

**PUBLIC UTILITIES
COMMITTEE**

Tuesday, June 19, 2018

6:00 PM

McFarland Municipal Center
Conference Room A

AGENDA

1. CALL TO ORDER, ROLL CALL.
2. PUBLIC APPEARANCES.
3. APPROVAL OF MINUTES.
 - a. Review and action on the draft minutes of the Public Utilities meeting held on May 15, 2018
4. BUSINESS.
 - a. Discussion on storm water concerns in the Falling Leaves Lane/Ridge Road area.
 - b. Discussion and recommendation on the request from Hoyos Consulting LLC to install equipment on the Holscher Road Water Tower with the intention of supplying internet coverage to the residents on the east side of the Village.
 - c. Follow up review and discussion regarding East Side Basin Study by Town and Country Engineering.
 - d. Discussion and action to accept Resolution PUC 01-2018 a resolution authorizing the submittal of the compliance maintenance annual report for 2017.
5. SCHEDULE NEXT MEETING DATE.
 - a. July 17, 2018 6:00 p.m.
6. ADJOURNMENT.

This meeting notice constitutes an official meeting of the above referenced group and was posted in accordance with all applicable laws related to Open Meetings Law. It is possible that members of and possibly a quorum of members of other governmental bodies of the municipality may be in attendance at the above stated meeting to gather information. No action will be taken by any governmental body at the above stated meeting other than the governmental body specifically referred to above in this notice. Upon reasonable notice, efforts will be made to accommodate the needs of disabled individuals. For additional information or to request this service, contact the McFarland Municipal Center at (608) 838-3153 or cassandra.suettinger@mcfarland.wi.us.

PUBLIC UTILITIES COMMITTEE

Tuesday May 15, 2018

6:00 P.M.

McFarland Municipal Center
Conference Room A

Minutes

1. Call the Public Utilities Meeting to Order.

Mary Pat Lytle called the meeting to order at 6:00 pm.

Members present.

Mary Pat Lytle, Stephanie Brassington, Eric Kryzenski, Craig Weiss, and Marc Nielsen.

Members absent.

Chris Fredrick

Staff Present.

Allan Coville (Director Public Works / Utilities), Brian Berquist and Tim Stieve (Village Engineers – Town and Country Engineering), Pauline Boness (Director Community Development).

Others Present.

Jodi Dobson (Baker Tilly Virchow Krause, LLP) Clair Utter, Wayne Utterback, Teresa Utterback, Brad Burrs, Austin Gannon and Kevin Urso.

2. Public Comments.

None

3. Review and possible action on the draft minutes of the joint Public Works / Public Utilities meeting held March 20, 2018 and the draft minutes of the Public Utilities meeting held on April 17, 2018.

Marc Nielsen made a motion to accept the March 20, 2018 joint meeting minutes for the Utility items only. Motion was seconded by Craig Weiss. Motion passed by unanimous consent.

Motion by Marc Nielsen and seconded by Stephanie Brassington to accept the minutes from the April 17, 2018 with noted corrections. Motion passed by unanimous consent.

4. BUSINESS

- a. **Presentation of 2017 financial statements and audit results for the Water Utility, Sewer Utility and Storm water Utility – Baker Tilly.**

Jodi Dobson (Baker Tilly Virchow Krause, LLP) passed out a summary Utility audit Report to the Utility Commission. In summary, all three Utilities, water, sanitary sewer and storm water are financially in good shape. Jodi recommended the Utility Committee consider submitting for a simplified rate case for the water utility as the rate of return has been decreasing over the last couple of years. She also recommended the Committee consider adopting a plan to pass through Madison Metro Sewer Districts increase on a yearly basis as expenses are cutting into revenue.

Baker Tilly also suggests a Utility always keep one billing cycle of unrestricted funds on hand. Water and Sewer unrestricted bi-monthly funds on hand currently equates to 9.91. Storm water bi-monthly billing funds on hand equates to 11.81.

- b. **Review and discussion regarding East Side Basin Study by Town and Country Engineering.**

Brian Berquist (Town & country Engineering) gave a presentation regarding the East Basin Utility Service Study. The study looked at all property east of the Village running out to the interstate and in some case just east of the interstate. In summary, the water utility is set for quite a while and other than installing a new well, should be in good shape for the near future.

The sanitary sewer presents some considerations in the near future. At present, the Juniper Addition and Prairie Place drain to Lift Station # 5 where it is pumped to MMSD interceptor by Siggelkow and Marsh. MMSD has requested those developments be directed south and tie into Lift Station #2 at some point in the future. At present, Lift Station #2 can only accept about 400 more single family residents. If Juniper Addition and Prairie Place are required to hook up to Lift Station #2, then only about 100 more homes would be able to hook into Lift Station #2 before upgrades to the Lift Station and forced main are required.

Brian request committee members and the residents to send him any comments and / or questions before the next meeting. Brian will be bring the report back to the next meeting.

5. Next Meeting Date and Time.

- a. June 19, 6:00 pm

6. Committee Meeting Adjournment

Brassington made a motion to adjourn at 7:32 pm and was seconded by Nielsen. Motion passed by unanimous consent.

PROCLAMATION

Designating May 20-26, 2018 as Public Works Week in McFarland, Wisconsin

WHEREAS, Public Works services and infrastructure provided in our community are an integral part of our citizens everyday lives; and

WHEREAS, the efficient operation of Public Works systems and programs such as the water system, sanitary sewers, streets, natural areas, building maintenance, storm sewers, vehicle maintenance, street trees, boulevards, compost site, garbage and recycling, open spaces and parks, are the cornerstone of the quality of life of our citizens who drive our streets, drink our water, flush toilets and so forth; and

WHEREAS, the health, safety and welfare of this community greatly depends on these facilities and services; and

WHEREAS, the quality and effectiveness of these Public Works services, as well as their planning, design, construction, and maintenance is vitally dependent upon the efforts and skill of Public Works employees; and

WHEREAS, these employees are the Village's silent heroes who guarantee that essential services are always working,

NOW, THEREFORE, be it resolved that we, the Village Board of McFarland do hereby proclaim that the week of May 20 through May 26, 2018 be designated as

Public Works Week

in the Village of McFarland and we call upon all citizens and civic organizations to acquaint themselves with the issues involved with providing our Public Works and to recognize the contributions which Public Works employees make every day to our health, safety welfare, comfort and quality of life.

Proclaimed at a regular meeting of the McFarland Village Board this 23rd day of April, 2018.

ATTEST:

APPROVED:

Cassandra Suettinger, Village Clerk

Brad Czebotar, Village President



Village of McFarland

Facility Use Proposal Holscher Road Water Tower

Presented by:

 Hoyos Consulting LLC

Date: May 15, 2018

This document is a proposal to use certain Village of McFarland facilities, in order to expand broadband access for Village of McFarland businesses and residents, as well as surrounding underserved areas.

1 About Hoyos Consulting LLC

Hoyos Consulting is a boutique internet service provider and consultancy, based in the McFarland/Madison area, providing internet services, colocation, managed services and expert level network consulting. Our ISP network spans Madison, Milwaukee, Chicago, Minneapolis, Seattle and Portland, with a mix of fiber and fixed wireless, and is quickly growing. Our expertise is networks, and we strive to provide the best rounded solutions to our clients.

Hoyos Consulting owns and operates two datacenter facilities in the Madison, WI area and one datacenter facility in Milwaukee, as well as a number of POPs to provide connectivity outside of Wisconsin. We operate a quickly growing fixed wireless network providing internet access to businesses and residents of Madison, WI and surrounding communities. We currently have over 300 on-net buildings where we provide business class internet service. We also sell equipment from multiple trusted vendors, including Juniper, Cisco, and Ubiquiti Networks.

Hoyos Consulting is currently using the Burma Road water tower to provide internet services to residents of McFarland and surrounding areas, specifically in areas where residents have not been able to obtain service previously. This deployment has been very successful in providing broadband services to rural areas of McFarland and the Town of Dunn that were previously unable to obtain broadband service.

Hoyos Consulting was also just awarded a grant of \$31,000 by the Wisconsin Public Service Commission to help expand our services further in to the Town of Dunn and neighboring areas. Our partnership with the Village of McFarland and the use of the water tower facilities is crucial in being able to provide these services, and bridge the digital divide facing these communities.

2 Proposal

The purpose of this proposal is to be able to expand our usage of certain Village of McFarland facilities (namely the water tower located at 5107 Holscher Rd) to assist in providing an alternative broadband option for residents and businesses of McFarland, as well as surrounding communities that are either un-served or underserved. With the addition of the Holscher Road water tower as a transmitter site, we can expand alternative broadband options in underserved/unserved areas to the north and east of the Village, as well as offer an additional option to residences and businesses in the Village. We've been very successful so far in providing services to unserved households, as well as a number of McFarland businesses, with the use of the Burma Road water tower.

We would seek an automatically renewing 5-year agreement for use of this water tower, similar to our agreement we have in place for the Burma Rd water tower, and dated in a co-terminus fashion, with a mandatory review meeting at each renewal period.

We would propose to install two distinct networks on each water tower (one residential facing targeting specific underserved areas, and one business facing), with backhaul capacity between the two water towers, and links to our core network in downtown Madison.

The physical footprints of the antennas are very small, the antennas being about the size of a coffee can. Existing space would be used in the base of the tower.

The expanded coverage areas are shown as *Figure 1* and our complete coverage with this Holscher WT site factored in is included as *Figure 2* below. Hoyos Consulting will be working with the Town of Dunn (one of the extremely underserved areas) on the additional residential facing deployments. From the business perspective, this allows expansion of services in to the northern parts of McFarland (including portions of the business park we were unable to service previously).

This network would be fully managed by Hoyos Consulting, and we'd be responsible for ensuring 24/7 operation of the network for all subscribers. Support would be available via email and telephone. A backbone network overview of how the network would connect to the outside world is shown below (*Figure 3*), to our core Madison POPs. We have found that our bandwidth blend provides a level of reliability and redundancy not found with other providers in the Madison area, with egress via Madison, Minneapolis, Chicago, and Milwaukee, and direct peering with Netflix, Akamai and other large bandwidth targets.

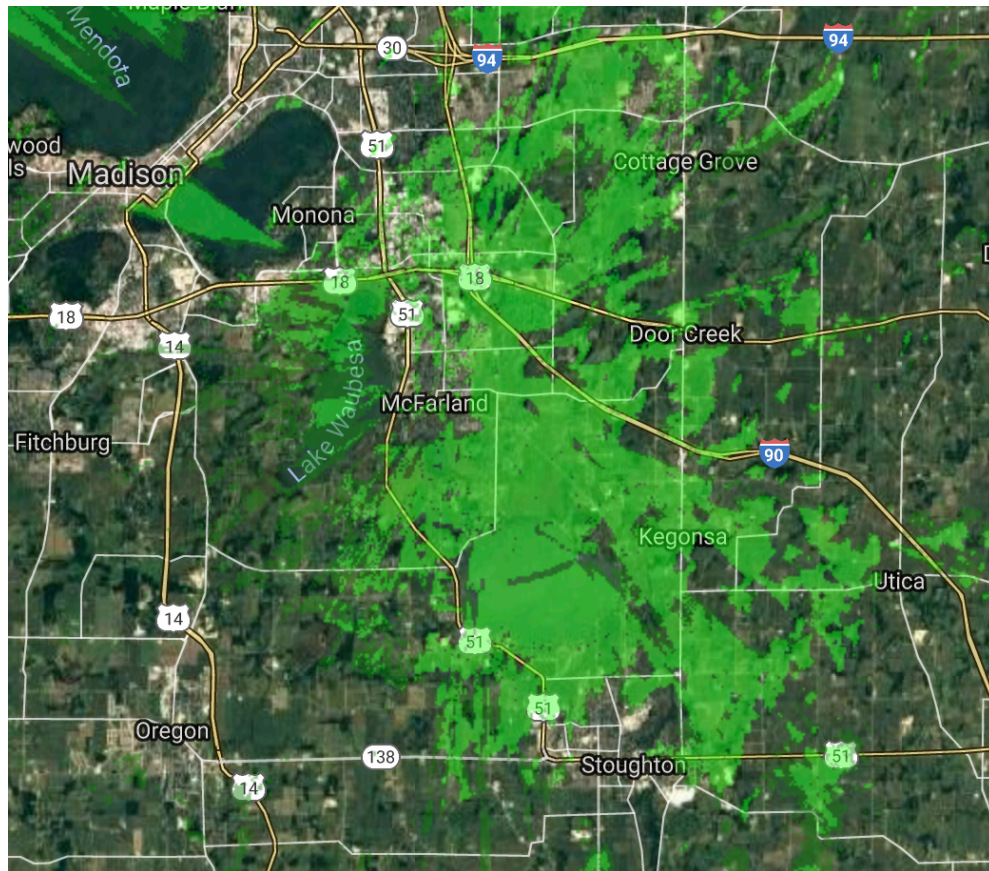


Figure 1 - residential coverage from Holscher WT

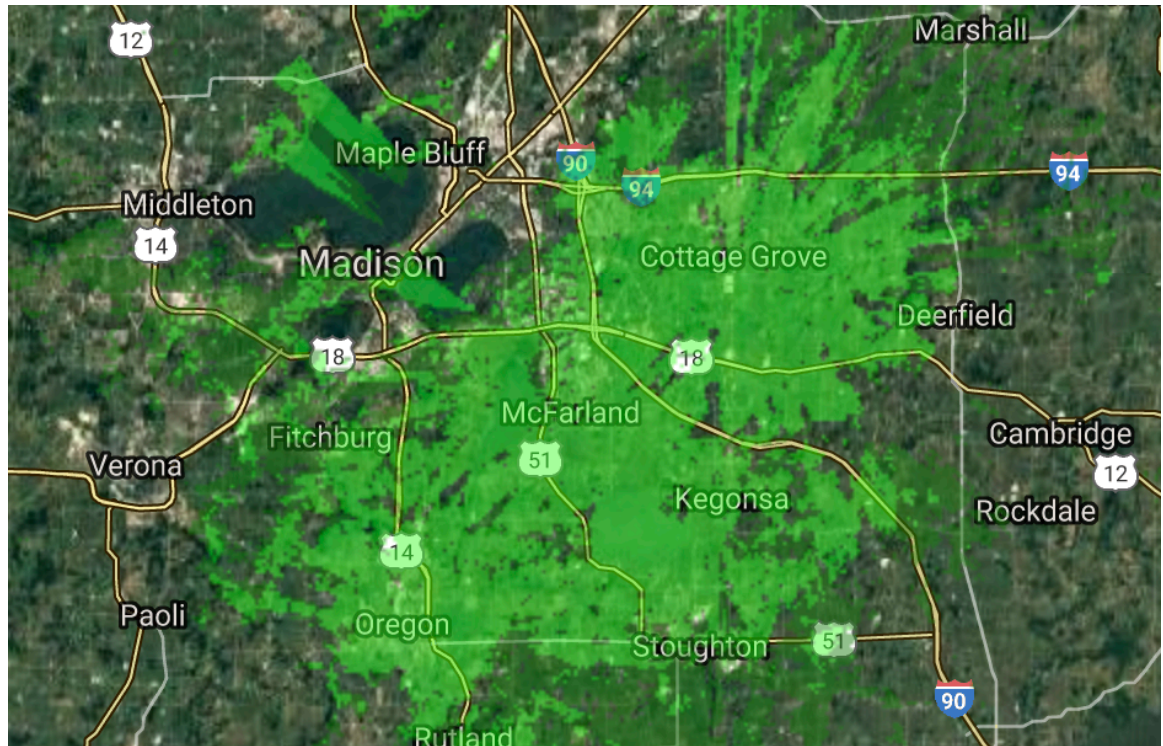


Figure 2 – overall current residential coverage (including proposed Holscher WT)

