any ad valorem taxes on any sewage facilities situated within Green Oak and owned by Northfield.

15. **COMPLIANCE WITH COURT ORDERS**

The parties hereby agree that this Agreement is subject to the terms and conditions of all applicable Orders entered by the Livingston County Circuit Court in the case Lakeland Property Owners Association, et al v Portage, Base, and Whitewood Owners Association, Inc., Case No. 70-1453-CE.

16. **COMPLIANCE WITH NORTHFIELD'S ORDINANCES**

Green Oak agrees to adopt ordinances which shall require all sewage disposal facility users situated within the area outlined in Exhibit "A" to be bound by all rules, regulations, and ordinances of Northfield to the same extent that users within the corporate limits of Northfield are so bound.

17. **RESOLUTION OF DISPUTES**

It is recognized by both parties that in the future certain disputes regarding the terms of this Contract may arise between Northfield and Green Oak. In order to provide for the orderly resolution of these matters the following process is established:

- A. Within thirty (30) days after a grievance is noted, the offended legislative body shall inform the other legislative body of their disagreement in writing. The non-aggrieved legislative body shall

have up to thirty (30) days in which to respond to the grievance.

This response shall be in writing.

- B. Should the parties be unable to resolve their differences within sixty (60) days of the date of the written response to the grievance or be then unable to agree upon a method to mediate and resolve their differences, either party may seek its lawful or equitable remedies in the Michigan Court having lawful jurisdiction over the subject matter of the dispute.

18. **NON-ASSIGNABILITY**

This Contract is not assignable by Green Oak without written consent from Northfield.

19. **SUCCESSORS**

It is hereby agreed that this Contract shall be binding upon all successor governmental units which may assume jurisdiction over all or part of the areas now governed by the parties.

20. **SEVERABILITY**

Should any provision of this Contract be found by a court of law to be unconstitutional it shall be severed from the Contract and the remaining provisions shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have set their hands and seals the day and year first above written.

WITNESSES:

Cynthia K. Wilson
Cynthia K. Wilson

Mary E. Williamson
Mary E. Williamson

WITNESSES:

Elizabeth Ann Campbell
ELIZABETH ANN CAMPBELL

Cynthia Dean
Cynthia Dean

NORTHFIELD TOWNSHIP
a general law township

By: Michael McFarland
Michael McFarland
Its: Supervisor

By: Michele K. Manning
Michele K. Manning
Its: Clerk

GREEN OAK TOWNSHIP
a General Law Township

By: Mark St. Charles
Mark St. Charles
Its: Supervisor

By: Michael H. Sudaak
MICHAEL H. SUDAAK
Its: Clerk

APPENDIX B: DATA USED FOR THE DEVELOPMENT OF THE 25-YEAR, 24-HOUR HYDROGRAPH

