2022 Water Reliability Study
and
General Plan

VILLAGE OF DECATUR

June 2022

WIGHTMAN

Table of Contents

Appendix

A. Village Zoning Map

   Future Land Use Map

B. Water System Map

C. Well and Pump Inspection Reports

D. 2020 Consumer Confidence Report

   Bacteriological SSP

   Lead SSP

E. Water Tower Inspection Report

F. Insurance Services Organization (ISO) Report

G. Hydraulic Analysis

H. Water AMP Capital Improvements Plan

I. General Plan Maps

I. Purpose and Scope

The purpose and scope of this Water System Reliability Study is to estimate the future water needs of the Village of Decatur (Village) water system service area, compare those needs with the existing water system's capabilities, and outline the necessary improvements to meet the Village's needs for the next 20 years. The existing water system flows and requirements will be assessed, and the existing and future system capabilities will be determined utilizing current water system data as well as water system models prepared using WaterCAD modeling software.

A Water System Reliability Study should be completed and updated every five years as required by the Michigan Safe Drinking Water Act (1976 PA 399 as amended).

The scope of this study includes the Village water supply, treatment, distribution, and storage facilities. This report does not evaluate private systems or any other water systems not directly controlled by the Village.

II. Project Planning Area

A. Service Area

The Village water system serves the businesses and residents within the Village, located in the South central portion of Van Buren County, Michigan. Van Buren County is surrounded by Allegan County, Kalamazoo County, Cass County, Berrien County, and Lake Michigan. The service area is located at the intersection of M-51 and CR-352.

The water system service area covers approximately 1.4 square miles. The land within the service area is a mix of residential, commercial, and industrial. Most commercial customers are located at the Village center along M-51 and N. Phelps St or in the northwest corner of the Village. While most industrial customers are located to the southeast near the railroad. Residential customers make up the remainder of the service area with the majority northwest of the railroad. The current village zoning map is included in Appendix A.

B. Population Projections

Table I lists the population growth experienced in Van Buren County and the Village of Decatur since 1970 according to U.S. Census data, along with projected growth to the year 2040. These population projections will be used to estimate future water usage.

Table I - Population Data and Projections

	Van Buren County		Village of Decatur	
	Population	**Percent Period Change**	**Population**	**Percent Period Change**
1970	56,173		1,764	
1980	66,814	15.9%	1,915	7.90%
1990	70,060	4.60%	1,760	- 8.80%
2000	76,263	8.10%	1,838	5.30%
2010	76,258	0.00%	1,819	- 2.10%
2020	75,587	-0.90%	1,651	- 10.2%
2026*	77,362	1.40%	1,612	0.00%
2041*	80,162	3.60%	1,516	0.00%

*Indicates extrapolated data based on historical population trends.

Van Buren County experienced significant growth from 1970 to 1980 then slowed to an average growth rate of approximately 3% per decade, with no change from 2000 to 2010, and a population decline of 0.9% from 2010 to 2020. A conservative growth rate between 1.4 and 3.6% over the next 20 years is estimated. The Village has experienced population decreases from 1980 to 2020 averaging about 1.6% per decade. Population is assumed to remain stagnant in the Village over the 20-year study period. The estimate of 0% growth over the 20-year planning period provides a conservative extrapolation of the historical population trend. This factor will be utilized in the 5- and 20-year system demand projections.

Table II demonstrates the profile of existing customers with the number of services as well as the annual use in millions of gallons (MG) in each class.

Table II – Service Connections and REU's		
Customer Class	**Services**	**Use (MG)**
Single Unit/ Residential	724	24.63
Multiunit/ Commercial (Apartment, industrial, condo, schools included)	49	20.73
Total	773	45.36

III. System Demands

A. Water Consumption and Supply

All single-family residential, commercial, and industrial users pay a monthly Readiness to Serve Charge per Unit based on the size of the public water meter. Rates are assessed based upon the following table:

METER SIZE	RATE FACTOR	READINESS TO SERVE CHARGE
5/8"	1.00	$16.70
3/4"	1.00	$16.70
1"	1.78	$29.73
1 1/4"	2.78	$46.43
1 1/2"	4.00	$66.80
2"	7.11	$118.74
3"	16.00	$267.20
4"	28.44	$474.95
6"	64.00	$1,068.80
8"	113.78	$1,900.13
10"	177.78	$2,968.93
12"	256.00	$4,275.20

All multi-family residential users providing service to more than one dwelling unit from one public water meter connected to the system pay a monthly Readiness to Serve Charge based on a 1.00 rate factor per dwelling unit. The Readiness to Serve Charge is assessed to all customers connected to the system, regardless of whether or not the service is active.

Users connected to the system are also charged a monthly Commodity Charge based on the water usage during the immediately preceding month at a rate of $2.82 per 1,000 gallons of water.

The system currently serves 724 single unit customers and 49 multiple unit customers (condominiums, apartment buildings, commercial/industrial properties, and schools).

Table III – Historic Annual Usage and Billing Data

	Total Water Billed (MG)
2017	47.41
2018	47.34
2019	44.95
2020	47.80
2021	45.36
Average	**46.57**

B. Demand Projections

The following is a summary of the current and projected 5- and 20-year flows that will be used to evaluate the system. Because there is little correlation between average daily flow and maximum daily flow, the most reliable method to compute the future maximum daily flow is to take the average maximum day/average day ratio from the past five years and use it to compute the future maximum daily flow.

Table IV – Existing and Projected Water Demand

	2017	2018	2019	2020	2021	2026*	2041*
Average Daily Use (MG)	0.18	0.21	0.19	0.22	0.19	0.19	0.19
Maximum Daily Use (MG)	0.34	0.33	0.25	0.45	0.33	0.33	0.33
Maximum Daily Use (GPM)	237	226	175	309	232	232	232
Max./Avg. Daily Use Ratio	1.93	1.55	1.35	1.99	1.73	1.73	1.73

*Projected water usage based on previous five years usage and population trends.

IV. Existing Facilities

A. General

The Village's water system consists of three water supply wells, one elevated storage tank, and approximately 17.5 miles of mostly 4-inch, 6-inch, and 8-inch distribution piping. The wells are capable of supplying a total of 1,750 GPM of water with a firm capacity of 750 GPM. The elevated storage tank helps maintain a steady pressure in the distribution system of 54 to 60 PSI (as measured at the base of the tank), while providing a total of 200,000 gallons of storage to meet peak and fire demands. The system currently serves 724 single unit customers and 49 multiple unit customers (condominiums, apartment buildings, commercial/industrial properties, and schools), providing an average day demand of 193,300 gpd and a peak day demand of 334,300 gpd in 2021. A map of the existing Village water system can be found in Appendix B.

B. Distribution System

The Village's water distribution system is known to consist of PVC and ductile iron water main, however due to the age of some of the mains within the system, some pipe materials are unknown. The system mains were analyzed and given estimated condition ratings based on age and material in the 2017 Village of Decatur Water Asset Management Program. Results of this analysis demonstrate that 73% of the mains are in good or very good conditions while the remaining 27% are in fair or poor condition. Distribution piping range in size including 2-inch, 4-inch, 6-inch, 8-inch, 12-inch and 16-inch diameter. Current standards require that all new water main shall not be less than 6-inch diameter, while 8-inch is recommended. The Village is not required to replace the existing 2- and 4-inch main, but should consider replacement during the planning of nearby infrastructure improvements. The following table summarizes the size and approximate length of the water main within the system.

Table V - Distribution System

Diameter	Length (ft)	Length (mi)	%
2"	585	0.11	0.6%
4"	27,610	5.23	29.8%
6"	31,225	5.91	33.7%
8"	16,780	3.18	18.1%
12"	15,810	2.99	17.1%
16"	595	0.11	0.6%
Total	**92,605**	**22.04**	**100.0%**

C. Water Supply

The Village currently has three wells. Well No. 2 is located along School Street southeast of the Village water tower, Wells No. 3 and 4 are in separate well houses approximately 250' north of County Road 352 and 750' east of Harrison Street. Well No. 2 was recently overhauled and was not inspected in the most recent well and pump inspection. Wells 3 and 4 were recently inspected and found to be in good overall condition. The following table summarizes the existing wells.