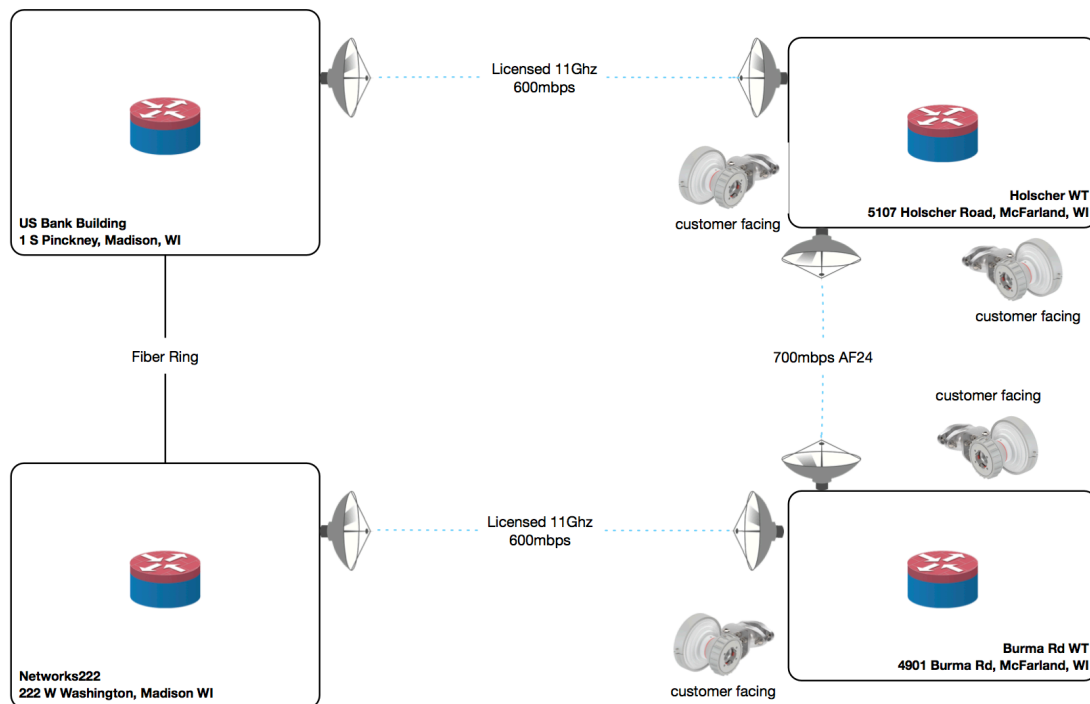


Figure 3 – Proposed Backbone Overview

3 Value to Village of McFarland

In exchange for the utilization of the Holscher Road Water Tower facilities to install antennas for an alternative broadband option (specifics shown in *Appendix A*), Hoyos Consulting would propose the following in-kind trade of services:

- Managed Firewall Service (normal rate, \$500/month)
 - Including Intrusion Detection, AntiVirus, and UTM features
 - Inclusive of all hardware required
 - 24/7 Availability and Security monitoring, software upgrades, and all moves/adds/changes included.
 - Current Firewall is end of life, and not able to effectively use all of the bandwidth currently being provided to the Village by Hoyos Consulting.
- Turnkey installation of new wireless point to point to William McFarland Park (approx \$5k)
 - Install **50x50mbps** wireless link to park building for Village security cameras
 - Connect back to Village Hall servers
 - 24/7 Monitoring and Support included
- Revenue Sharing (same as Burma WT)
 - 5% of any revenue generated using these facilities (net taxes and fees)

In addition, we've heard from a number of the members of the business community that would find value in alternatives to the current incumbent internet providers (Charter/Spectrum and Frontier), both from a redundancy perspective and a customer service perspective. The ability to add an alternate internet provider should create more competition, allowing for lower prices and better services for all residents of the Village. Even with the new TDS Fiber coming town, we find businesses value having a completely redundant, non-terrestrial connection option. We would also be able to provide an option for higher speed access for those residents that may not want to use the incumbent providers.

Thank you for the opportunity to extend our current facility use agreement arrangements. We are excited to continue to provide an alternative internet access/broadband option for the Village of McFarland and expanding further for surrounding underserved communities. We're looking forward to a long relationship with the Village of McFarland!

4 Appendix A – Water Tower Detail

Holscher WT Utilization

- install 2x point to point link using dish to downtown Madison and Burma Road WT (Fig 2: *Antenna A*)
- install 3x 60 degree horn antennas for business coverage (Fig 3: *Antenna B*)
- install 2x 65 degree sector antennas for residential coverage (Fig 4: *Antenna C*)
- install rack at base of tower (identical to Burma WT)

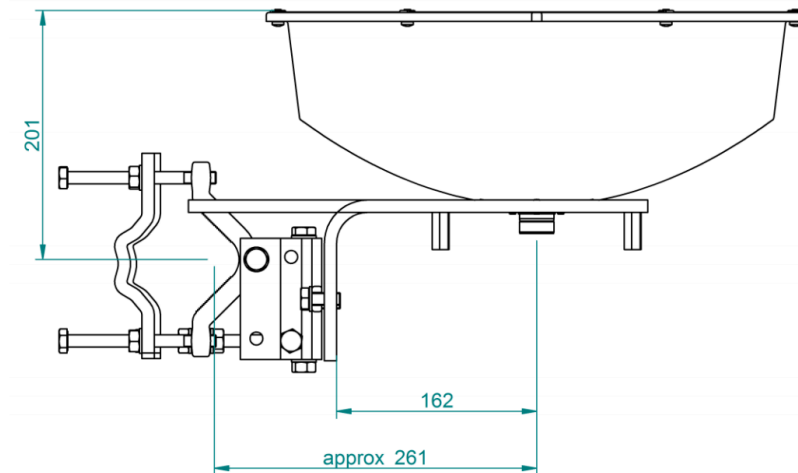


Figure 3: Antenna A

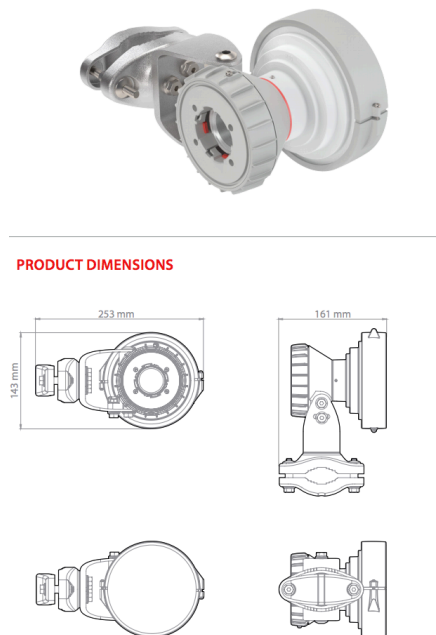


Figure 4: Antenna B



Figure 5: Antenna C

EAST BASIN UTILITY SERVICE STUDY

Village of McFarland, Wisconsin

April 2018

TOWN & COUNTRY ENGINEERING, INC.

Madison ♦ Rhinelander ♦ Kenosha

2912 Marketplace Drive, Suite 103 • Madison, WI 53719 • (608) 273-3350 • tce@tcengineers.net

EAST BASIN UTILITY SERVICE STUDY

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Appendix D	– Existing Municipal Water Distribution Infrastructure

1. INTRODUCTION

The purpose of this study is to evaluate the existing wastewater and public water utility service capabilities within the Village of McFarland's East Basin and quantify and plan for the impacts of projected future community growth on these systems.

For the purposes of this report, McFarland's East Basin generally consists of the current service area of Lift Station #2, the current service area of Lift Station #5, and the undeveloped, unserved lands on the eastern edge of the Village east to Door Creek Road. The eastern edge of the Village has historically and is currently seeing the greatest pressure for new development and this report seeks to aid in proper planning of infrastructure needs as the Village grows.

A similar planning effort was completed in November of 2000 and was titled "McFarland East Basin Capacity Study". That study only explored wastewater service options. This study is intended to be a reevaluation of sanitary sewer capacity recommendations and conclusions from the prior study updated planning data.

Additionally, this study will evaluate the capacity of the Village's municipal water system to serve future developments. The most recent study that contemplated the capacity of the Village's water system was completed in 1997, just prior to the installation of a new elevated storage tank that the study recommended.

2. STUDY METHODOLOGY

2.1. STUDY BOUNDARY DETERMINATION

The initial step in beginning this evaluation was to determine the overall boundaries of the undeveloped and currently unserved areas to be studied. This determination was made by using a combination of existing future land use planning data, topographical and geographic obstacles, and a projection of lands that are most likely to require municipal service in the future. A meeting with Village and MMSD staff was held in February 2018 to review MMSD plans for the study zone and outlying areas to ensure that service options were consistent with existing MMSD plans. A map of the resulting overall study boundary is shown in Figure 2-1, East Basin Study Boundary.

2.2. DEVELOPMENT AND FUTURE LAND USE PROJECTIONS

Future projections for wastewater flows and municipal water demand, require estimates of the expected number of future utility system users. This evaluation will use as the primary population data source the Village's recently adopted, August 2017 Comprehensive Plan. Future land use data was obtained from that plan and the data set was clipped to the overall study boundaries.

The future land use data was then classified as either "developable" or "undevelopable". Developable land is land that can be and is expected to be developed at some future point. Undevelopable land is land that cannot be developed due to environmental or legal reasons or is otherwise particularly unlikely to be developed.

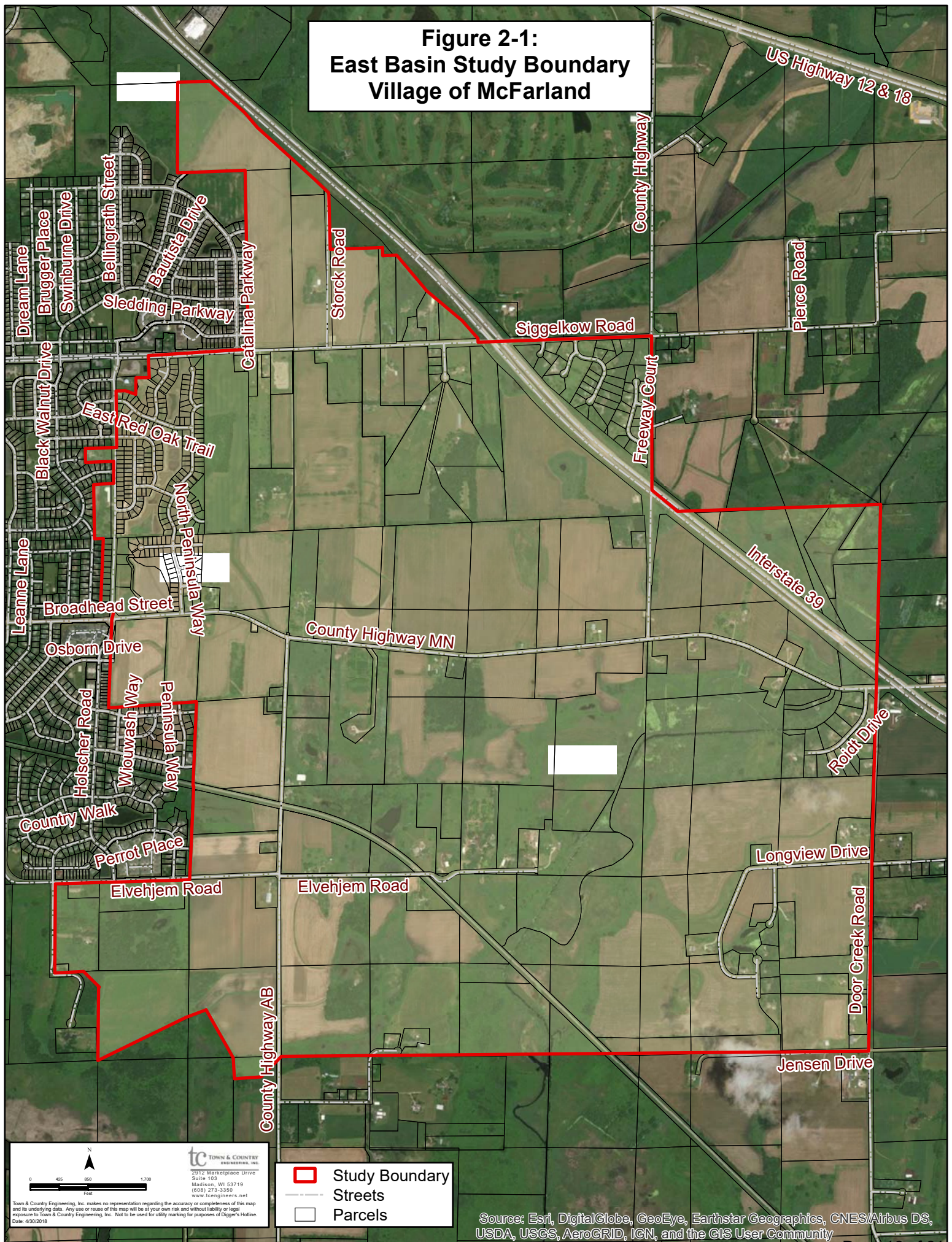
Much of the land within the study boundary cannot be developed due to the presence of existing wetlands or conservation easements. The Wisconsin Department of Natural Resources (WDNR) Wetland Inventory was included in the analysis and it was assumed that lands within this dataset are undevelopable.