Summary of Existing Wells

Description	Well No. 2	Well No. 3	Well No. 4
Year Constructed	1930	1977	1979
Type	Tubular	Tubular	Tubular
Diameter	10"	12"	12"
Depth	116'	188'	192'
Year of Last Well Cleaning	2016	2013	1996
Year of Last Pump Overhaul	2020	2013	2016
Original Test Rate	325 GPM	1,000 GPM	1,000 GPM
Pump Rated Capacity	250 GPM	500 GPM	1,000 GPM
Pump Rated TDH	185'	210'	210'
Motor Size	20 Hp	40 Hp	75 Hp
Electrical	3 Ø, 220/440 V	3 Ø 460 V	3 Ø 230/460 V
Current Pumping Rate	Not Tested	506 GPM	1000 GPM
Current TDH	Not Tested	193'	284'
Backup Power	Portable Generator Hookup	Automatic Standby Generator (Shared)	Automatic Standby Generator (Shared)

Standby power is supplied at Well No. 2 via emergency portable generator when required. Wells 3 and 4 receive emergency power from a single 100KW automatic generator. A copy of the most recent Annual Well and Pump Testing and Maintenance Reports from Peerless Midwest Inc. are included in Appendix C.

D. Water Quality and Treatment

The water quality in the Village is acceptable and does not surpass any of the State of Michigan's maximum contaminant levels or action levels. The Village has discussed the installation of an iron filtration plant in order to address nuisance hardness and improve water quality above and beyond the State's requirements. Ultimately, the Village has chosen not to peruse an iron filtration plant at this time.

The Village completed their Wellhead Protection Plan (WPP) in 2015 and adopted ordinances to protect their groundwater within the wellhead delineations. The Village should continue to update this plan as needed.

2018 state-wide testing of the water system resulted in non-detect levels for the emerging contaminants of concern Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS). Total tested Polyfluoroalkyl substances (PFAS) result was also non-detect. According to the Village's 2020 Consumer Confidence Report (CCR), there are no known contaminants above

the maximum allowable contaminant level (MCL). See the 2020 CCR in Appendix D for additional water quality information. The 2021 CCR will be available on the Village website later this summer. Additionally the Village's Bacteriological Site Sampling Plan (SSP) and Lead SSP are available for review in Appendix D.

E. Water Storage

Water storage for the Village consists of a 200,000-gallon spheroidal elevated tank located on the corner of Eli Street and School Street. The tank, constructed by Universal Tank in 1979, has a height to low water line of 110 feet above ground with an operating range of 38 feet or 16.5 psi. The current average tank operating level is maintained at 28 feet of water for daily and fire flows.

A tank inspection conducted by Dixon Engineering, Inc. in September 2020 indicated the tank was in good overall condition. The inspection concluded with six recommendations for immediate repairs due to noncompliance and nine recommendations for repairs to be completed at the next tank painting. The tank was recommended for repainting within 4 years of the inspection. See the full report in Appendix E for a list of the recommendations.

F. Operation and Maintenance of System

The water system is operated by one full-time licensed operator and four full-time employees who perform regular operations and maintenance of the water and wastewater systems as well as street cleaning and maintenance, snow removal and leaf pickup. All customer meters are read on a monthly basis.

The Village operates the system via a combination of Mission SCADA controls for the water tower and manual controls for pump operation. In 2018 the Village added the mission dialers to send high and low tower level alarms to the system operating personnel who then manually turn on or off well pumps. The Village prefers this manual operation as compared to an automated system in order to manage false alarms and reduce the risk of overflowing the tower. Alarms are sent to multiple personnel who live locally and can respond to alarms quickly.

Hydrant flushing is conducted biannually, once in the spring and once in the fall, by Village staff. Dead-end mains are also flushed monthly throughout the summer. This is an important process to maintain to prevent sediment deposition in mains with low velocities such as dead-end lines, which can impact system hydraulics including available fire flow.

The Village began a regular valve turning program in 2020, however due to the necessary manpower required and the other maintenance obligations of staff, valves are now only turned as time allows. The Village should continue to exercise valves as time allows and should either consider adding seasonal staff to help with valve exercising or consider contracting this work out to a specialized contractor.

V. Unbilled Water

To effectively evaluate system efficiency, it is important to compare the billed flows against actual pumped flows to identify any lost revenue or system leaks. It is expected the amount of water metered and billed to customers will be less than what is read by the system's master meters. There may be multiple reasons for this, such as hydrant flushing, firefighting, water main breaks, water theft, system leaks, and inaccurate meters, among others. To help gauge this, the American Water Works Association (AWWA) has developed a formula to calculate the Unavoidable Annual Real Losses (UARL). UARL accounts for water losses associated with regular system operation such as flushing and minor losses due to small leaks in the mainline and water service pipe.

UARL (gal/day) = [(5.41 x Lm) + (0.15 x Nc) + (7.5 x Lp)] x P
Lm = Length of water mains, miles (17.50 miles)
Nc = Number of service connections (724)
Lp = Total length of private pipe, miles (5.5 miles – Estimated based on 50 ft/connection)
P = Average pressure in the system, psi (57 psi)

UARL = [(5.41 x 17.50) + (0.15 x 724) + (7.5 x 5.5)] x 57 = 13,950 Gal/day = 418,500 Gal/month (5.09 MG/year).

The Infrastructure Leakage Index (ILI) compares the UARL to the Current Annual Real Losses (CARL), which is the actual water loss (pumped water – billed water, gallons). The Village has a CARL equal to 25.20 MG/year for 2021.

ILI = CARL/UARL = 25.20/ 5.09 = 4.95

Since the ILI is more than one, losses in the system are more than the estimated amount for unavoidable losses as described above. This indicates system losses are higher than expected. Some of the causes could be due to under-reading meters, leaks within the water mains, construction activities, or flushing activities. It is likely a combination of these causing losses within the Village's water system.

Table VII – Unbilled Water

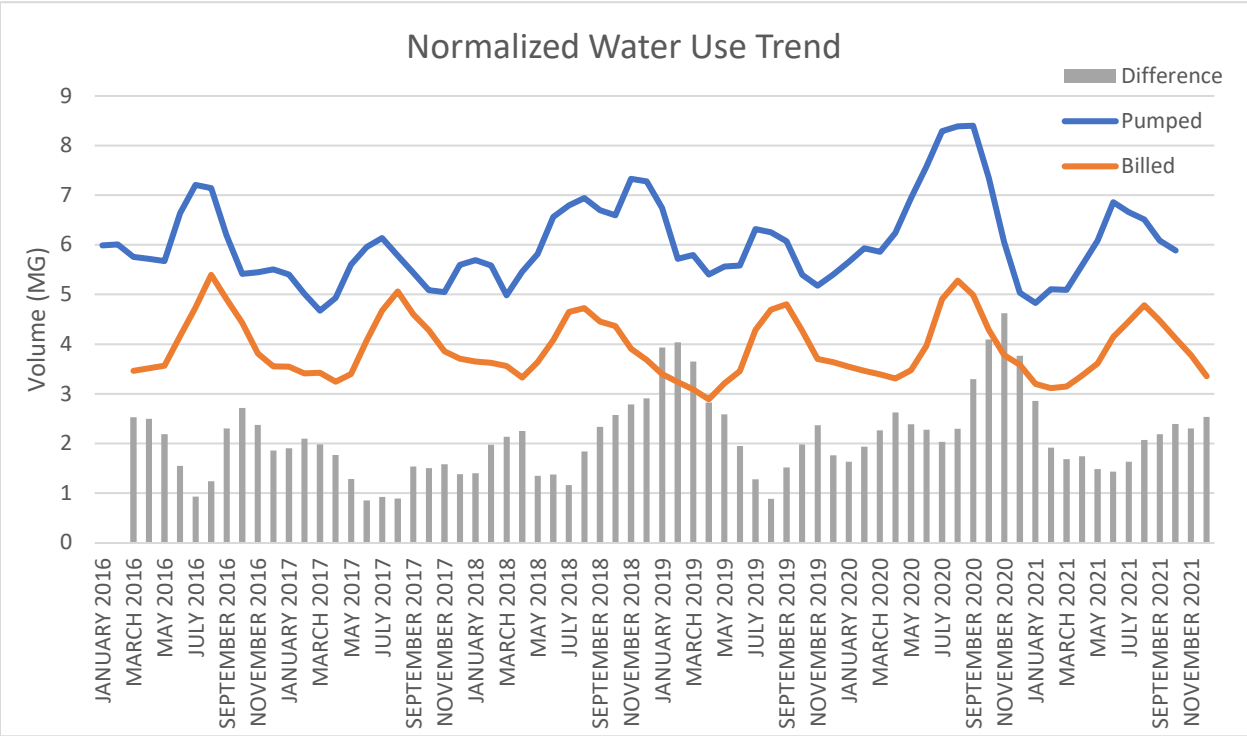
Year	Difference in pumped vs. billed (MG)	Percent of Billed Water (%)
2017	16.92	26
2018	29.65	39
2019	23.17	34
2020	34.14	42
2021	25.20	36
Average	**25.82**	**35**

As evidenced in Table VII, the annual water loss has been above the UARL benchmark for the past five years.

Another way to assess water loss is to compare the loss as a percentage of the pumped amount. If lost water is constant during changes in demand, the loss is usually associated with system leaks. If the loss increases with increases in demand, the loss could be associated with under-reading meters.

It can be seen in the following graph that there is a combination of continuous losses and peaks associated with months with higher demand. The Village replaced customer meters in 2013, therefore it is unlikely under-reading customer meters that are contributing to the unaccounted-for water. However, the Village is aware that the high service flow meters at wells 2 and 4 are original to the system, have never been calibrated, and have surpassed their useful life. The flow meter in Well No. 3 was installed in February of 2022. Given the age of the high service flow meters, and that the new flow meter in Well No. 3 was installed after the data used in this report was collected, it is likely a large portion of the unaccounted-for water is attributable to these meter inaccuracies. The Village should replace the flow meters in wells 2 and 4 and review unaccounted for water monthly to monitor for improvements.

It is also possible that there are small leaks within the distribution system that are not easily detected. After installing new flow meters and the water supply, the Village should continue to inspect aged infrastructure, such as hydrants and valves, which are more likely to become damaged and leak over time.



If the average loss is calculated into gallons per minute:

25.20 million gallons/year / (365 days/year x 24 hr./day x 60 minutes/hr.) = 48 GPM

The loss of 48 GPM spread across the three high service meters would result in a flow of approximately 16 GPM at each meter. This rate is comparable to a 3 – 4 kitchen faucets running. This is likely more than simply the high service meters needing replacement. It is more likely a combination of the high service meters, hydrant flushing, and small leaks within the distribution system combined, which result in the existing unaccounted-for water. The Village should replace the high service meters, continue to monitor suspected leaks, and repair as necessary. After all

three flow meters are replaced, the scale of unaccounted for water elsewhere in the system will be more easily understood.

VI. System Capacity

A. Source and Treatment

The firm pumping capacity of a system is defined as the total capacity of all pumps within the system with the largest pump out of service. Since Well #2 is rated for 250 GPM, Well #3 is rated for 500 GPM, and Well #4 is rated for 1,000 GPM, the firm capacity would be the total pumping capacity with Well #4 out of service. The firm pumping capacity is 750 GPM. Total daily firm pumping capacity is 1.08 million gallons per day (MGD). Since each well has its own chemical feed system, sized specifically for the full volume of each well, the treatment system also has adequate capacity for current and future demands.

When the maximum daily flow exceeds 80% of the firm pumping capacity (600 GPM), EGLE requires the community begin planning for water system improvements. The highest maximum day demand over the past 5 years was 309 GPM in 2020. Therefore, no additional source capacity is required to meet the current or future maximum daily demands.

B. Storage

For the purposes of this report, it is assumed the 200,000-gallon elevated storage tank will be providing a firm capacity equal to 80% of its total capacity or 160,000 gallons. This capacity will be available for daily potable flow and fire protection. The average daily demand of 190,000 gallons per day is approximately 119% of the firm storage capacity. It is recommended that the system have a firm storage capacity of one full day's demand. While the average daily pumped use is 190,000 gallons, the actual billed use is less. Because losses are believed to be mostly attributed to meter inaccuracies, the actual average daily use could be as low as 124,000 gallons per day.

The Village should monitor average daily use after new high service flow meters are installed to determine whether the current elevated tower has sufficient firm storage capacity for the actual daily demand. The Village should also determine if it is in the best interest of the community to implement additional storage to accommodate future service outside the current service area, for example to proposed commercial growth to the north of the Village limits. An additional storage tank could provide benefits such as redundancy, improved fire flow capacity, and of course more storage. However, operational costs and water quality should not be ignored.

C. Backup Power

Standby power is supplied at Well #2 via emergency portable generator when required. Wells #3 and #4 receive emergency power from a single 100kW automatic generator.

D. Fire Demand

While a water system is primarily used to distribute potable water, the system must be designed to provide both potable flows and fire flows simultaneously. A system's ability to provide fire protection significantly affects the service area's Insurance Services Office (ISO) rating. The better the rating, the lower the insurance premiums are for residents and businesses. The Village was last evaluated in November 2021 and resulted in a rating of 04/4Y. The evaluation completed by ISO is available in Appendix F.

The current and future minimum fire flow requirements for this study are 1,000 GPM. This flow is added to the maximum day flow. The duration of the fire flow is assumed to be a maximum of 2 hours and the minimum residual pressure anywhere in the system limited to 20 psi during a fire

flow event. Therefore, the system should be able to provide a 1,000 GPM fire flow in addition to the future maximum daily demand of 232 GPM, which yields a total of 1,232 GPM. For the purposes of this report, we have assumed that the 200,000-gallon elevated storage tank will be providing a firm capacity equal to 80% of its total capacity or 160,000 gallons. This capacity will be available for maximum daily potable flow and fire protection. Assuming a two-hour fire flow duration, the capacity of the water tower is 160,000 gal. / (2 hr. x 60 min/hr.) = 1,333 GPM.

Table VIII – Fire Flow Capacity

Fire Flow (GPM)	Firm Well Capacity (GPM)	Maximum Daily Demand (GPM)	Net Change (GPM)	Time to Empty Tank from 80% Full (160,000 gal)
- 500	+ 750	- 232	18	N/A
- 1,000	+ 750	- 232	- 482	330 min. = 5.5 hrs.
- 1,500	+ 750	- 232	- 982	160 min. = 2.7 hrs.
- 2,000	+ 750	- 232	- 1,482	100 min. = 1.8 hrs.
-2,500	+750	-232	-1,982	80 min = 1.3 hrs.

The firm capacity of the system including both the tower (1,333 GPM) and the wells (750 GPM) is 2,083 GPM for a two-hour fire flow. Therefore, the system has adequate capacity to provide the 1,232 GPM stated above.

VII. Hydraulic Model

A. Hydrant Flow Testing

The Village Water System was modeled using Bentley WaterCAD V8i. A series of hydrant flow tests were completed by Wightman and Village staff on December 10, 2020 according to AWWA standards for hydrant flow testing in order to ensure proper calibration of the hydraulic model. The results of the fire flow testing and calibration process are summarized in Table IX below.

Table IX - Hydrant Flow Test and Calibration Data

Test Number	Static Pressure			Flow @ 20 psi		
	Test (psi)	Model (psi)	Difference (psi)	Test (gpm)	Model (gpm)	Difference (%)
1	70	70	0	1,174	743	37
2	68	69	-1	977	992	2
3	58	56	2	1,604	1,599	0
4	N/A	N/A	N/A	N/A	N/A	N/A
5	66	65	1	2,083	2,602	25
6	72	73	-1	2,950	2,901	2
7	63	66	-3	1,234	1,065	14

B. Distribution System and Model Calibration

Hydraulic modeling was completed using WaterCAD software. During test 4, it was identified that there was an issue with the pressure gauges, so this test was ignored. There are differences between the model and actual flows which are higher than what is typically accepted, however because of the relatively lower flows the actual difference is exaggerated. The acceptable difference between the test flows and model flows is typically 10%, tests 1, 5, and 7 have exceed this threshold. With knowledge of the system, and sound engineering judgement, the model is believed to be reflective of actual system operation. Results of the calibrated model show that the system has the ability to provide adequate static pressure and fire flows within the Village while maintaining a residual pressure of 20 psi or greater. The hydraulic model results are included in Appendix G.

C. System Pressure

Static pressures in the system range from 45 psi to 72 psi throughout the system. This meets the minimum working pressure of 35 psi in accordance with Ten States Standards. The lower pressures predicted by the model are typically found at the existing dead ends throughout the distribution system.