The Town of Dunn's Purchase of Development Rights (PDR) program has obtained conservation easements on several of the parcels within the study boundary. These conservation easements restrict, in perpetuity, the use of land to farming or open space. The latest available dataset (April 2017) of PDR properties was used in this analysis and these properties were considered undevelopable.

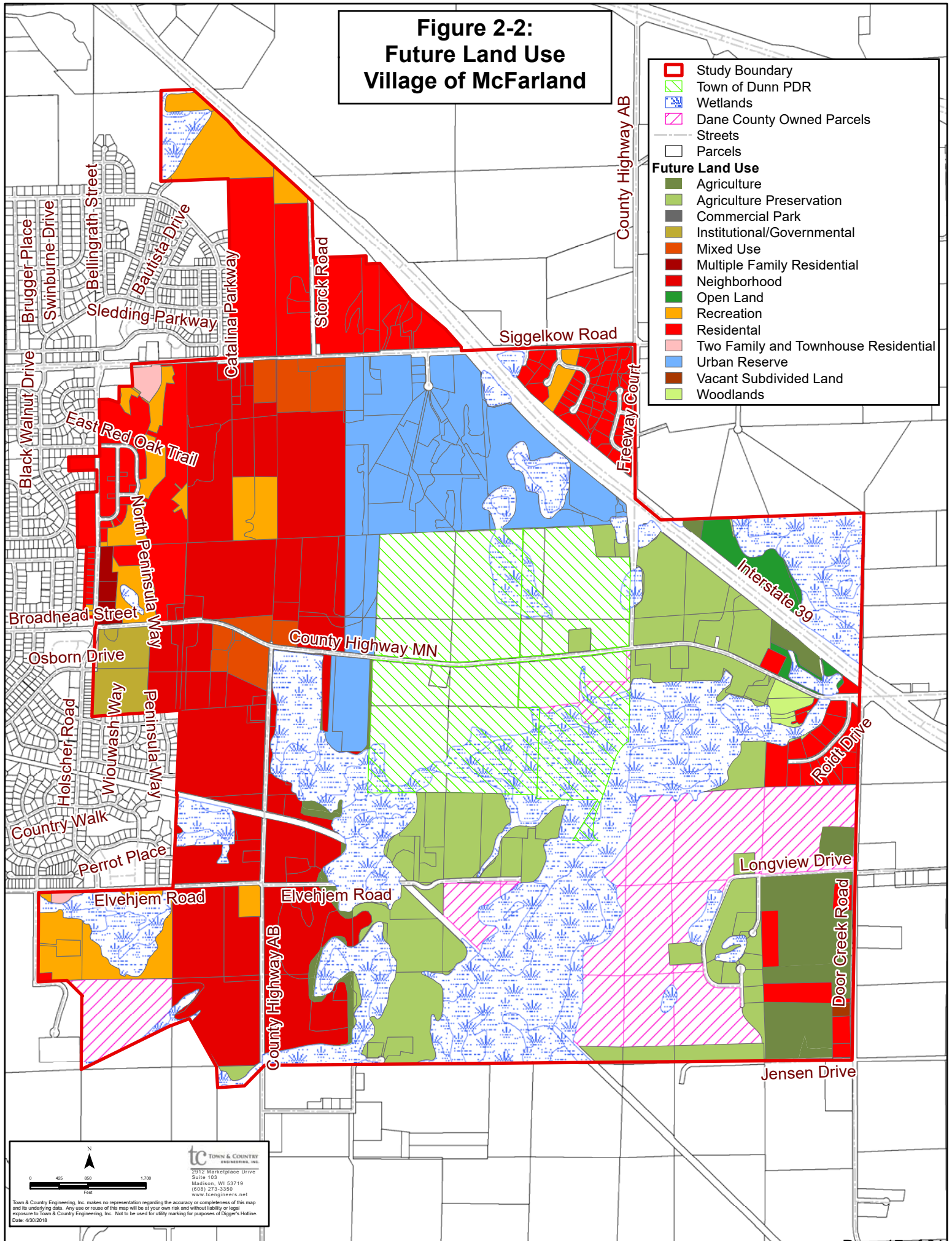
There are some parcels within the study boundaries that are owned by either Dane County or WDNR. Although these parcels may not have a formal conservation easement, it was assumed that the purpose of the aforementioned parties' ownership was for conservation and that any development on these properties in the foreseeable future is unlikely. These properties were treated as undevelopable lands for the purposes of this study.

Figure 2-2 depicts the resulting developable and undevelopable land within the study boundary. Developable land is shown in solid colors and undevelopable land is shown as hatched.

**Figure 2-1:
East Basin Study Boundary
Village of McFarland**



**Figure 2-2:
Future Land Use
Village of McFarland**



2.3. IMPACTS OF DEVELOPMENT ON FUTURE WATER USAGE

From the data contained in Figure 2-2, assumptions of expected population density and water usage can be applied to estimate future utility service demand within the study area. Table 2-1 summarizes the design parameters and Table 2-2 summarizes the population and water usage estimates within the study area.

Table 2-1: Design Parameters for Community Growth Forecasts

Population Density		
Housing Density	3.2	housing units/acre
Occupancy Density	2.83	persons/housing unit
Water Usage		
Individual Usage	75	gpd/person
Wastewater Peaking Factor	3.5	
Industrial/Commercial Usage	1000	gpd/acre
Residential Usage	679.2	gpd/acre

Table 2-2: Developable Property within Study Boundary Wastewater Usage Estimates

Future Land Use Classification	Total Area Within Study Boundary (ac.)	g.p.d./ac.	Average Water Useage (gpm)	Peak Wastewater Flow (gpm)
AGRICULTURE	83.4	679	39	137.64
AGRICULTURE PRESERVATION	244.2	679	115	403.16
COMMERCIAL PARK	0.0	1000	0	0.00
INSTITUTIONAL/GOVERNMENTAL	23.0	1000	16	55.84
MIXED USE	42.2	679	20	69.64
MULTIPLE FAMILY RESIDENTIAL	6.6	679	3	10.97
NEIGHBORHOOD	419.9	679	198	693.15
OPEN LAND	19.6	679	9	32.32
RECREATION	104.2	679	49	171.99
RESIDENTIAL	267.5	679	126	441.59
TRANSPORTATION, COMMUNICATIONS AND UTILITIES	4.2	0	0	0.00
TWO FAMILY AND TOWNHOUSE RESIDENTIAL	5.6	679	3	9.30
URBAN RESERVE	194.5	679	92	321.16
VACANT SUBDIVIDED LAND	1.2	679	1	1.95
WATER	0.4	0	0	0.00
WOODLANDS	6.9	679	3	11.43
		TOTAL	674	2360.13

2.4. POPULATION GROWTH ESTIMATES

Another useful set of design data is the Village's forecasted population growth. This data can be used to estimate the point in time at which certain levels of development will be reached. For the purposes of this study, it has been assumed that all future population growth in the Village will be direct result of development within the study boundary.

The population growth estimates used in this study were obtained from the Wisconsin Department of Administration (DOA). The DOA estimates were available to the year 2040. For use in this study, it was assumed that the rate of growth included in the estimates from 2020-2040 would continue steadily out to 2060. The population projections used in this study are given in Table 2-3.

Table 2-3: Population Estimates

Village of McFarland Population Growth Estimates	
Year	Population
2010	7,815
2016	8,320
2020	8,490
2025	8,930
2030	9,335
2035	9,635
2040	9,895
2050	10,457
2060	10,682

3. WASTEWATER COLLECTION SYSTEM EVALUATION

3.1. EXISTING INFRASTRUCTURE

The Village of McFarland has an agreement with Madison Metropolitan Sewerage District (MMSD) to accept sanitary sewer flow for processing at the Nine Springs Wastewater Treatment Facility. As a result of this agreement, the Village of McFarland does not operate its own wastewater treatment facility, but instead oversees a collection sewer system, including lift stations, to convey their flow contributions to the MMSD system.

A detailed map of the existing Village and MMSD infrastructure is included in Appendix C. This map also includes a delineation of future drainage sub-basins and highlights infrastructure components discussed in this section.

The following sub-sections discuss elements of the Village's existing wastewater infrastructure that will be critical to the conveyance of flows from future developments.

3.1.1. LIFT STATION #5

The East Basin area of McFarland is currently served by two such lift stations that convey flow to the MMSD system. The Village's Lift Station #5 (also referred to as "Holscher Road Lift Station") was built in 2016. The service area for Lift Station #5 encompasses approximately 148 acres of which the Juniper Ridge and Prairie Place housing developments are the primary users. The creation of this lift station directs flow to a discharge point in the MMSD system that was not originally designed to or planned for accepting flows from developments in this area. For this reason, MMSD's approval of the lift station included several contingencies.

The MMSD approval contingency most relevant to this report is that Lift Station #5 must be abandoned once gravity flow sanitary sewer is constructed to the south that is able to relieve the lift station and redirect its contributory flow to Lift Station #2. Additionally, the maximum rate of discharge from the station may not exceed 500,000 gallons per day. For further reference, the MMSD Commission Resolution can be found in Appendix A. For the purposes of this report, it is assumed that flows tributary to Lift Station #5 will become flows tributary to Lift Station #2 at some point in the future.

3.1.2. COUNTRYWOOD INTERCEPTOR

The Countrywood Interceptor is a 15" PVC gravity sewer which carries flows to Lift Station # 2 from the east. This interceptor will also serve the majority of the new drainage sub-basins depicted in Figure 3-1. Generally, it will be the first connection point of any new developments to the east into the existing system and as such, the capabilities of this interceptor are critical to this analysis. The estimated maximum capacity of this interceptor is 1,010 gpm or 1.45 MGD.

In the fall of 2014 and spring of 2015, a study of the existing influent flows and existing pumping capabilities was completed to assess the capacity of Lift Station #2. Flow monitoring of the Countrywood Interceptor was conducted as a part of that assessment. At that time, it was found that the peak flow in this interceptor was 190 gpm. No significant amount of development has occurred in this area since the spring of 2015 and this peak flow number will be used for the purposes of this study.

3.1.3. LIFT STATION #2

Lift Station #2 is located near the southeast corner of the Village. A map of the Village's collection system is included in Appendix C. It was constructed in 1979 and is a dual pump dry pit type "can" station. The pumps in Lift Station #2 were upgraded in 2000. There are two 20 HP pumps that alternate pumping wastewater every other cycle into an 8" force main. The pumps were designed to pump at minimum 600 gpm with 56' of total dynamic head (TDH).

Lift Station #2 receives gravity flow from a 10-inch PVC collector and from the 15-inch PVC Countrywood Interceptor. The 10-inch collector serves an area to the north of Lift Station #2 which has already been developed and from which future wastewater flows are unlikely to increase. The highest observed peak flow from this interceptor was recorded during the 2000 East Basin Capacity Study. That peak flow rate will be used for future planning and is 182 gpm. Flow contributions from the Countrywood Interceptor are discussed in Section 3.1.2.

A study of the existing influent flows and existing pumping capabilities was completed in the fall of 2014 and spring of 2015 to assess the capacity of Lift Station #2. Drawdown tests were conducted in both years and it was found that the minimum pumpage rate of the station was consistently above the rated pump capacities. Tracked pumpage rates were as high as 740-860 gpm. The minimum pumpage rate at the station was found to be 680 gpm. Accordingly, 680gpm will be used as the maximum design capacity of the station. The analysis completed in 2014 and 2015 was detailed further in a memo that has been included in Appendix B.

3.1.4. LIFT STATION #2 FORCE MAIN

The Lift Station #2 Force Main is an 8" cast iron force main that was likely constructed with the lift station in 1979. It has one air relief valve and has a total length of approximately 3,200 feet. The force main discharges into the Highland Drive Interceptor at Manhole 301, as shown in Appendix C

The estimated peak capacity of this force main is 950 gpm. This ultimate capacity is dependent upon the specific pump and motor combination used. Additionally, the estimated capacity decreases as the condition of the pipeline deteriorates. The condition of the force main has not been directly assessed. Given that it is an approximately 40 year-old cast iron pipe, it is possible that it has experienced some tuberculation over time. This type of corrosion restricts the interior diameter of the pipe, increases frictional losses, and would reduce the ultimate capacity. Further

inspection of the force main would be required to make an accurate assessment of its ultimate capacity. Cast iron pipelines are known to be relatively brittle and a condition assessment would also yield useful information to inform decisions about potentially increasing flow rates and corresponding pressure surges.

3.1.5. HIGHLAND DRIVE INTERCEPTOR

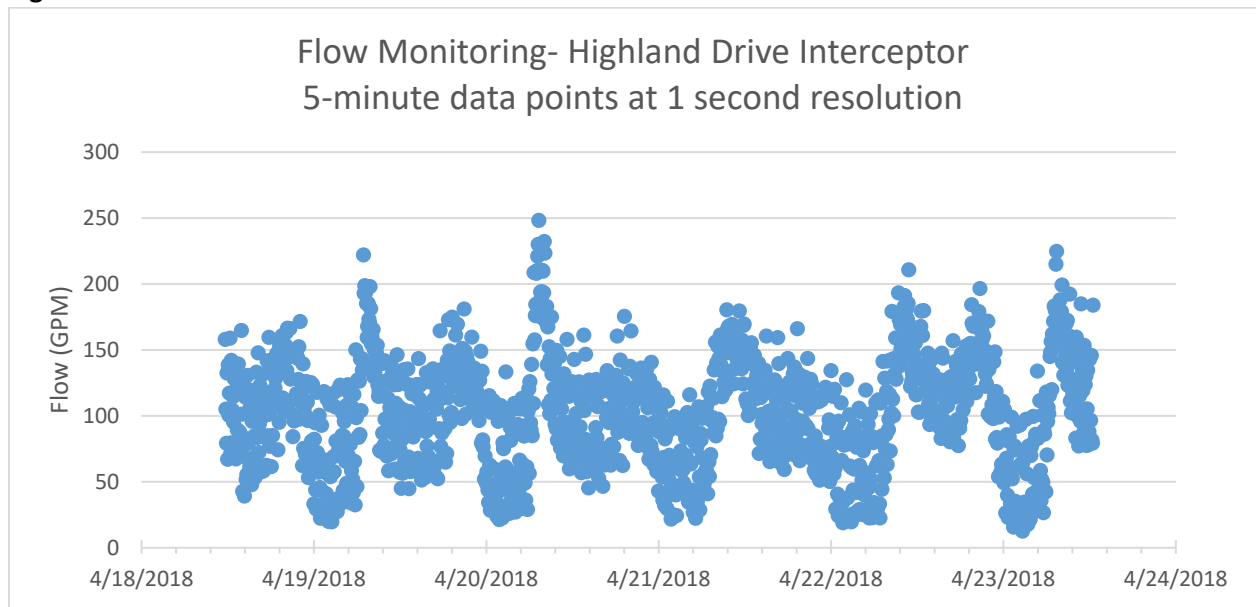
The Lift Station #2 Force Main discharges into the Highland Drive Interceptor. This is a concrete sanitary sewer, with an average slope of approximately 0.27%. The initial 1,300 feet of this sewer is 12 inches and the diameter increases to 18 inches at Jaeger Road. The total length of the interceptor is approximately 3,100 feet. The design capacity of this sewer for the purpose of this study will be set at the capacity of the 12" section of the sewer, which is 702 gpm.

The Highland Drive Interceptor has the lowest amount of remaining design capacity to be allocated to future developments of the existing infrastructure elements examined in this study. For this reason, it is a critical design point. There has not been any studies on this section of sewer to estimate the contribution of local gravity flow (non-force main) into the interceptor. The contribution of local flow can be estimated based on the number of homes that are connected and using the typical design criteria as given in Table 2-1. This estimation approach yields a 37.7 gpm average (no peaking factor) daily local flow contribution.

Some flow monitoring was completed in mid-April of 2018 to verify this estimate of average daily local flow. The monitoring equipment was installed in Manhole SA323, the first manhole east of the intersection of Jaeger Road and Exchange Street. The results of that monitoring are shown in Figure 3-1. Note that flows throughout the monitoring period remained relatively consistent. Some elevation of flow on the evening of 4/22/18 was measured, which is likely due to a snow melt event. Overall, average daily flow in the interceptor was measured at 102 gpm. Previous flow monitoring studies have indicated that the average daily flow contribution from the Lift Station #2 Force Main is approximately 70 gpm. This would indicate that the average contribution of local flow into the interceptor is 32 gpm, which is consistent with estimates.

The flow monitoring results verify the average daily flow assumptions. However, the peak flows as measured during this monitoring period in this manhole are well below the force main discharge rate of 680 gpm. One possible reason for this difference could be that the data collected simply did not record a time when the peak flow was passing through the monitoring equipment. During the studies completed in 2014/2015 (Appendix B), wet well drawdown times were less than 2 minutes. The data points collected for this monitoring are in 5 minute intervals at 1 second resolution and for this reason may have not recorded during the time of peak flow.

Figure 3-1:



Another possibility is that the wastewater flow is experiencing significant amounts of natural flow equalization prior to reaching the monitoring point. The pump runtimes at Lift Station #2 are relatively short and the approximate distance from manhole SA323 to Lift Station #2 is 4,200-feet. Further analysis and flow monitoring could be completed to verify both average and peak flow rates and flow equalization within the interceptor and force main.

The Highland Drive Interceptor carries flows to a discharge point in a MMSD Manhole located near the intersection of Yahara Drive and USH 51. The MMSD interceptor then carries this flow to MMSD Pumping Station 9 and further on to the Nine Springs Wastewater Treatment Plant.

3.2. WASTEWATER SUB-BASINS

3.2.1. DRAINAGE CHARACTERISTICS AND PROJECTED FLOWS

The sub-basins delineated for this study are shown in the map included in Appendix C. Basins A, B, C, D, E, and F all appear to be capable of conveying flow to Lift Station #2 by gravity alone. Basin A also currently represents the service area of Lift Station #5. Basins J1, J2, J3, J4, J5, J6, and J7 will all require an additional lift station to convey future wastewater flows to the existing system.

Sub-Basin K1 could be served by gravity sewer to Lift Station #2. Sub-Basin K2 would require a lift station to convey flow to Lift Station #2. However, both basins have been identified by the Capitol Area Regional Planning Commission (CARPC) and MMSD to be served by an existing MMSD interceptor which lies approximately 200 feet to the north of the northern edge of Basin K2. For these reasons, the projected flows resulting from development of these basins should not be included in the future needs assessment for Lift Station #2.

By applying the development wastewater use data detailed in Section 2.3 to the land use data within the sub-basin boundaries, it is possible to project future wastewater use within each sub-basin. Table 3-2 (following page) summarizes various sub-basin characteristics

Table 3-2: Projected Flows in Developed Sub-Basins

DEVELOPED DRAINAGE SUB-BASIN CHARACTERISTICS					
Basin	Total Area in Basin (ac.)	Developable Percentage	Fully Developed Peak Wastewater Flow (gpm)	Estimated Population	Estimated Number of Homes
A	147.21	92.1%	224.04	1226	433
B	28.85	94.2%	46.61	226	80
C	79.46	96.3%	142.30	507	179
D	131.04	57.3%	123.99	680	240
E	113.91	98.1%	184.40	1012	358
F	163.27	96.9%	261.21	1433	506
J1	68.42	34.9%	39.41	216	76
J2	43.19	45.2%	32.22	177	62
J3	294.88	38.7%	188.18	1033	365
J4	297.71	25.8%	126.76	696	246
J5	270.90	58.3%	260.76	1431	506
J6	379.30	33.0%	206.62	1134	401
J7	372.19	36.8%	226.32	1242	439
J8	64.34	62.3%	66.18	363	128
K1	107.15	94.7%	167.51	919	325
K2	49.89	77.2%	63.57	349	123
Sub Total A-F			982.55	5084	1796
Sub Total J1-J8			1146.45	6292	2223
Sub Total K1-K2			231.08	1268	448
Sub Total A-J8			2129.00	11376	4019
Overall Total			2360.09	12644	4467

3.2.2. GRAVITY COLLECTOR SEWER ROUTING, SUB-BASIN A

A relief gravity sewer route from Lift Station #5 to Lift Station #2 is depicted in Figure 3-2. It is shown in green on the map and labeled as “Lift Station #5 Relief Sewer”. As shown, this relief sewer is 4,000 lineal feet and 12-inches in diameter. The southernmost point of this sewer is a connection to an existing manhole in the intersection of Peninsula Way and Tuscobia Trail, referred to as Manhole #30A. The invert elevation in this manhole is 856.14. The invert elevation of Lift Station #5 is 866.00. The proposed sewer route has 10 manholes and allowing for a 0.1’ invert elevation drop in each manhole, the required slope is approximately 0.22%.

The bury depth of this route varies from approximately 12-28 feet. The portion of the route that traverses Sub-Basins B and C is the deepest and any major deviations from the route shown would likely require bury depths beyond 28 feet.

It should also be noted that this interceptor would be capable of serving portions of Sub-Basins B, C, E and F. It would, however, require that significant additional sewer be constructed that is beyond 20 feet in depth of bury. Additionally, it would not be possible to serve significant portions within the southernmost part of Sub-Basin F with this sewer via gravity. As a result, a separate branch of the collector sewer would need to be constructed, shown on the map as “Northeast Interceptor” in cyan.

3.2.3. GRAVITY COLLECTOR SEWER ROUTING CORRIDOR, SUB-BASINS B-F

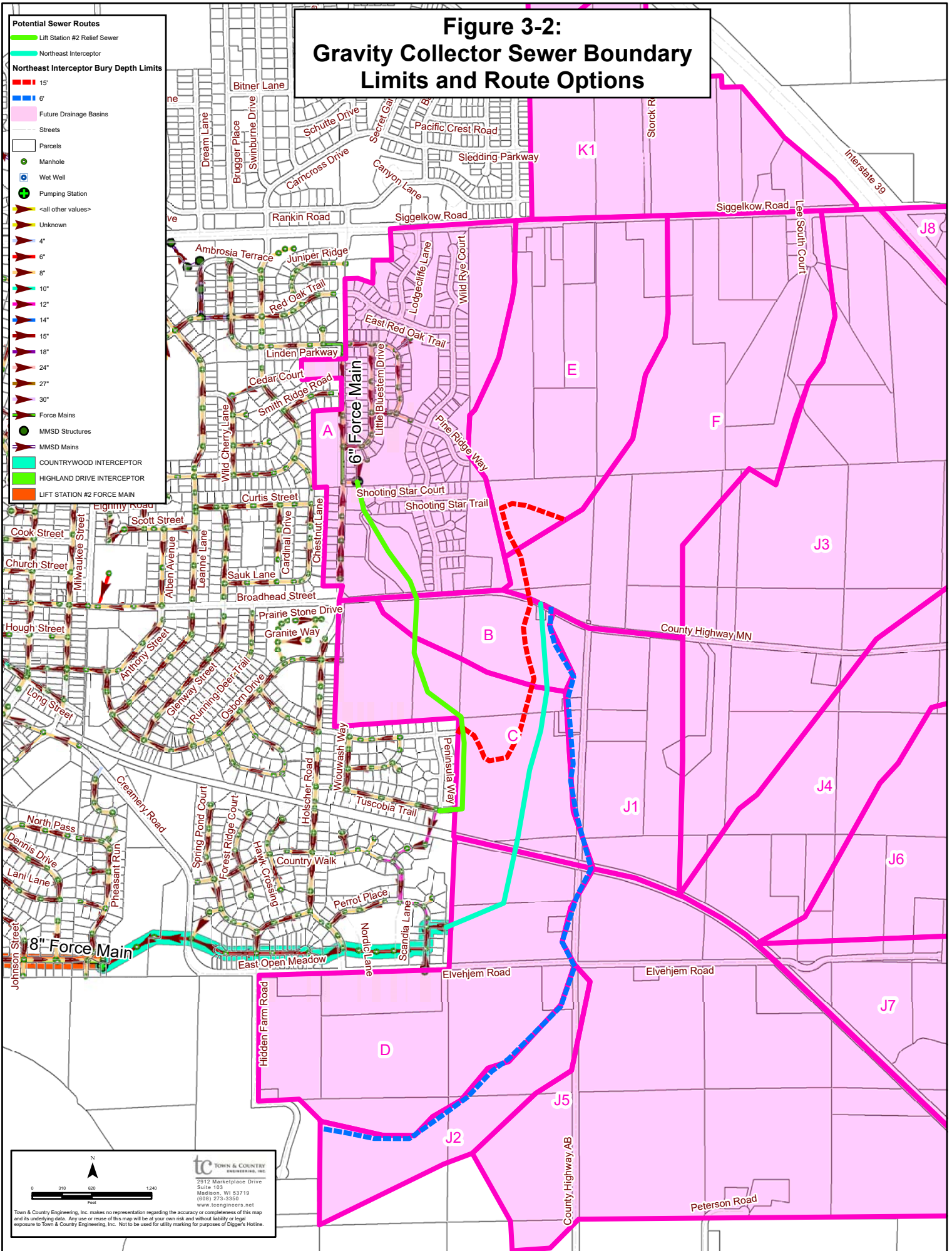
In order for flows from future developments to be conveyed via gravity from Sub-Basins B, C, E and F, a gravity sewer will have to be carefully planned and constructed. The sewer will need to be constructed at minimum grades to be able to be connected to the existing system and there is a relatively narrow corridor within which the sewer can be constructed and still be capable of conveying flows from basins B-F.

Using the existing invert elevation at the Village’s manhole on Devil’s Lake Way (849.76) and a minimum pipe slope of 0.3%, it is possible to determine the required ground elevation at a given point that would be required to maintain a required depth of cover over the pipe. Figure 3-2 is a representation of this analysis.

Shown in Figure 3-2 are the boundary lines (in red and blue) at which a new interceptor sewer would reach the shallow bury limits of 6 feet and the deep bury limit of 15 feet. The space between these limits is representative of a corridor within which a new sewer could be constructed that would be capable of serving basins B-F. The bury limit of 6 feet directly corresponds with the eastern boundaries of sub-basins F, B, C, and D. South and east of that limit, lift station service will be required to provide sanitary service.

The southern portion of Sub-Basin D is relatively flat and will also require minimum grade sewer connected to the Village’s manhole on Devil’s Lake Way to provide service. The routing of a collector sewer through this area of the sub-basin will be highly dependent on how the area develops.

**Figure 3-2:
Gravity Collector Sewer Boundary
Limits and Route Options**



3.3. WASTEWATER COLLECTION SYSTEM CAPACITY CONSTRAINTS

Having compiled the population, land use, and drainage information from the previous sections, it is possible to contemplate the impacts of development on the wastewater infrastructure. The following sub-sections contemplate these impacts and what improvements may meet future needs for additional system capacity.

3.3.1. EXISTING SYSTEM CAPACITY

The first scenario to consider is the point at which the existing system reaches ultimate capacity without any improvements being made. Table 3-3 summarizes the existing system capacities.

Table 3-3:

Existing Collection System Infrastructure Constraints				
Existing Component	Design Capacity (gpm)	Existing Base Peak Flow (gpm)	Remaining Flow Capacity (gpm)	Number of Additional Homes to Reach Capacity
Lift Station #2	680	372	308	597
Countrywood Interceptor	1010	190	820	1590
Lift Station #2 Force Main	950	680	578	1120
Highland Drive Interceptor	702	810	-108	N/A

Table 3-3 shows the Highland Drive Interceptor has no remaining capacity and may be surcharged at points during peak flow events. However, the capacity of this portion of the interceptor has likely been in this state for nearly 8 years now without known incident. Since the peak local flow contribution to the inceptor has an assumed amount of I&I added, it is also possible that the amount of local I&I in the area is less than estimated and that the interceptor does not surcharge. Additional discussion of existing flow characteristics in the Highland Drive Interceptor can be found in Section 3.1.5

Regardless of the actual flow conditions within the Highland Drive Interceptor during a peak event, it is recommended to make capacity improvements to the interceptor prior to upgrades in the capacity of Lift Station #2.

The capacity of the Highland Drive Interceptor could be increased by the installation of a parallel sewer or by replacement of the existing sewer with a larger diameter sewer. If a parallel sewer option is pursued, then lining of the existing sewer should be considered in order to maintain structural integrity and original design capacity. Lining of the existing sewer may increase the flow capacity in the sewer by about 2-3%.

3.3.2. MAXIMIZING CAPACITY OF LIFT STATION #2 AND FORCE MAIN

If improvements are implemented to increase the capacity of the Highland Drive Interceptor, Lift Station #2 would be the next constraint in system capacity. Additionally, with the pump replacements that were made in 2000, the existing capacity of the station is not far below the capacity of the receiving force main and thus these two infrastructure elements would likely reach capacity around the same time.