VIII. Capital Improvements

The Village has an approved Water Asset Management Program (AMP) on file with EGLE. Included in the AMP was a detailed analysis of recommended capital improvements. The Capital Improvements Plan (CIP) below has been revised to remove all projects already completed. Estimated costs included in the CIP were created in 2017 and do not reflect the current bidding environment. Presently, the Village is encouraged to plan for a minimum of 50% over the estimated cost listed in the CIP. The complete CIP is included in Appendix H.

Year	Project Name	Estimated Cost
2022	Water Tapping Machine	$5,000
2022	Cedar Street - Pine to Phelps	$175,000
2022	Pine Street Water Main	$207,000
2022	Austin Boulevard and Pine Street Water Main	$210,000
2022	Lee Avenue and Memory Lane Water Main	$185,000
2022	Kinney Street and Douglas Drive Water Main	$192,000
2022	George Street Water Main	$242,000
2024	Hand Held Meter Reader	$9,000
2024	Well 4 Pump Maintenance - 2024	$19,000
2024	White Oak Street Water Main	$135,000
2025	Miscellaneous Hydrant Replacements	$44,000
2025	Rosewood Avenue Water Main	$70,000
2025	Well 3 Rehabilitation	$25,000
2025	Well 4 VFD Replacement	$7,000
2026	Beers Street Water Main - 2026	$144,000
2027	Beers Street Water Main - 2027	$130,000
2028	Beers Street Water Main - 2028	$108,000
2028	Recoat the Elevated Storage Tank - Exterior	$69,000
2028	Well 2 Pump Maintenance - 2028	$19,000
2029	Well 3 Pump Maintenance - 2029	$19,000
2029	Williams Street Water Main	$116,000
2030	Replace Well 3 and 4 Standby Generator	$65,000
2030	Water Meter Replacement - 2030	$100,000
2032	Well 4 Pump Maintenance - 2032	$19,000
2033	Replace Well 2 and Well 3 Control Panels	$11,000
2033	Water Meter Replacement - 2033	$100,000
2033	Well 4 Maintenance	$4,000
2034	Well 2 Building Maintenance	$4,000
2034	Well 3 Maintenance	$4,000
2035	Replace Portable Generator for Well 2	$32,000
2035	Replace Well 4 Control Panel	$6,000
2036	Edgar Bergen Boulevard and N. East Street Water Main	$410,000
2036	Well 2 Pump Maintenance - 2036	$19,000
2037	Recoat the Elevated Storage Tank - Interior	$88,000
2037	Well 3 Pump Maintenance - 2037	$19,000
2037	Well 3 VFD Replacement	$7,000
2038	John Street Water Main	$216,000
Total Estimated Project Cost for Twenty Year Drinking Water CIP =		**$3,234,000**

IX. General Plan

See the attached maps in Appendix I with details of the water system including water main locations based on size, material, and age (if known), and locations of valves, hydrants, wells, backup power, and the storage tank. The Village does not have any booster pump stations and only has one pressure district.

X. Water Shortage Response Plan

The Village defines a water shortage as an unexpected event which restricts the existing water supply and storage facilities from providing the service area with the current water demands.

The Village has identified the following steps for emergency action response:

- Identification of event causing water shortage. This may include loss or limitation of water supply, loss of storage facilities, major break(s) in distribution mains, or contamination of distribution mains.
- Notification to employees of event causing water shortage and implementation of plan.
- Notification to public of implementation of plan and encourage conservation of water or enact “Boil Water” or “Do Not Drink” order depending on the event causing the shortage.
- Identification of areas at greatest risk including schools, nursing homes, or areas serving vulnerable populations. Provide additional accommodations as appropriate.
- Implementation of appropriate measures for providing safe water to customers as detailed below.

In the event of a water shortage, the Village has established the following procedures pertinent to maintaining a minimum level of service within the water system:

- Boil Water Notice/Water Conservation Notice to the public.
- Disinfect and flush contaminated distribution mains.
- Coordinate with emergency response agencies to assist in supplying bottled water/filters to affected customers if necessary.
- Coordinate with state licenses potable water haulers to provide drinking water.

The Village does not have an existing agreement with a licensed water hauler to provide safe potable water in the event of a loss of supply. The Village should review the list of licensed haulers provided by EGLE and contact the nearest supplier.

XI. Conclusions and Recommendations

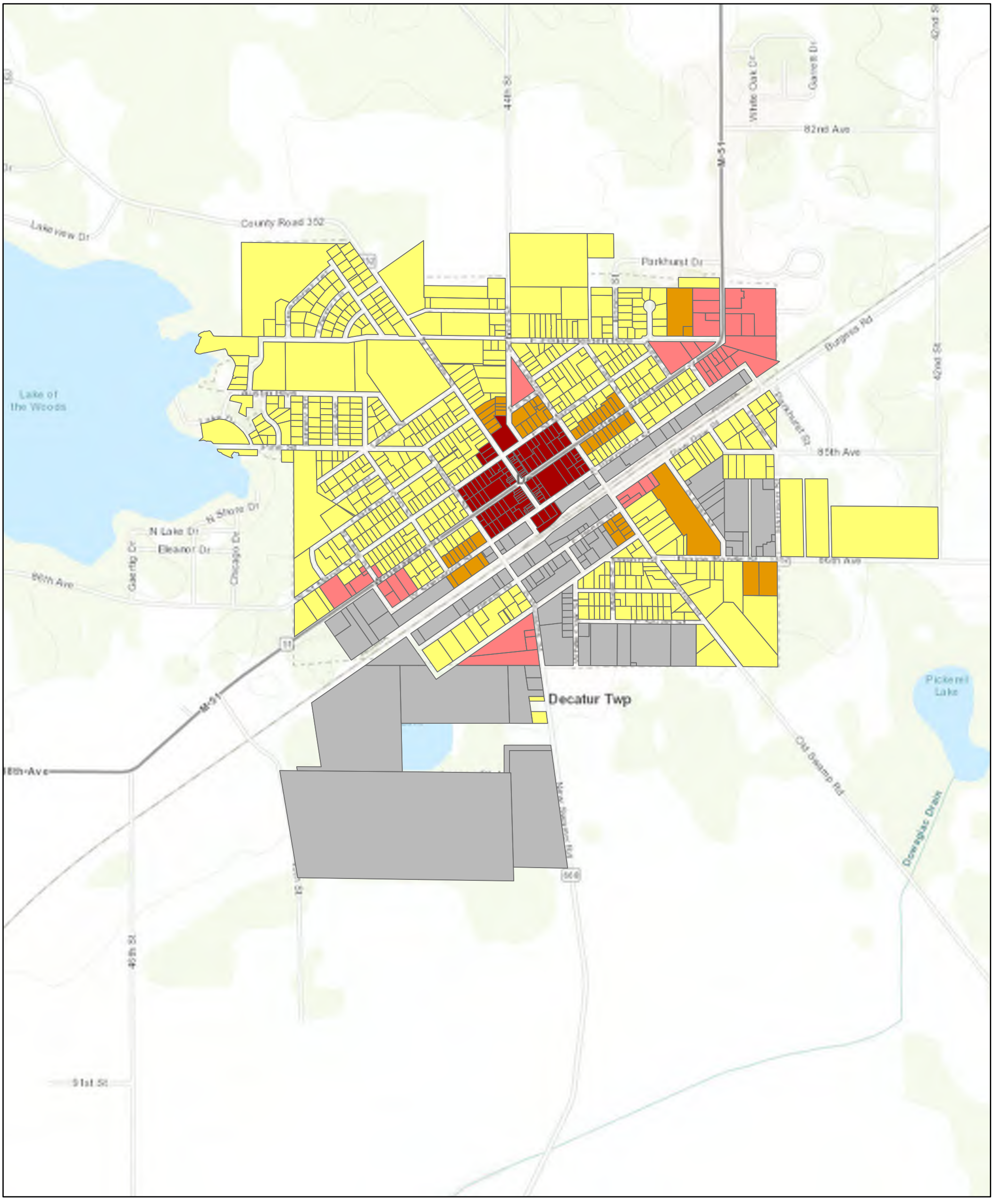
The final section of this report consists of conclusions and recommendations based on previously discussed deficiencies in the Village water system. It is recommended that the Village proceed with the following recommendations to correct deficiencies identified in the existing water system:

- Complete improvements as recommended in the Well and Pump Inspection Reports and continue to have wells and pumps inspected annually.
- Complete improvements as recommended in the Water Tower Inspection Reports and continue to have tower inspected annually.
- Consider adding seasonal staff to help implement a regular valve turning program or consider contracting this out.
- Continue regular hydrant flushing. Consider adding a documentation process to record hydrants in need of repair and estimated water used during flushing.
- Replace the high service flow meters at wells 2 and 4 and monitor unaccounted-for water to determine whether or not the water loss has been eliminated.
- Continue to review, plan for, and complete projects identified in the CIP.
- Coordinate with state licensed water hauler(s) to provide water service in case of emergency.
- Update Water Reliability Study and General Plan every five years.