Currently the lift station has separate wet well and dry well with dry pit centrifugal pumps. Multiple options exist that could add capacity to the existing lift station. The lift station could be converted to a submersible lift station. Larger pumps paired with the correct variable speed drives and a larger force main may allow for significant capacity to be added while keeping the station in a wet well/dry pit configuration. Alternatively, a larger new station could be constructed that accommodates larger pumps. Additional options may exist and a detailed evaluation of all available options should be completed prior to implementation of any improvements project.

A significant increase in lift station capacity would also require additional capacity in the force main. The options for force main capacity improvement would be constructing a parallel relief force main or a full replacement of the existing force main with a new larger diameter force main.

3.3.3. MAXIMIZING COUNTRYWOOD INTERCEPTOR CAPACITY

The final element of infrastructure that will require increased capacity is the Countrywood Interceptor. This interceptor is expected to have enough capacity to accommodate flow from basins A-E as well as approximately 35% of a fully developed basin F. The amount of additional flow that can be accommodated in the interceptor represents a population growth of approximately 4,500 people, which would be a 54% increase in the Village's current population. A straight-line projection of the current forecasted population growth rate would suggest that this population level would not be reached before 2100. However, this calculation would change if population increases are not as forecasted.

When increased capacity is required at this point in the system, it could be achieved with either replacement of the existing sewer with a new, larger diameter sewer or by constructing a parallel sewer to convey the additional flow to Lift Station #2.

3.4. RECOMMENDATIONS

3.4.1. PLANNING FOR SYSTEM IMPROVEMENTS

Table 3-2 displays the ultimate number of homes that could theoretically be added to reach the maximum capacity of a given element of infrastructure. However, improvements to the collection system should be implemented well before that limit is reached. Since the trigger for all improvements in this system is the capacity at Lift Station #2, the recommended point in time for

the implementation of infrastructure improvements will hinge on the influent peak flow to the station.

It is recommended that new improvements be constructed when influent peak flows at Lift Station #2 reach a level 100 gpm below station capacity. This corresponds with an influent peak flow at the station of 580 gpm and the capacity for approximately 400 additional homes to be added to the station. If development and population growth occur at the rates projected by the DOA and outlined in Section 2.4, then this level of flow may be reached as early as 2032.

Capacity improvements in the Highland Drive Interceptor must be constructed before improvements at the lift station are implemented. It would likely be prudent to complete those improvements a few years prior to the lift station upgrade. It is recommended that planning for the interceptor improvements should begin when the peak influent flows at Lift Station #2 reach approximately 530 gpm or when replacement of the pumps at the lift station becomes necessary, whichever occurs first. If the Village's growth is as forecasted, this would result in construction of the interceptor improvements 3 years prior to construction of lift station upgrades.

Further analysis and design will need to be completed to determine the required improvements to the force main when planning for improvements at Lift Station #2. Additionally, the impacts of improving the force main capacity prior to lift station upgrades should be investigated. By increasing the size of the lift station's force main, the total amount of pumping head that the pumps are required to handle should drop. This may increase the overall capacity of the station and could delay the need to pump upgrades and lift station improvements.

3.4.2. EXISTING INFRASTRUCTURE CONDITION ASSESSMENTS

It is recommended that the Village actively monitor the condition of the critical infrastructure elements discussed in this report. This is especially true for the older and thus potentially more vulnerable infrastructure. The Lift Station #2 Force Main and Highland Drive Interceptor would be prime candidates for investment of resources in inspection and preventative maintenance.

The inspection and maintenance of the Highland Drive Interceptor can be completed with typical pipeline televising and cleaning equipment and performed by many local contractors. The cleaning of the interceptor can help to maintain its peak capacity. Inspection data can be used to make a condition assessment and may advise replacement or lining well before any capacity improvements are expected to be made at Lift Station #2.

Further monitoring of the Highland Drive Interceptor to verify peak flow rates would also be advisable over time and as additional users are connected to Lift Station #2. As shown in Table 3-3, the interceptor is likely operating at capacity during peak flow events. To date this has not caused any issues in the area, but as discharged average flows begin to increase it is recommended that this point in the system is closely monitored. Additionally, as the interceptor ages, it is possible that the

amount of inflow and infiltration into the system could increase. Periodical monitoring of peak flows would aid in tracking the status of this critical portion of infrastructure.

The Lift Station #2 Force Main is approaching 40 years of age and is a cast iron force main. This type of force main is prone to internal corrosion and reduction in effective capacity. The existing condition of this pipe is unknown. Force main inspections are less typical in the industry than gravity sewer inspections and the methods do vary. Various emerging and older technologies are available to perform these inspections. Given the length of this force main, it may be possible to conduct an inspection with typical televising equipment. Further analysis would need to be completed to determine the feasibility of inspection and the best and most cost effective method for force main inspection in this case.

3.4.3. IMPACTS OF LIFT STATION #5 ABANDONMENT

Special consideration should be given to monitoring the trigger points that may cause the need to abandon Lift Station #5 and redirect its flows to Lift Station #2. The projected peak flow resulting from a fully developed Sub-basin A alone would require that improvements be made to Lift Station #2 and the Highland Drive Interceptor. The actual build out of developments on the east side of the Village and the corresponding availability of gravity sewer to convey its tributary flow to Lift Station #2 will likely be the governing factor.

If gravity sewer is not available to carry flow from Sub-Basin A to Lift Station #2 and if Sub-Basin A is fully developed, it is possible, given the rate of current growth projected for the Village, improvements to Lift Station #2 could be delayed for another 15-25 years beyond 2030. This relationship between the two lift stations complicates planning efforts. The current status of the potential for Lift Station #5 abandonment should always be taken into consideration prior to making any infrastructure improvement decisions in the study area. Additionally, communication and coordination of planning efforts with MMSD should be ongoing so that any operational or design changes can be properly accounted for.

4. MUNICIPAL WATER SYSTEM EVALUATION

4.1. EXISTING INFRASTRUCTURE

4.1.1. MUNICIPAL WELLS

McFarland's water system serves the entire Village, with an average demand of around 500,000 gallons per day (gpd). The demand stays fairly consistent throughout the year, with a slight increase during the summer months. The Village currently operates 3 wells, Well #1, Well #3, and Well #4. Well #2 was removed from service in 1987 and permanently abandoned in 2000 due to the presence of contaminated groundwater at the site.

A future well, "Well #5", has been contemplated and discussed in multiple studies conducted in the past. Future Well #5 will serve to meet future development capacity needs of the Village. The Village has selected a future site and purchased the property for this planned addition to the system. A report was produced in 2012 (Well Site Investigation Report- Well No. 5) to document the evaluation and suitability of the selected site. The locations of the existing wells and site for the planned well are shown in Figure 4-1. The characteristics of the Village's existing wells are detailed in Table 4-1.

Table 4-1: Existing Well Statistics and Capacities

Well #	Year Installed	Total Depth (ft.)	Well Diameter (ft.)	Pump Size (HP)	Design Capacity (gpm)
1	1971	560	10	40	500
3	1996	700	18	125	1000
4	1990	800	20	100	1000

4.1.2. MUNICIPAL STORAGE

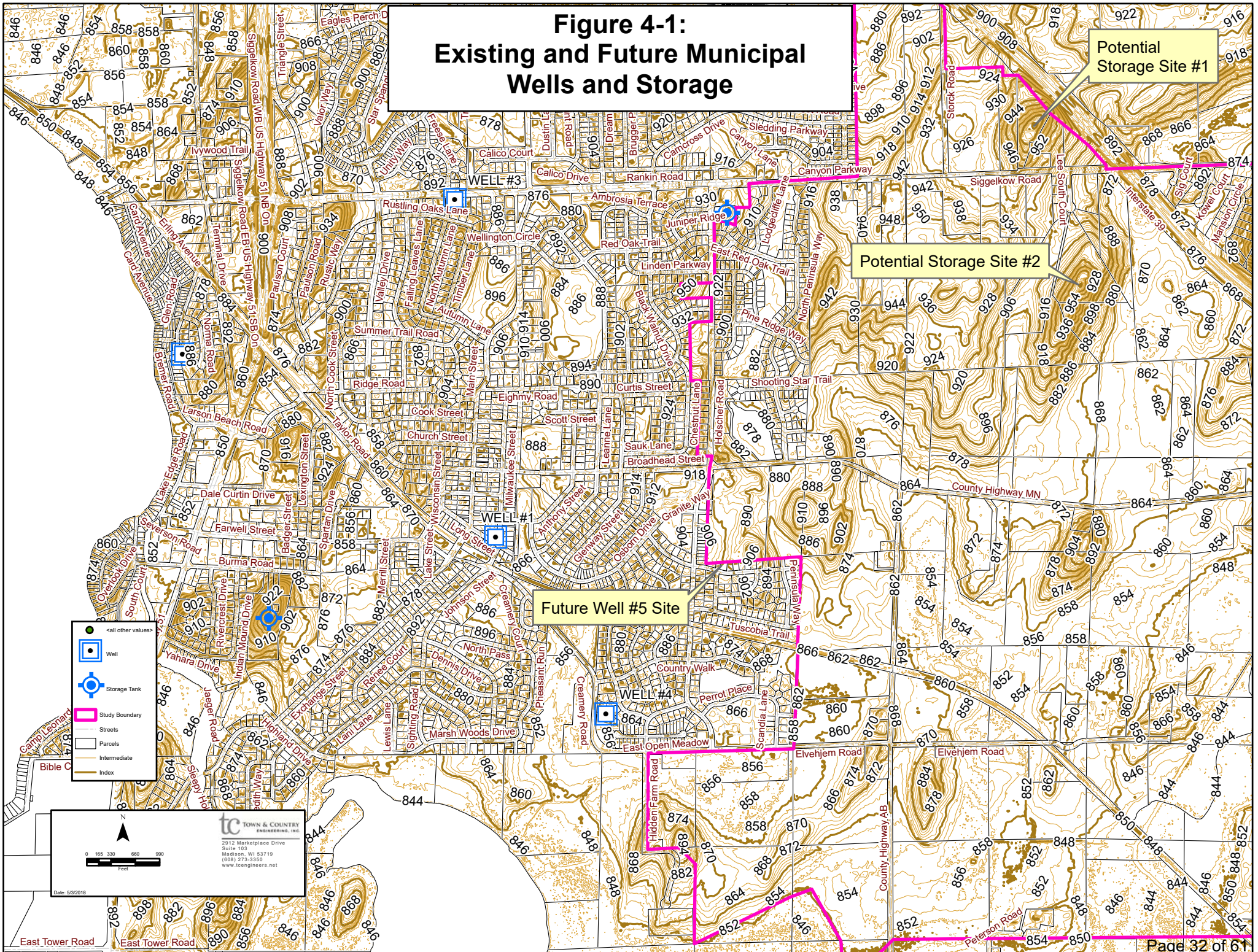
The Village currently has 2 elevated storage tanks. The locations of these storage tanks are as indicated in Figure 4-1.

The Burma Reservoir was constructed in 1975 and is the older of the two storage tanks. It is the southernmost storage tank in the Village. It has a capacity of 500,000 gallons. The tank has an overflow elevation of 1048 feet and an operating range of approximately 37 feet. The ground elevation at the tank is approximately 957 feet.

The Holscher Reservoir was constructed in 2000. It is the northernmost storage tank in the Village. It has a capacity of 750,000 gallons. The tank has an overflow elevation of 1047 feet and an operating range of approximately 40 feet. The ground elevation at the tank is approximately 934 feet.

The maximum service elevation of the existing storage tanks is approximately 965 feet.

**Figure 4-1:
Existing and Future Municipal
Wells and Storage**



4.1.3. WATER DISTRIBUTION SYSTEM

The Village of McFarland's water system is comprised of mains ranging in size from 1 inch to 12 inches in diameter. The 2016 water main size inventory is summarized in Table 4-2. There are approximately 231,555 feet, or about 44 miles of water main. The majority of the system is 6-inch and 8-inch in diameter and those sizes make up 29% and 42% of the system, respectively. A listing of Village water main statistics is included in Table 4-2. A map of the existing water distribution system is included in Appendix D.

Table 4-2: Existing Water Main Statistics

Existing Water Main Statistics		
Diameter (inches)	Total System Length (ft.)	Percentage of Overall System
1	155	0.07%
2	33	0.01%
4	356	0.15%
6	66253	28.61%
8	97664	42.18%
10	43569	18.82%
12	23525	10.16%

4.2. WATER SYSTEM ANALYSIS

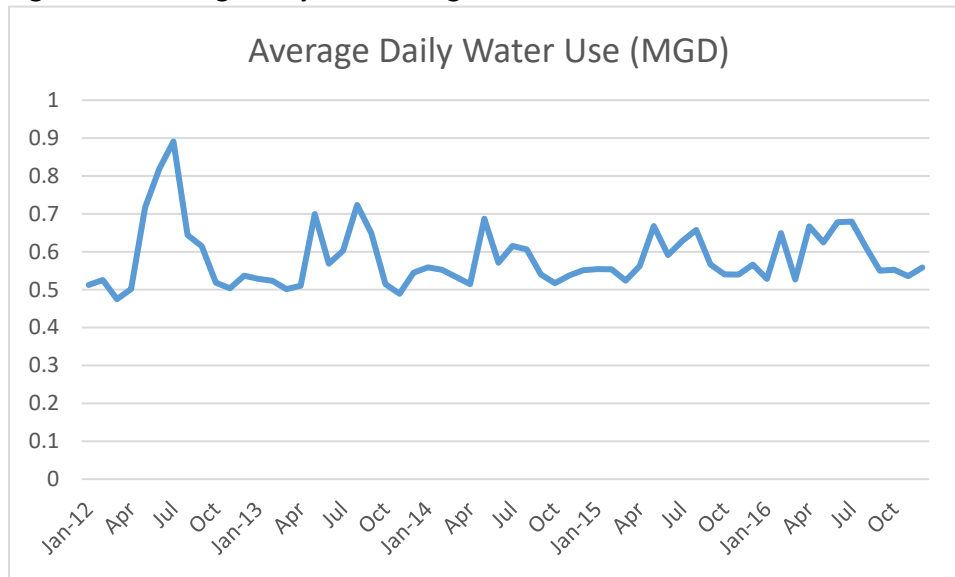
4.2.1. EXISTING WATER USAGE DATA

Existing water usage data was compiled from Public Service Commission (PSC) statistics from 2012-2016. From these datasets, it was possible to obtain both average daily water usage, and maximum daily water usage. The Village's overall average daily water use from 2012-2016 was approximately 584,000 gallons. The peak daily use within this time period was 1.47 MGD. These statistics are further summarized in Figure 4-3 and Table 4-3.