Appendix A

Village Zoning Map
Future Land Use Map

9LOODJH RI 'HFDWXU =RQLQJ



$0

- 3DUFHOV
- =RQLQJ
- 5 2QH DQG 7ZR)DPLO\ 'HWDFKHG 5HVLGHQWLDO
- 5 0XOWLSOH)DPLO\ 'LVWULFW
- % &HQWUDO %XVLQHVV 'LVWULFW
- % *HQHUDO %XVLQHVV 'LVWULFW
- ' ,QGXVWULDO 'LVWULFW

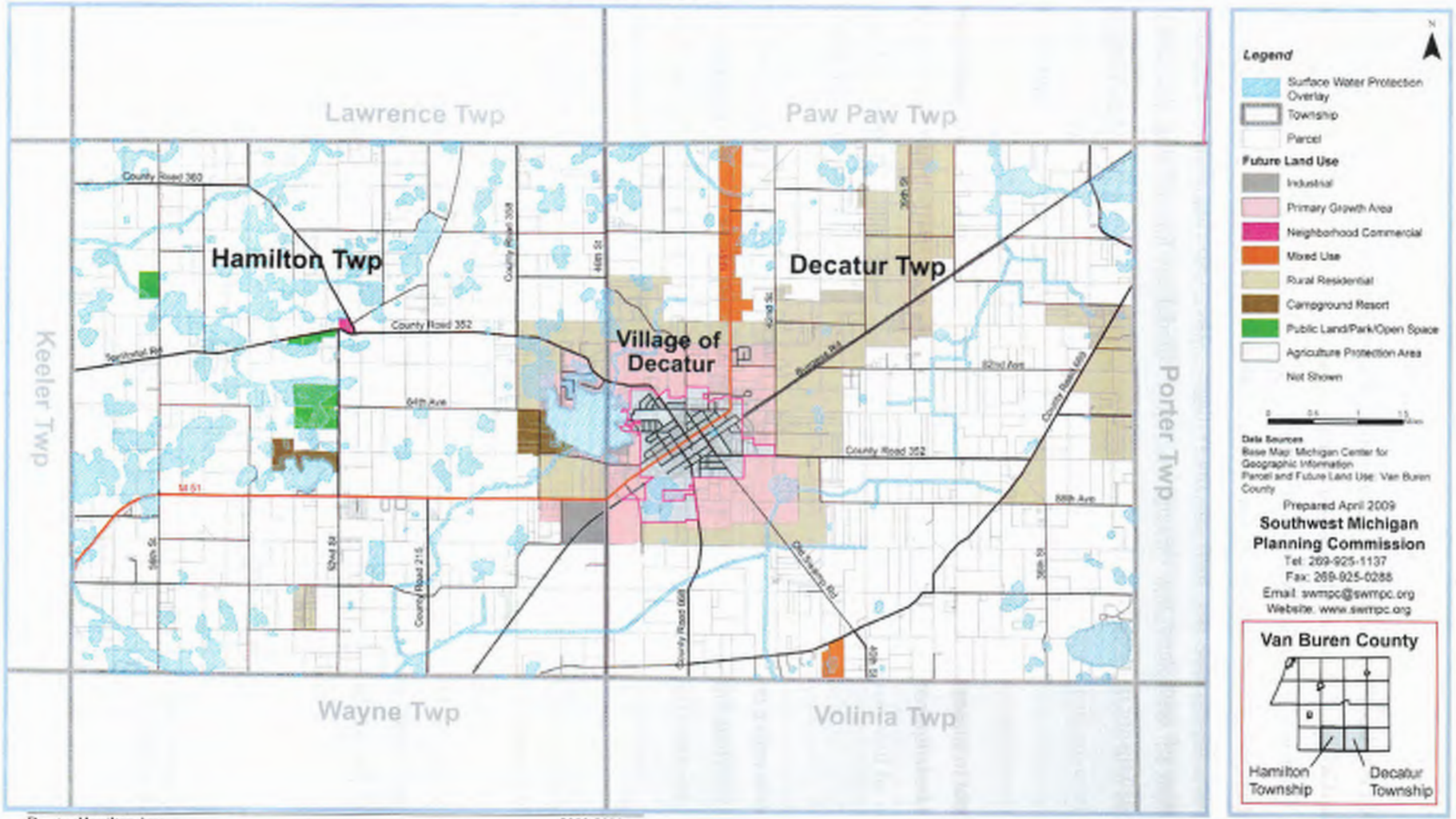
PL

NP

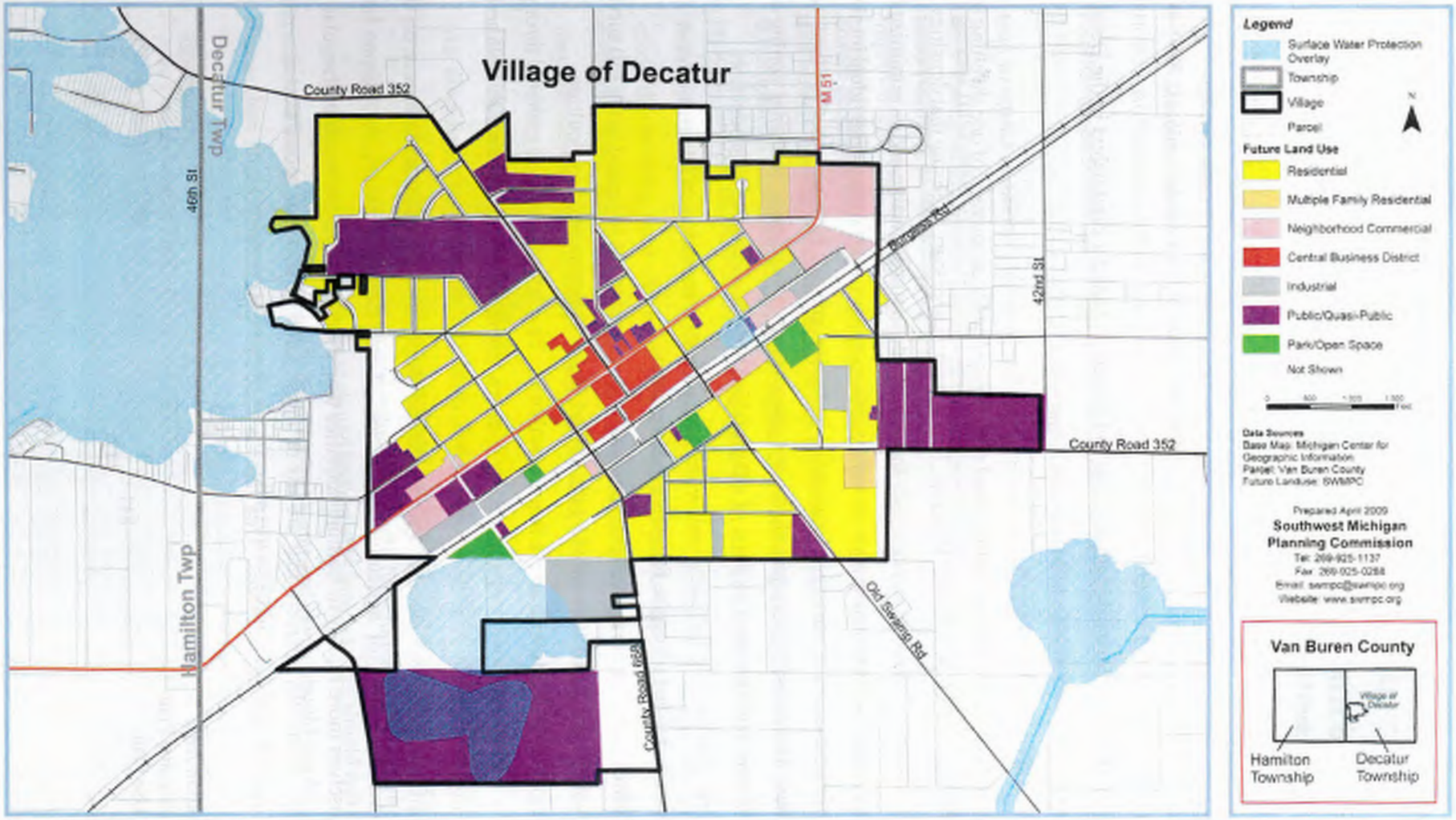
6RXUFHV (VUL +(5(*DUPLQ ,QWHUPDS *(%&2 86*6)$2 136 15&$1 *HR%DVH ,*1 . 2UGQDQFH 6XUYH\ (VUL -DSDQ 0(7, (VUL & 2SHQ6WUHHW0DS FRQWULEXWRUV DQG WKH

9LOODJH RI 'HF
9LOODJH RI 'HFDWX

Future Land Use



Future Land Use

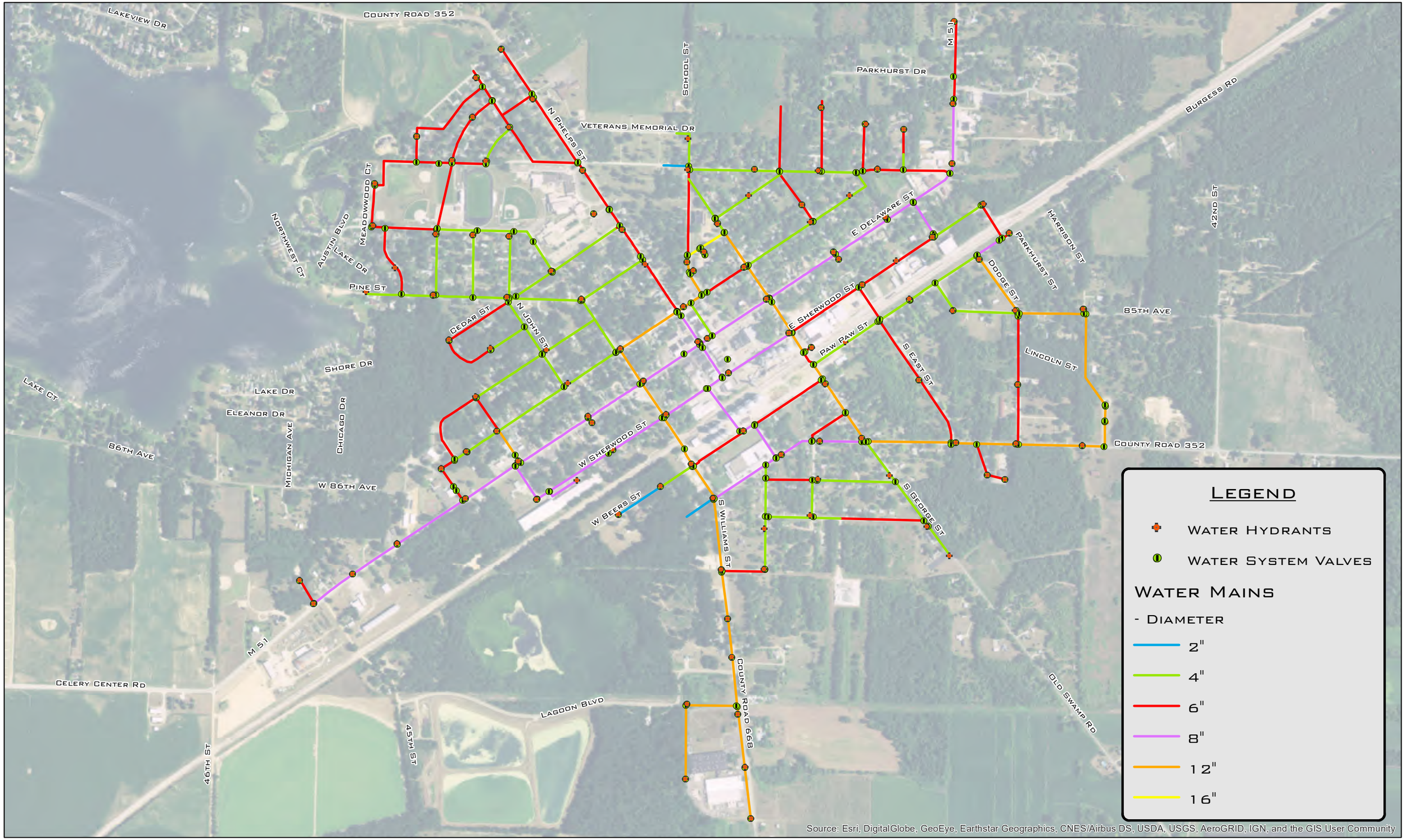


Decatur-Hamilton Area
Joint Comprehensive Plan
Future Land Use Plan

2009-2029

Appendix B

Water System Map



Wightman & Associates, Inc.

172173

VILLAGE OF DECATUR

WATER AMP

0 250 500 1,000

1 inch = 850 Feet

WATER SYSTEM - PIPE SIZE

12/14/2017

Appendix C

Well and Pump Inspection Reports

PEERLESS MIDWEST INC
An Employee Owned Company

Mishawaka, IN / 574.254.9050
Tipton, IN / 317.896.2987
Ionia, MI / 616.527.0050
Fenton, MI / 810.215.1295
Lombard, IL / 630.708.3212
Boulder, CO / 574-286-0765
Littleton, CO / 303-968-7920

May 18th, 2021

Mr. Jimmy Ebling
Village of Decatur
Village Manager
114 N Phelps Street
Decatur, MI 49045

Re: Annual Well and Pump Inspections

Dear James:

Enclosed with this letter please find the results of the well and pump inspections we recently performed on your water system. Also, a copy of our invoice is enclosed to perform this service. Please keep all of this information with your permanent records.

Well #2 underwent recent rehabilitation and was not serviced at this time.

Well #3 has a current specific capacity of 36.1 gallons per minute per foot of drawdown compared to 35.7 after the Well was cleaned in 2013. Production remains in line with historical testing. The pump was last overhauled in 2013 and is currently operating 7.6% below its rated design conditions. This unit should be budgeted for overhaul in the coming years as it approaches the end of its service cycle.

Well #4 has a current specific capacity of 50.0 gallons per minute per foot of drawdown, as compared to 38.4 after the Well was cleaned in 1996. This well is in excellent condition and remains a strong producer. The pump in this well was last overhauled in 2016 and is operating above its rated design condition. No further work is recommended at this time.

To summarize, your system remains in excellent condition. Well pump #3 should be considered the next candidate for overhaul.

In closing, we would like to thank you for giving Peerless-Midwest the opportunity to perform this service and trust that it was completed to your satisfaction. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,

Joel A. Annable

Peerless-Midwest, Inc.
Joel A. Annable
Project Manager

JAA:atp
Enclosures

PEERLESS MIDWEST INC

55860 Russell Industrial Parkway / Mishawaka, Indiana 46545 / 574.254.9050 / Fax 574.254.9650

WELL & PUMP SERVICE INSPECTION REPORT

Owner Village of Decatur City Decatur State MI

Location 210' North of 86th St. 750' East of Harrison St. N. 42.10728 / W. 085.95939

Well No. 3 (South) Date Drilled 1977 Dia. 12" Depth 188' Type Well Tubular

Screen ID. 12" Screen Length 20' Depth to Top of Screen 168' Type Screen Johnson SSWW

Dates of Cleaning 1994, 2001, 2002, 2013

Phone 269-487-8475-7360 or 423-6114 Person to Contact Jimmy Ebling, Village Manager

	DATE	STATIC	G.P.M.	PUMPING LEVEL	PRESSURE	SPECIFIC CAPACITY
ORIGINAL	1977	25'	1000	52'	-	37.0
AFTER LAST CLEANING	2013	31'	500	45'	55#	35.7
AFTER LAST TEST	2020	31'	488 Orifice 477 Meter	44'	66#	37.5
AT PUMP'S RATED FLOW	2021	33'	506 Orifice 490 Meter	47'	63#	36.1
AT SYSTEM OPERATING PSI	2021	33'	470	51.5'	67#	25.4

Test Completed Through Meter ___ Flange or Thread Size 6" Confined Space Entry? No

Motor HP 40 Make Newman Volts 460 RPM 1775 Phase 3

Gear Drive None HP - Ratio - RPM Meter Required ___

Pump Mfg. Floway Serial No. 79-10405 Airline Length 50'

Rated Capacity: 500 GPM 210' TDH Operating Pressure 64#

Total Setting 64' Size of Packing 3/8" Date Installed 1979

Dates of Overhaul 1985, 1990, 1996, 1997(motor), 2003, 2013

THE FOLLOWING IS TO BE PERFORMED DURING EACH INSPECTION

Is Check Valve Leaking? No Change Motor Oil & Grease X Repack Pump X Grease Pump ___

Pump is Presently Developing 506 **GPM** 193' **TDH** **Projected Curve Capacity** 500 **GPM** 194' **TDH**

Shut Off Pressure 98 PSI Rated Shut Off Head 264 ft. Calculated Shut Off Head 259 ft.