Table 4-3: Maximum Daily Water Usage

Maximum Daily Water Usage 2012-2016			
Year	Maximum Daily Usage (MGD)	Date of maximum	Cause of maximum
2016	1.275	4/22/2016	Flushing hydrants
2015	1.092	5/19/2015	Flushing hydrants
2014	1.427	5/5/2014	Flushing hydrants
2013	1.444	5/20/2013	Flushing hydrants
2012	1.471	5/24/2012	Flushing hydrants

Figure 4-3: Average Daily Water Usage



4.2.2. FIRM CAPACITY ANALYSIS

A firm capacity analysis of the need for future storage and well capacity was completed and is shown in Table 4-4. Firm well capacity is the combined source water supply capacity of a system of municipal wells with the largest unit out of service. Accordingly, all analysis included in this section and in Table 4-4 assumes that the largest well in McFarland is out of service. McFarlands's firm well capacity is 1,500 gpm based on the current operating conditions.

It is necessary to include available water in storage to get an accurate picture of water system performance. In Table 4-4, the combined capacity of wells and storage is referred to as "system capacity". To calculate a total system capacity for this analysis, the effective water storage capacity was used.

Effective water storage capacity is the minimum amount of water in storage under normal operating conditions. This capacity represents all storage facilities being at the low end of their normal operating range, just before calling for the wells to start replenishing storage. For evaluation purposes, effective storage was estimated as 70% (350,000 gallons) of the total storage for the Burma Reservoir and 70% (525,000 gallons) of the total storage for the Holscher Reservoir. Total effective storage volume is 875,000 gallons.

For each design condition, the effective storage is assumed to be fully utilized over the demand period and the system capacity is then the sum of firm well capacity plus the effective storage capacity. The surplus (or deficient) capacity is the difference between the design condition demand and the system capacity. The goal is to have surplus capacity in meeting each of the design

**Table 4-4
Firm Capacity Analysis Summary**

Year	Village Population	Total Annual Pumpage (1000 gallons)	Average Day Demand (gpm)	Spare Well Capacity during Max Day Demand		Max Day Demand Plus Fire Flow (gpm)	Spare System Capacity during Max Day Demand Plus Fire Flow		Total Pump Running Hours Required to Meet Demand	
				Maximum Day Demand (gpm)	Spare Well Capacity Available (gpm)		Spare Capacity (gpm)	Provided by Largest Well	Day Demand (hrs)	Day Demand (hrs)
2016	8,320	218,304	415	1,022	478	4,022	2,340	43%	7	15.3
2020	8,490	309,885	590	1,356	144	4,356	2,005	50%	9	21.7
2025	8,930	325,945	620	1,426	74	4,426	1,935	52%	10	22.8
2030	9,335	340,728	648	1,491	9	4,491	1,870	53%	10	23.9
2035	9,635	351,678	669	1,539	-39	4,539	1,822	55%	11	24.6
2040	9,895	361,168	687	1,580	-80	4,580	1,781	56%	11	25.3
2050	10,457	381,681	726	1,670	-170	4,670	1,691	59%	12	26.7
2060	10,682	389,886	742	1,706	-206	4,706	1,655	60%	12	27.3

Average Daily Water Pumpage Per Person (gal):

100.00

Ratio of Maximum Day to Average Day:

2.30

ISO Fire Protection Recommendation (gpm):

3000

Fire Duration (hours):

3

Current Firm Well Capacity (gpm):

1,500

Largest Available Well (gpm) (SE):

1,000

Burma Reservoir Capacity (gallons):

500,000

Burma Reservoir Effective Storage Ratio:

0.70

Burma Reservoir Effective Capacity (gallons):

350,000

Holscher Reservoir Capacity (gallons):

750,000

Holscher Reservoir Effective Storage Ratio:

0.70

Holscher Reservoir Effective Capacity (gallons):

525,000

Current Total Effective Storage (gallons):

875,000

¹ Spare capacity calculated during maximum day demand plus fire event with largest well out of service using all effective storage over the fire demand period.

² Spare capacity calculated during maximum day demand plus fire event with largest well out of service and largest reservoir out of service; using all remaining effective storage over the fire demand period.

³ Data included for the year 2016 is taken directly from actual PSC report data. Forecasts for future years use peak average daily water pumpage per person rates from

conditions, including the worst-case scenario of a fire demand occurring during the period of a maximum daily demand when the largest well is out of service.

The Insurance Services Office (ISO) sets the basic fire flow for each community depending on their individual make-up. The basic fire flow for a municipality is determined as the fifth highest needed fire flow for any location in the municipality. ISO has determined that the basic fire flow for the Village is 3000 gpm at a duration of 3 hours.

The firm capacity analysis shows that if population growth rates are as forecasted, the Village's existing water distribution system has robust storage capacity. The columns most relevant to this conclusion in Table 4-4 have the heading "Space System Capacity during Max Day Demand Plus Fire Flow". There is not a point in the analysis that additional storage in the system will be required on the basis of maximum day demand plus fire flow under firm well capacity constraints.

Included in the analysis as well is the number of total pump runtime hours needed to meet the demands of an average day and the demand on a maximum day under firm well capacity constraints. Generally, it is not recommended to run well pumps in excess of 12 hours per day on a regular basis. This part of the analysis shows that on an average day the wells are not forecasted to pump in excess of 12 hours, but on a day of maximum demand, this constraint could be reached by 2030.

The analysis does show the potential need for the installation of the new Well #5 by the year 2030. The columns most relevant to this conclusion in Table 4-4 have the heading "Spare Well Capacity during Max Day Demand ". This need is on the basis of maximum daily demand without fire flow conditions under firm well capacity constraints. Although the "Maximum Day Demand" values are given in gpm (gallons per minute), they are derived from a peak 24hr-based daily peak value. For this reason it is prudent to compare the maximum daily demand directly to the firm well capacity. By 2030, the maximum day demand is approximately equal to the firm well capacity and there is essentially no remaining spare well capacity.

4.3. RECCOMENDATIONS

4.3.1. CONSTRUCTION OF WELL #5

The firm capacity analysis projects the potential requirement for a new well #5 by 2030. However, this projection is highly dependent on actual development rates and actual peak water usage by the Village. Presently, there appears to be approximately 500 gpm of maximum day pumpage capacity remaining in the system. This is equivalent to the addition of approximately 360 additional homes to the Village.

It takes approximately 3 years to plan and construct a new well. Therefore, it is not imminently necessary that the Village begin detailed planning for the construction of a new well. It is recommended that the Village closely monitor the maximum daily peak water usage on an annual

basis as it rises and begins to approach 1,500 gpm. It is also recommended that the Village plan for this infrastructure improvement in long-term capital infrastructure improvements funding and planning.

4.3.2. POTENTIAL THIRD STORAGE TANK

The firm capacity analysis provides a “snapshot” in time look at the system and assumes that there are no restrictions within the water systems that will slow the delivery of water to a given location. If the analysis shows that there is enough capacity in the system, but a fire occurs in an area with no water main looping, it is likely that demand for fire-fighting will cause the area fed by the singular water main to have inadequate water supply while the rest of the system will have an adequate water supply. For this reason, hydraulic modeling should be used to analyze all future development planning.

Depending on how development progresses on the east side of the Village, it may be advisable to construct a new water tower before elements of the firm capacity analysis would suggest the need for improvements. The distance or disconnectedness of new developments to the existing system may call for an additional storage tank for the sake of system redundancy or maintain system pressures.

Two potential sites for a third storage reservoir have been identified on Figure 4-1. Site #1 is located north of Siggelkow Road, near the intersection with I-39. It should also be noted that this location is the only area within the study boundaries that is unserviceable by the existing water storage reservoirs on the basis of elevation. Site #2 is south of Siggelkow Road, approximately 1,400 feet due south of the end of the cul-du-sac at Lee South Court. It is recommended that the Village take these potential locations into account when planning for new developments in the area of these sites.

APPENDIX A

RESOLUTION NO: 1

WHEREAS, plans for sanitary sewer extensions were submitted to the Madison Metropolitan Sewerage District (MMSD) for Holscher Road Lift Station and Force Main, in the Village of McFarland, on August 4, 2015, by Gregory Droessler, Town & Country Engineering, Inc., and

WHEREAS, the project consists of installing a lift station and non-sewered storage building on Outlot 1 of the plat of Juniper Ridge, 122 feet of 8-inch gravity sewer within Outlot 1 of the plat of Juniper Ridge, and 1,780 feet of 6-inch force main on Holscher Road and Linden Parkway to connect to the Village of McFarland's sewerage facilities, and

WHEREAS, the proposed lift station is designed to provide service to the developments of Juniper Ridge and Prairie Place, and

WHEREAS, the proposed developments of Juniper Ridge and Prairie Place naturally drain to the south, and

WHEREAS, the proposed sanitary sewer extension will convey flows to the north to connect to the Village of McFarland's sewerage facilities and to MMSD's Southeast Interceptor/Siggelkow extension, and

WHEREAS, MMSD wrote a letter to the Village of McFarland dated July 8, 2008, stating that MMSD would allow the subject lift station to pump to MMSD's Siggelkow Interceptor provided that the maximum rate of discharge not exceed 500,000 gallons per day and that the lift station be relieved when gravity sewer service is available from the south, and

WHEREAS, plan review fees are due, and

WHEREAS, interceptor and treatment plant connection charges for the lands to be served will be determined with future phases of development, and

WHEREAS, the MMSD has received a sewer extension review letter #6-15-44 from the Capital Area Regional Planning Commission (CARPC) dated July 27, 2015 stating the CARPC staff has reviewed the proposed extension and determined that it is consistent with the urban service area provisions of the Dane County Water Quality Plan and the Dane County Land Use and Transportation Plan, and

WHEREAS, the Chief Engineer and Director of MMSD has recommended the approval of said plans,

THEREFORE, BE IT RESOLVED, that the plans for sanitary sewer extensions for Holscher Road Lift Station and Force Main, in the Village of McFarland, submitted on August 4, 2015, by Gregory Droessler, Town & Country Engineering, Inc., be approved subject to the following conditions:

1. That the Village of McFarland shall pay the plan review fee of \$1,250.00 to the MMSD within 30 days of receiving an invoice for the fee.
2. That the maximum rate of discharge from the lift station shall not exceed 500,000 gallons per day. The Village shall install such equipment and controls necessary to ensure that said flowrate cannot be exceeded.
3. That the Village shall provide to MMSD copies of the certified pump curves and the results of any factory or field testing performed prior to start-up of the lift station.
4. That the Village shall provide MMSD staff access to the flow metering equipment at the lift station to verify the pumping flowrate.
5. That the Village of McFarland shall consider this facility to be a temporary lift station, which will be relieved when gravity sewer service is available from the south. Future planning performed by the Village of McFarland shall include strategies to establish a gravity sanitary sewer line to relieve this lift station.
6. That if sewer service is established to any buildings constructed on Outlot 1 of the plat of Juniper Ridge, the Village of McFarland shall be responsible for payment of all appropriate MMSD connection fees.
7. That the Village of McFarland shall require the presence of an engineer or an inspector on the construction of said sewer extensions who shall make a record showing in detail the construction as built and shall furnish the MMSD with as-built plans in the case of any significant deviations from the original design.
8. That the construction, operation, maintenance and use of said sewer extensions shall be in accordance with the lawful rules and regulations of the MMSD and with the applicable State of Wisconsin plumbing and sewerage codes.
9. That if construction of the sewer extensions covered by said plans has not commenced within four years following the approval date of this resolution, this approval shall become void and new plans shall be submitted. If construction has commenced but has not been completed within the four-year approval period, the unbuilt portion must be

submitted for reapproval if it is a significant portion of the project and would require DNR approval.

The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held in the District office on August 13, 2015.

APPENDIX B

MEMORANDUM

Date: May 29th, 2015

To: Mr. Allan Coville
Director of Public Works/Utilities
Village of McFarland, WI

From: Adam Groshek
Town and Country Engineering, Inc.

Subject: Lift Station No. 2 Remaining Capacity study

The investigation of the incoming flows to lift station No. 2 (LS No. 2) during the fall of 2014 and the spring of 2015 were valuable in determining the approximate remaining capacity of LS No. 2. The monitoring verified that previous estimates of available capacity were conservative and the lift station still has the ability to accept more sanitary sewer flows.

LS No. 2 has two pumps that alternate pumping wastewater every other cycle into an 8" forcemain. They were designed to pump at minimum 600 gpm with 56' of total dynamic head (TDH). The drawdown tests that were performed in 2014 and 2015 showed that the pumps were able to exceed this design flow during all the tests. On average one of the pumps pumped 860 gpm and the other pumped 740 gpm. The minimum pumpage rate tracked in fall 2014 and spring 2015 was 680 gpm. These drawdown tests were also checked by estimating the flow being discharged from the forcemain in its discharge manhole. Peak velocities recorded were approximately 5.2 feet per second, which results in a flow of about 790 gpm in the 8" ductile iron forcemain flowing full. For the purpose of this evaluation, 680 gpm will be used as the capacity of LS No. 2.

If the pumps do indeed pump at a higher flow of 740-860 gpm on a regular basis, that only provides more capacity. It is not known exactly why the measured flows differed so much between the two pumps, but it is expected that impeller wear or differences within the internals of the pumps is the leading cause. It is recommended that replacement SCADA and a level sensor in the LS No. 2 wetwell could be used to further refine the pump rates of the lift station pumps during all conditions.

TOWN & COUNTRY ENGINEERING, INC.

Madison, Wisconsin • Rhinelander, Wisconsin
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Madison, Wisconsin 53719

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tce@tcengineers.net

The last time a study was done on the influent wastewater to LS No. 2 was in 2000. It was found that influent wastewater peak flows from the western 10" sewer were relatively high because of infiltration/inflow (I/I) issues. Flows from the eastern 15" sewer were relatively low because of the limited amount of development to the east at the time.

In this study, peak incoming flows were measured in the two gravity sewers flowing into the wetwell in fall 2014 and spring 2015. The period during fall 2014 was relatively dry and limited I/I was observed. It was decided to continue the study in the spring of 2015 in order to capture some of the spring runoff flows. The peak flow data for these two lines, 15" and 10" in diameter, are shown in Table 1.