Electrical Data (With Pump in Operation): 460 V 44 / 44 / 44 Amps 48.8 @ 460v Full Load Amps

Location of Power Lines Approximately 40' away Can Electrical Box be Locked Out? Yes

Distance From Top of Pump Pedestal to Grade 16" Materials Needed to Clean Well Drop 6" spool and check elbow off head, (3) hoses to tank, and 75' to waste

Need a Smeal to Raise Pump? No Remarks ___

Maintenance: Meter or 6" flang out wall 1 firehose to waste. Motor is screened.

Inspected By Mike Kline Date Inspected May 7, 2021

PEERLESS MIDWEST INC
55860 Russell Industrial Parkway / Mishawaka, Indiana 46545 / 574.254.9050 / Fax 574.254.9650

WELL & PUMP SERVICE INSPECTION REPORT

Owner Village of Decatur City Decatur State MI

Location 180' N of Well #3, 400' N of 86th St., 750' E of Harrison st. N. 42.10728 / W. 085.95939

Well No. 4 (North) Date Drilled 1979 Dia. 12" Depth 192' Type Well Tubular

Screen ID. 12" Screen Length 20' Depth to Top of Screen 172' Type Screen Johnson SSWW

Dates of Cleaning 1989, 1996

Phone 269-487-8475-7360 or 423-6114 Person to Contact Jimmy Ebling, Village Manager

	DATE	STATIC	G.P.M.	PUMPING LEVEL	PRESSURE	SPECIFIC CAPACITY
ORIGINAL	1979	29'	1000	67' 6"	-	26.0
AFTER LAST CLEANING	1996	37'	500	40'	-	38.4
AFTER LAST TEST	2020	30'	998 Orifice 1000 Meter	47'	35#	58.7
AT PUMP'S RATED FLOW	2021 (60 Hz)	35'	1000 Orifice 1000 Meter	55'	99#	50.0
AT SYSTEM OPERATING PSI	2021 (46.4 Hz)	35'	711 Orifice 700 Meter	51'	55#	44.4

Test Completed Through Meter ___ Flange or Thread Size 6" Confined Space Entry? No

Motor HP 75 Make U.S. Volts 230/460 RPM 1775 Phase 3

Gear Drive None HP - Ratio - RPM Meter Required

Pump Mfg. Floway Serial No. 79-10404 Airline Length 80'

Rated Capacity: 1000 GPM 210' TDH Operating Pressure 82#

Total Setting 94' Size of Packing 3/8" Date Installed 1979

Dates of Overhaul 1985, 1987, 1992, 1999, 2008, 2016

THE FOLLOWING IS TO BE PERFORMED DURING EACH INSPECTION

Is Check Valve Leaking? No Change Motor Oil & Grease X Repack Pump X Grease Pump

Pump is Presently Developing 1000 **GPM** 284' **TDH** **Projected Curve Capacity** 1000 **GPM** 284' **TDH**

Shut Off Pressure 82 PSI Rated Shut Off Head 320 ft. Calculated Shut Off Head 224 ft.

Electrical Data (With Pump in Operation): ___ V 108 / 108 / 108 Amps 90 @ 480V Full Load Amps

Location of Power Lines No Overhead Lines Can Electrical Box be Locked Out? Yes

Distance From Top of Pump Pedestal to Grade 18" Materials Needed to Clean Well Drop out 6" spool and check (3) hoses to tank, 75' to waste.

Need a Smeal to Raise Pump? No Remarks 62 Amps at 46.4 Hz. Motor trips VFD when run at full speed

Maintenance: Meter or 6" flange out wall, 2 fire hoses to waste. 6" Elbow

Inspected By Mike Kline Date Inspected May 7, 2021

Appendix D

2020 Consumer Confidence Report
Bacteriological SSP
Lead SSP

The 2020 Michigan Consumer Confidence Report on Water Quality is available at the Water and Sewer Office, 114 N. Phelps St. in Decatur, Michigan. The report will also be printed in the Decatur Republican Newspaper in the June 3, 2020 issue and appear on the Village of Decatur Website (www.decaturmi.org) and Facebook Page. The report will not be mailed directly to consumers unless a copy is requested.

The information contained in the report is a snapshot of the quality of water that the Village of Decatur provided in 2020. Included are details about where the water comes from, what it contains and how it compares to Environment Protection Agency and state standards. Please feel free to contact Public Works foreman, Jim Ebeling at 269-423-6114, with any questions.

2020 Water Quality Report for the Village of Decatur

This report covers the drinking water quality for the Village of Decatur for the 2020 calendar year. This information is a snapshot of the quality of the water that we provided to you in 2020. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards.

Your water comes from three groundwater wells located within the Village Limits. Number 2 well is 116' deep, #3 well is 192' deep, #4 well is 192' deep, they draw from a Drift clay covered aquifer system. Our water is pumped fresh from these wells and no treatment is utilized at this time. The State has performed an assessment of our source water. Such an assessment was completed on all of the sources of drinking water across the country that provide water to 25 people or more. Each system's wells were given a rating based on how susceptible the source water is to contamination from identified sources. This will help communities understand the potential threats to their water supplies and prioritize needs for protecting the water from contamination. *This does not mean* that your water is or will become contaminated. The possible susceptibility rating ranges from low to very high. The rating for the wells in the Village of Decatur is moderately high. A complete copy of this report is available at the Decatur Village Hall.

The Village of Decatur is making efforts to protect our sources by participating in a Wellhead Protection Program completed as of September 2015. If you would like to know more about the report, please contact The Village of Decatur offices.

- **Contaminants and their presence in water:** Drinking Water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the **EPA's Safe Drinking Water Hotline (800-426-4791)**.

- **Vulnerability of sub-populations:** Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

- **Sources of drinking water:** The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our water comes from wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

- Contaminants that may be present in source water include:
  - **Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
  - **Inorganic contaminants**, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
  - **Pesticides and herbicides**, which may come from a variety of sources such as agriculture and residential uses.
  - **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.
  - **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

In order to ensure that tap water is safe to drink, EPA prescribe regulations that limit the levels of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which provide the same protection for public health.

Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2020 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 – December 31, 2020. The State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All of the data is representative of the water quality, but some are more than one year old.

Terms and abbreviations used below:

- Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- N/A: Not applicable ND: not detectable at testing limit ppb: parts per billion or micrograms per liter ppm: parts per million or milligrams per liter pCi/l: picocuries per liter (a measure of radioactivity).
- Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
-

Regulated Contaminant	MCL	MCLG	Level Detected	Range	Year Sampled	Violation Yes / No	Typical Source of Contaminant
Arsenic (ppb)	10	0	3.1	N/A	8-2-18	NO	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Nitrate (ppm)	10	10	<0.020	<0.020	7-22-20	NO	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
Fluoride (ppm)	4	4	<0.16	<0.10 <0.16	7-22-20	NO	Erosion of natural deposits. Discharge from fertilizer and aluminum factories.
Sodium (ppm)	N/A	N/A	28	5.9-28	7-22-20	NO	Erosion of natural deposits
Radioactive Contaminant	**MCL**	**MCLG**	**Level Detected**	**Range**	**Year Sampled**	**Violation Yes / No**	**Typical Source of Contaminant**
Total Coliform (Total number or % of positive samples/month)	TT	N/A	N/A	N/A	1 – Oct. 2020	NO	Naturally present in the environment
Alpha emitters (pCi/L)	15	0	ND	NA	8-18-16	NO	Erosion of natural deposits
Combined radium (pCi/L)	5	0	3.30	ND-3.47	7-11-19	NO	Erosion of natural deposits

** 90 percent of the samples collected were at or below the level reported for our water.

*** Unregulated contaminants are those for which EPA has not established drinking water standards. Monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.