Table 1
LS No. 2 Influent Peak Flows

	Previous Studies	Fall 2014 Monitoring	Spring 2015 Monitoring	Recorded Peak Flow
15" San. Sewer E of LS No. 2	68 gpm	190 gpm	135 gpm	190 gpm
10" San. Sewer N of LS No. 2	182 gpm	20 gpm	131 gpm	182 gpm
Remaining LS No. 2 Capacity	430 gpm	470 gpm	414 gpm	308 gpm

The 2015 spring monitoring showed peak flows occurring during rain events that had I/I clearwater add to the sanitary flow. A peak flow of 135 gpm from the 15" sewer was measured of which 1-20 gpm is estimated to be from I/I. The sanitary sewer coming into the lift station from the north is considerably older, and therefore it is expected to have more I/I. A peak of 131 gpm from the 10" sewer was measured of which 60-80 gpm is estimated to have occurred due to I/I. These I/I estimates were found by looking at the gathered flow data from the monitoring that occurred on the two influent sewer lines to LS No. 2. The graphs in Figure 1 show this flow data relative to the major rain event of 1.8 inches that occurred on 4/9/15. Daily maximum flow in the sewers tended to follow the twice daily "diurnal" pattern of sanitary sewers with peak flows around 7am (before work) and 7pm (after work). The 7am peak each day tends to be the higher of the two peaks and therefore a rain event that occurs during the morning hours tends to result in the overall peak flow. Figure 1 also shows this peak in the 10" sewer as most of the 1.8 inches on 4/9/15 fell in the morning hours.

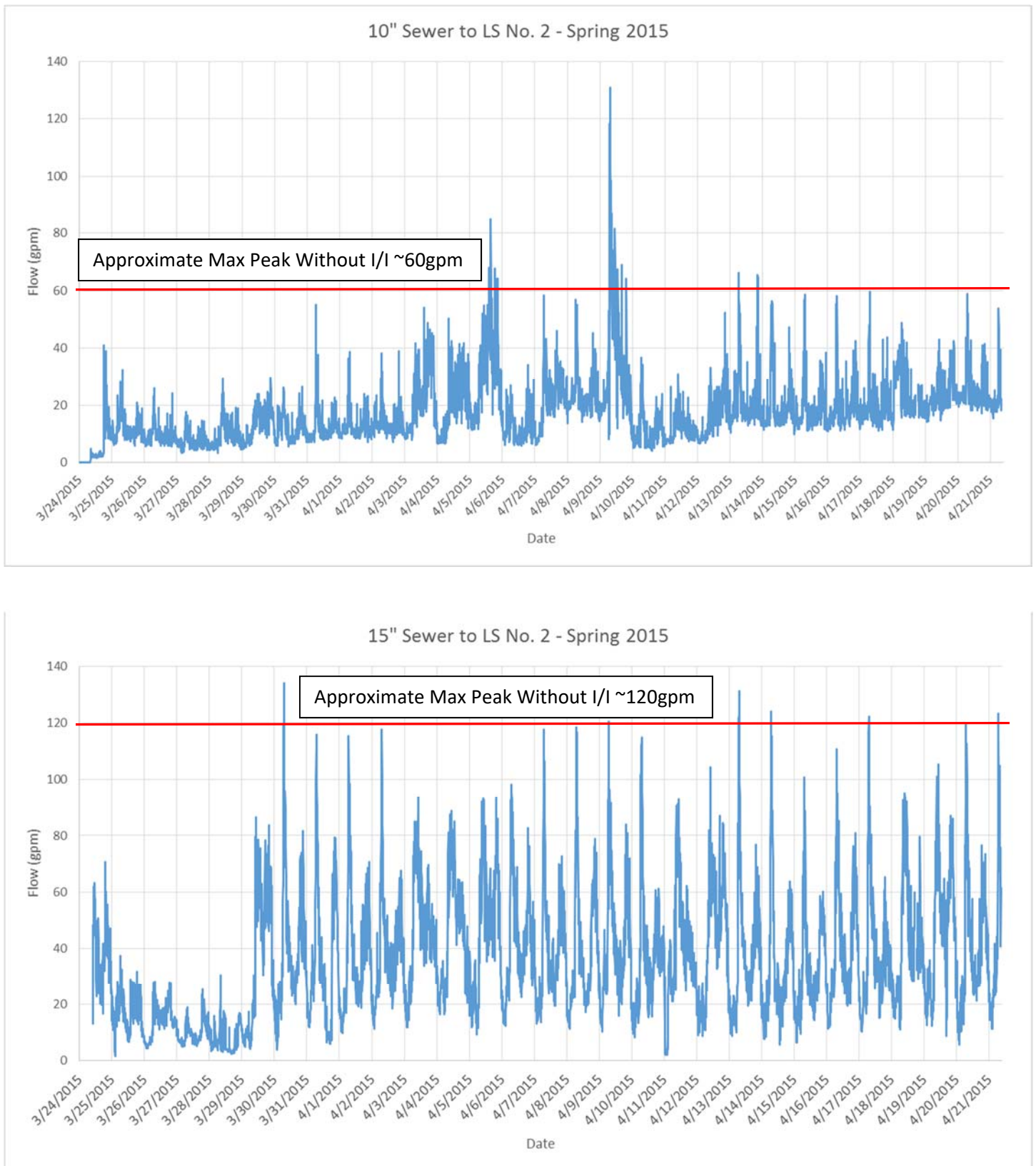


Figure 1: Graphs of the LS No. 2 Influent Flows

I/I is not visibly present in the graph of the 15" sewer to LS No. 2. It is expected that because the sewers draining to the 15" interceptor to LS No. 2 are relatively new, little I/I clearwater exists for the time being from the subdivisions east of LS No. 2. I/I flows from the subdivisions east of LS No. 2 may increase as the sewer infrastructure ages.

The sewers and manholes observed in the study appeared to be in relatively good condition but it should be noted that all the manholes that were opened had water stains around the inside barrel of the manholes due to inflow of rainwater under the unsealed manhole castings. Future I/I may be avoidable with better sealing of the sanitary sewer system, especially underneath the manhole cover castings. It is expected that there will always be at least a small amount of I/I entering the sanitary sewer, which is why the factors of safety are built in.

There are about 125 household units with wastewater discharging to the 10" sewer into LS No. 2. This service area has no future growth expected unless the land use of it changes. As of May 2015, there are also about 300 household units discharging to LS No. 2 through the 15" sewer. Assuming 300 gallons per household per day (which includes some I/I flow) and a peaking factor of 3.5, it is expected that each additional household connected to the sewer and discharging to LS No. 2 could contribute 0.73 gpm to the LS No. 2 wet well. The present flow rate per household based on recent spring 2015 monitoring is 0.63 gpm. This results in the ability to connect at least 400 additional households to discharge to LS No. 2. While this is a conservative estimate based on current conditions of the sanitary sewer leading up to LS No. 2, I/I impacts on any future sewer will always have to be taken into consideration. An illicit connection or a faulty manhole may greatly affect these flows.

Using all of the above, the data indicates LS No. 2 can handle another 308 gpm. It is important to keep in mind that the peak data collected for the two sewer lines coming into LS No. 2 show one-time events. Future peak flows may be higher depending on conditions. The monitoring events are limited so a factor of safety should be applied for the unknown events. For the purpose of this study, it is recommended to limit future additional capacity to 300 gpm to minimize the risk of overloading LS No. 2.

It is recommended that the pump controls be upgraded to gallons flow values (calculated in PLC programming) in order to easily pick out the peak I/I events. It is also recommended that a pressure gauge be installed on the discharge of the LS No. 2 pumps to be able to track the head that the lift station pumps

are pumping against. There is the option to either install one gauge on the main discharge header or one gauge on each pump discharge. A gauge on the main header would involve tapping into the pipe under pressure while the discharge piping from each pump could be separately isolated with the valves to avoid sewage from flowing back. Current flows from the pumps are higher than design most likely because the current friction and elevation head losses are less than the design TDH of 56'. A pressure gauge would allow one to be able to see the head that each pump is pumping against, and using a pump curve, predict the expected flow in the forcemain.

Continuous and future monitoring may support the suggested 400 additional household units and it is likely that future monitoring could show that additional future capacity exists beyond the 400 additional household units. The following recommendations should be taken into consideration as they will allow the capacity of LS No. 2 to be more accurately tracked. They do not need to happen immediately but only as necessary to track the capacity of LS No. 2:

1. Upgrade SCADA to add a pressure sensor to verify the pump head pressure during all times of operation. This will be important to verify the pump capacity during all pumping conditions.
2. Add logic and level sensor to calculate influent flows and pump capacity.
3. Have the qualified pump technician perform a maintenance checkup on the LS No. 2 pumps to identify wear of the impellers and to try to determine the cause of the large difference between flows between the two LS No. 2 pumps.

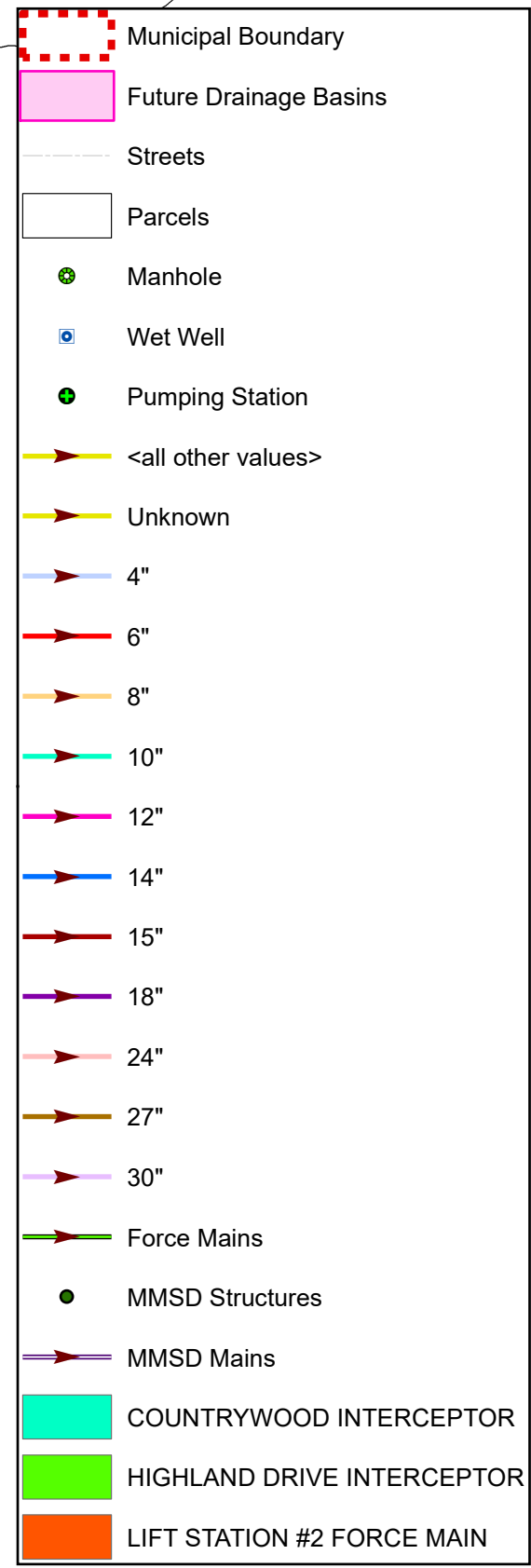
It is hard to predict exactly what will happen in the future as the Village of McFarland expands eastward. It is known that LS No. 2 has adequate capacity for developments to be added onto the sanitary sewer network discharging to LS No. 2. With proper planning and construction practices, LS No. 2 may be able to handle 400 additional household units being added onto its sewer drainage basin before a forcemain and/or pump upgrade will be needed.

ARG

J:\JOB#5\McFarland\Mc-81-13 (East Side Sanitary Sewer Service Study)\Lift Station No2 2015 capacity summary.docx

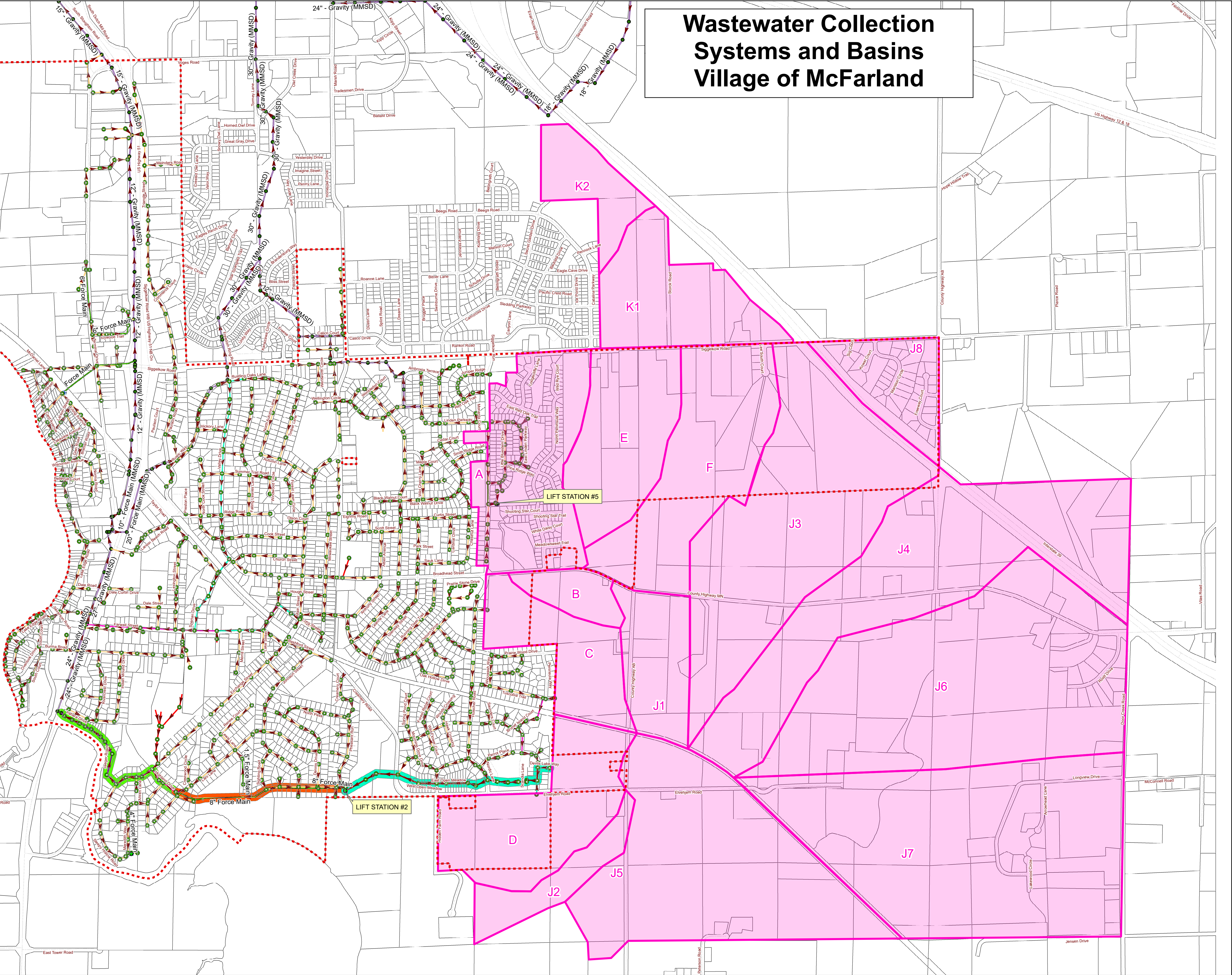
APPENDIX C

Wastewater Collection Systems and Basins Village of McFarland



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Date: 4/24/2018



APPENDIX D

Existing Municipal Wells, Storage, & Distribution Village of McFarland

- Municipal Boundary
- Study Boundary
- Streets
- Parcels
- Hydrants
- <all other values>
- Main
- Hydrant
- <all other values>
- Well
- Storage Tank
- Unknown
- 2" or smaller
- 3"
- 4"
- 6"
- 8"
- 10"
- 12"

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Date: 4/24/2018

RESOLUTION

PUC 01-2018

RESOLUTION AUTHORIZING SUBMITTAL OF THE COMPLIANCE MAINTENANCE ANNUAL REPORT FOR 2017

WHEREAS, the McFarland Public Utilities Committee has received and reviewed the Compliance Maintenance Annual Report (CMAR) for 2017; and

WHEREAS, the Public Utilities Committee is pleased to acknowledge the “A” letter grade achieved by the McFarland Sewer Utility on both the Financial Management and Collection Systems portions of the CMAR; and

WHEREAS, the Public Utilities Committee will consider optional actions in the future that would further improve the future performance of the McFarland Sewer Utility;

NOW, THEREFORE, BE IT RESOLVED that the McFarland Public Utilities Committee accepts the CMAR for 2017 and authorizes its submission to the Wisconsin Department of Natural Resources.

The above and foregoing Resolution was duly adopted by the McFarland Public Utilities Committee of the Village of McFarland at a regular meeting held this 19th day of June, 2018.

APPROVED:

ATTEST:

Mary Pat Lytle, Chair

Cassandra Suettinger, Clerk/Treasurer

Compliance Maintenance Annual Report

Mcfarland Village

Last Updated: Reporting For:

6/8/2018

2017

Financial Management

1. Provider of Financial Information Name: Matt Schuenke Telephone: (608) 838-3153 (XXX) XXX-XXXX E-Mail Address (optional): matt.schuenke@mcfarland.wi.us										
2. Treatment Works Operating Revenues 2.1 Are User Charges or other revenues sufficient to cover O&M expenses for your wastewater treatment plant AND/OR collection system ? ☒ Yes (0 points) ☐ No (40 points) If No, please explain: 2.2 When was the User Charge System or other revenue source(s) last reviewed and/or revised? Year: 2017 ☒ 0-2 years ago (0 points) ☐ 3 or more years ago (20 points) ☐ N/A (private facility) 2.3 Did you have a special account (e.g., CWWP required segregated Replacement Fund, etc.) or financial resources available for repairing or replacing equipment for your wastewater treatment plant and/or collection system? ☒ Yes (0 points) ☐ No (40 points)		0								
REPLACEMENT FUNDS [PUBLIC MUNICIPAL FACILITIES SHALL COMPLETE QUESTION 3]										
3. Equipment Replacement Funds 3.1 When was the Equipment Replacement Fund last reviewed and/or revised? Year: 2017 ☒ 1-2 years ago (0 points) ☐ 3 or more years ago (20 points) ☐ N/A If N/A, please explain: 3.2 Equipment Replacement Fund Activity 3.2.1 Ending Balance Reported on Last Year's CMAR 3.2.2 Adjustments - if necessary (e.g. earned interest, audit correction, withdrawal of excess funds, increase making up previous shortfall, etc.) 3.2.3 Adjusted January 1st Beginning Balance 3.2.4 Additions to Fund (e.g. portion of User Fee, earned interest, etc.)		<table><tr><td>\$</td><td> 336,992.01 </td></tr><tr><td>\$</td><td> 0.00 </td></tr><tr><td>\$</td><td> 336,992.01 </td></tr><tr><td>\$</td><td> 34,399.99 </td></tr></table>	\$	336,992.01	\$	0.00	\$	336,992.01	\$	34,399.99
\$	336,992.01									
\$	0.00									
\$	336,992.01									
\$	34,399.99									

Compliance Maintenance Annual Report

Mcfarland Village

Last Updated: Reporting For:

6/8/2018

2017

3.2.5 Subtractions from Fund (e.g., equipment replacement, major repairs - use description box 3.2.6.1 below*)

- \$ 0.00

3.2.6 Ending Balance as of December 31st for CMAR Reporting Year

\$ 371,392.00

All Sources: This ending balance should include all Equipment Replacement Funds whether held in a bank account(s), certificate(s) of deposit, etc.

3.2.6.1 Indicate adjustments, equipment purchases, and/or major repairs from 3.2.5 above.

None

3.3 What amount should be in your Replacement Fund? \$ 10,000.00

0

Please note: If you had a CWFP loan, this amount was originally based on the Financial Assistance Agreement (FAA) and should be regularly updated as needed. Further calculation instructions and an example can be found by clicking the SectionInstructions link under Info header in the left-side menu.

3.3.1 Is the December 31 Ending Balance in your Replacement Fund above, (#3.2.6) equal to, or greater than the amount that should be in it (#3.3)?

● Yes

○ No

If No, please explain.

4. Future Planning

4.1 During the next ten years, will you be involved in formal planning for upgrading, rehabilitating, or new construction of your treatment facility or collection system?

● Yes - If Yes, please provide major project information, if not already listed below.

○ No

Project #	Project Description	Estimated Cost	Approximate Construction Year
1	Upgrade to Lift Station #2	200000	2021

5. Financial Management General Comments

ENERGY EFFICIENCY AND USE

6. Collection System

6.1 Energy Usage

6.1.1 Enter the monthly energy usage from the different energy sources:

COLLECTION SYSTEM PUMPAGE: Total Power Consumed

Number of Municipally Owned Pump/Lift Stations: 5

Compliance Maintenance Annual Report

Mcfarland Village

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6/8/2018 **2017**

	Electricity Consumed (kWh)	Natural Gas Consumed (therms)
January	3,278	
February	4,291	
March	3,593	
April	3,433	
May	3,416	
June	2,860	
July	2,859	
August	2,236	
September	2,305	
October	2,901	
November	3,159	
December	3,629	
Total	37,960	0
Average	3,163	0

6.1.2 Comments:

6.2 Energy Related Processes and Equipment

6.2.1 Indicate equipment and practices utilized at your pump/lift stations (Check all that apply):

- ☐ Comminution or Screening
- ☐ Extended Shaft Pumps
- ☐ Flow Metering and Recording
- ☐ Pneumatic Pumping
- ☒ SCADA System
- ☒ Self-Priming Pumps
- ☒ Submersible Pumps
- ☐ Variable Speed Drives
- ☐ Other:

6.2.2 Comments:

6.3 Has an Energy Study been performed for your pump/lift stations?

☐ No

☒ Yes

Year:

2017

By Whom:

Independent Engineer

Describe and Comment:

Lift Station #2 and the corresponding force main need to eventually be upgraded over the next few years as development grows to the east.

Compliance Maintenance Annual Report

Mcfarland Village

Last Updated: Reporting For:
6/8/2018 **2017**

6.4 Future Energy Related Equipment

6.4.1 What energy efficient equipment or practices do you have planned for the future for your pump/lift stations?

The SCADA system is being replaced and upgraded on 2018 which will allow for better control of the equipment and cycling of the equipment.

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

Compliance Maintenance Annual Report

Mcfarland Village

Last Updated: Reporting For:
6/8/2018 2017

Sanitary Sewer Collection Systems

1. Capacity, Management, Operation, and Maintenance (CMOM) Program

1.1 Do you have a CMOM program that is being implemented?

- ☒ Yes
- ☐ No

If No, explain:

1.2 Do you have a CMOM program that contains all the applicable components and items according to Wisc. Adm Code NR 210.23 (4)?

- ☒ Yes
- ☐ No (30 points)
- ☐ N/A

If No or N/A, explain:

1.3 Does your CMOM program contain the following components and items? (check the components and items that apply)

- ☒ Goals [NR 210.23 (4)(a)]

Describe the major goals you had for your collection system last year:

Clean approximately 1.3 of the sanitary mains
Televise approximately 1/3 of the sanitary mains

Did you accomplish them?

- ☒ Yes
- ☐ No

If No, explain:

- ☒ Organization [NR 210.23 (4) (b)]

Does this chapter of your CMOM include:

- ☒ Organizational structure and positions (eg. organizational chart and position descriptions)
- ☒ Internal and external lines of communication responsibilities
- ☒ Person(s) responsible for reporting overflow events to the department and the public

- ☒ Legal Authority [NR 210.23 (4) (c)]

What is the legally binding document that regulates the use of your sewer system?

Chapter 47 "Sanitary Sewer System" Ordinance

If you have a Sewer Use Ordinance or other similar document, when was it last reviewed and revised? (MM/DD/YYYY) 01/24/2014

Does your sewer use ordinance or other legally binding document address the following:

- ☐ Private property inflow and infiltration
- ☐ New sewer and building sewer design, construction, installation, testing and inspection
- ☐ Rehabilitated sewer and lift station installation, testing and inspection
- ☐ Sewage flows satellite system and large private users are monitored and controlled, as necessary
- ☒ Fat, oil and grease control
- ☒ Enforcement procedures for sewer use non-compliance

- ☒ Operation and Maintenance [NR 210.23 (4) (d)]

Does your operation and maintenance program and equipment include the following:

- ☒ Equipment and replacement part inventories
- ☒ Up-to-date sewer system map

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☒ A management system (computer database and/or file system) for collection system information for O&M activities, investigation and rehabilitation ☒ A description of routine operation and maintenance activities (see question 2 below) ☐ Capacity assessment program ☐ Basement back assessment and correction ☐ Regular O&M training ☒ Design and Performance Provisions [NR 210.23 (4) (e)] What standards and procedures are established for the design, construction, and inspection of the sewer collection system, including building sewers and interceptor sewers on private property? ☒ State Plumbing Code, DNR NR 110 Standards and/or local Municipal Code Requirements ☒ Construction, Inspection, and Testing ☐ Others: 	0
☒ Overflow Emergency Response Plan [NR 210.23 (4) (f)] Does your emergency response capability include: ☒ Responsible personnel communication procedures ☒ Response order, timing and clean-up ☒ Public notification protocols ☒ Training ☒ Emergency operation protocols and implementation procedures ☒ Annual Self-Auditing of your CMOM Program [NR 210.23 (5)] ☒ Special Studies Last Year (check only those that apply): ☐ Infiltration/Inflow (I/I) Analysis ☒ Sewer System Evaluation Survey (SSES) ☐ Sewer Evaluation and Capacity Management Plan (SECAP) ☐ Lift Station Evaluation Report ☐ Others: 	

2. Operation and Maintenance		
2.1 Did your sanitary sewer collection system maintenance program include the following maintenance activities? Complete all that apply and indicate the amount maintained.		
Cleaning	33	% of system/year
Root removal	33	% of system/year
Flow monitoring	10	% of system/year
Smoke testing	0	% of system/year
Sewer line televising	33	% of system/year
Manhole inspections	33	% of system/year
Lift station O&M	4	# per L.S./year
Manhole rehabilitation	0	% of manholes rehabbed
Mainline rehabilitation	0	% of sewer lines rehabbed
Private sewer inspections	0	% of system/year

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Private sewer I/I removal % of private services

River or water crossings % of pipe crossings evaluated or maintained

Please include additional comments about your sanitary sewer collection system below:

3. Performance Indicators

3.1 Provide the following collection system and flow information for the past year.

Total actual amount of precipitation last year in inches

Annual average precipitation (for your location)

Miles of sanitary sewer

Number of lift stations

Number of lift station failures

Number of sewer pipe failures

Number of basement backup occurrences

Number of complaints

Average daily flow in MGD (if available)

Peak monthly flow in MGD (if available)

Peak hourly flow in MGD (if available)

3.2 Performance ratios for the past year:

Lift station failures (failures/year)

Sewer pipe failures (pipe failures/sewer mile/yr)

Sanitary sewer overflows (number/sewer mile/yr)

Basement backups (number/sewer mile)

Complaints (number/sewer mile)

Peaking factor ratio (Peak Monthly:Annual Daily Avg)

Peaking factor ratio (Peak Hourly:Annual Daily Avg)

4. Overflows

LIST OF SANITARY SEWER (SSO) AND TREATMENT FACILITY (TFO) OFERFLOWS REPORTED **

	Date	Location	Cause	Estimated Volume (MG)
None reported				

** If there were any SSOs or TFOs that are not listed above, please contact the DNR and stop work on this section until corrected.

5. Infiltration / Inflow (I/I)

5.1 Was infiltration/inflow (I/I) significant in your community last year?

☐ Yes

☒ No

If Yes, please describe:

5.2 Has infiltration/inflow and resultant high flows affected performance or created problems in your collection system, lift stations, or treatment plant at any time in the past year?

☐ Yes

Compliance Maintenance Annual Report

Mcfarland Village

Last Updated: Reporting For:
6/8/2018 **2017**

• No If Yes, please describe: 5.3 Explain any infiltration/inflow (I/I) changes this year from previous years: None 5.4 What is being done to address infiltration/inflow in your collection system? The Village continues to monitor flows and equipment operations to identify any problem that need to be corrected.	
--	--

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

Compliance Maintenance Annual Report

Mcfarland Village

Last Updated: Reporting For:
6/8/2018 2017

Grading Summary

WPDES No: 0047341

SECTIONS	LETTER GRADE	GRADE POINTS	WEIGHTING FACTORS	SECTION POINTS
Financial	A	4	1	4
Collection	A	4	3	12
TOTALS			4	16
GRADE POINT AVERAGE (GPA) = 4.00				

Notes:

A = Voluntary Range (Response Optional)

B = Voluntary Range (Response Optional)

C = Recommendation Range (Response Required)

D = Action Range (Response Required)

F = Action Range (Response Required)