Information about lead: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Village of Decatur is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

***** Our water supply has **80** lead service lines and **168** service lines of unknown material out of a total of **726** service lines.

Monitoring and Reporting to the Department of Environment, Great Lakes, and energy (EGLE) Requirements: The State of Michigan and the U.S. EPA require us to test our water on a regular basis to ensure its safety. We met all the monitoring and reporting requirements for 2020.

(OVER)

Per-and polyfluoroalkyl substances (PFAS)

Regulated Contaminant	MCL, TT, OR MRDL	MCLG OR MRDLG	Level Detected	Range	Year Sampled	Violation Yes/No	Typical Source of Contaminant
Hexafluoropropylene oxide Dimer acid (HFPO-DA) (ppt)	370	N/A	< 2.0	<1.8 - <2.0	2021	NO	Discharge and waste from industrial facilities Utilizing the Gen X chemical process
Perfluorobutane sulfonic acid (PFBS) (ppt)	420	N/A	< 2.0	<1.8 - <2.0	2021	NO	Discharge and waste from industrial Facilities; stain-resistant treatments
Perfluorohexane sulfonic acid (PFHxS) (ppt)	51	N/A	< 2.0	<1.8 - <2.0	2021	NO	Firefighting foam; discharge and waste From industrial facilities
Perfluorohexanoic acid (PFHxA) (ppt)	400,000	N/A	< 2.0	<1.8 - <2.0	2021	NO	Firefighting foam; discharge and waste from industrial facilities
Perfluorononanoic acid (PFNA) (ppt)	6	N/A	< 2.0	<1.8 - <2.0	2021	NO	Discharge and waste from industrial facilities; breakdown of precursor compounds
Perfluorooctane sulfonic acid (PFOS) (ppt)	16	N/A	< 2.0	<1.8 - <2.0	2021	NO	Firefighting foam; discharge from electroplating facilities; discharge and waste from industrial facilities
Perfluorooctanic acid (PFOA) (ppt)	8	N/A	<2.0	<1.8 - <2.0	2021	NO	Discharge and waste from industrial facilities; stain-resistant treatments
Inorganic Contaminant Subject to Action Levels (AL)	**Action Level**	**MCLG**	**Your water**	**Range of Results**	**Year sampled**	**Number of Samples Above AL**	**Typical Source of Contaminant**
Lead (ppb)	15	0	0	N/A	8-8-18	0	Lead service lines, corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits
Copper (ppm)	1.3	1.3	0.01	0-0.021	8-8-18	0	Corrosion of household plumbing systems: Erosion of natural deposits

Monitoring and Reporting to the Department of Environment, Great Lakes, and Energy (EGLE) Requirements: The State and EPA require us to test our water on a regular basis to ensure its safety. We met all the monitoring and reporting requirements for 2020. We will update this report annually and will keep you informed of any problems that may occur throughout the year, as they happen. Copies are available at the Decatur Village Hall (114 N. Phelps St. Decatur, MI) This report will not be sent to you. We invite public participation in decisions that affect drinking water quality. Village of Decatur Council Meetings are held on the first Monday of every month at 7:00 pm in the Krum Annex of the Village Hall. For more information about your water, or the contents of this report, contact Jimmy Ebeling at 269-423-6114 or look at the Decatur Website (decaturmi.org). For more information about safe drinking water, visit the U.S. Environmental Protection Agency at www.epa.gov/safewater/.

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION

EGLE

SAMPLE SITING PLAN - BACTERIOLOGICAL

Issued under authority of 1976 PA 399 and Administrative Rules, as amended. Administrative Rule R 325.10704c requires a water supply to monitor for total coliform bacteria according to a written sample siting plan subject to department review and revision. This form is provided as a convenience to the water supply for developing the plan.

Water Supply Information

Village of Decatur Water distribution System Supply Name	1750 WSSN
114 N. Phelps St Address	1850 Population Served
Decatur MI 49045 City, State, Zip	Vanburen County

Contacts – Water Supply

Foreman / James Ebeling Name/Title	Jebeling@decaturmi.org E-mail	269-487-8475 Telephone
Tech / Tim Shroyer Name/Title	tshroyer@decaturmi.org E-mail	(269) 423-2838 Telephone
Tech / Kody Hillering Name/Title	Khillering@decaturmi.org E-mail	(269) 929-6655 Telephone

Contacts – EGLE and Other

John Karnes EGLE Revised Total Coliform Rule Analyst Name	karnesj@michigan.gov E-mail	(517) 284-6570 Telephone
Stacy Wilson EGLE Drinking Water District Analyst Name	Wilsons56@michigan.gov E-mail	(269) 491-3107 Telephone
Md. Abdullah Al Masud EGLE Drinking Water District Engineer Name	masudm@michigan.gov E-mail	(269) 569-4131 Telephone
Pollution Emergency Alerting System (PEAS) Information Call PEAS number if unable to contact EGLE staff.		1-800-292-4706 Telephone
Matt Newton Local Official	mnewton@decaturmi.org E-mail	(269) 423-6114 Telephone
 Local Official	 E-mail	( ) Telephone
Vanburen County Health Dept Health Department	 E-mail	(269) 621-3143 Telephone

Public Notification

Village Web Page Face book Radio/television
Means of Public Notification

WWMT channel 3 Kalamazoo ~~Newspaper Name~~ and City television	 E-mail	1(800) 875-3333 Telephone
WKZO radio Kalamazoo Radio/Television Name and Address or City	 E-mail	(269) 345-7121 Telephone

This Cover Sheet Updated

10-1-19
Date

EGLE

SAMPLE SITING PLAN - BACTERIOLOGICAL
EQP5950

Bacteriological Sampling Requirements Collect at least 2 routine samples per month from the routine sites listed below. For a chlorinated system, measure and record the chlorine residual at the same time and place as every routine and repeat sample collected. Results from all routine and repeat sites are used to determine compliance. Results from other sites might not be allowed for compliance. EGLE recommends a site map. Map enclosed: Yes ☒ No ☐

Distribution System Sample Sites

Dist. Site #	Routine Site Address	# of Samples per Month	Upstream Site Address*	Downstream Site Address*	Site Code of All Sources that Serve the Routine Site * (Not required for surface water supplies)
1	114 ELI st	1	211 school st	211 N. George	VOD-DS-1
2	116 N. Phelps	1	114 N. Phelps	120 N. Phelps	VOD-DS-2
3					
4					
5					

* When a routine sample is positive for total coliform or *E. coli*, collect samples from repeat sites in the distribution system. Groundwater supplies must also sample all raw water sources (wells) for each positive routine sample result. With EGLE approval, source water collection may be limited to those wells that were in use at any time within the 72-hour period prior to the collection of the routine positive sample. Supplies that purchase their water must notify their water supplier within 24 hours of a positive routine sample result. Surface water supplies are not required to sample their source water.

Source Sample Sites* and Other Non-Distribution Sites (raw water, common header)

Site Code	Well # or Other Designation	Location or Address
VOD-2	Well # 2	208 school st
VOD-3	Well # 3	Prarie Rohnde
VOD-4	Well # 4	Prarie Rohnde

Comments:

* All sources **MUST** be sampled if a routine distribution sample is positive for total coliform or *E. coli*.

Laboratory Certified to Analyze Bacteriological Samples - for more labs certified in total coliform, visit http://www.michigan.gov/deqlab.

Paw Paw Laboratory Laboratory Name - Primary	110 Harry L. Bush Blvd. Paw Paw MI 49079 Address, City, State, Zip	E-mail	(269) 657-3169 Telephone
Kalamazoo Reclamation Laboratory Name - Alternate	Address, City, State, Zip	E-mail	(269) 385-8149 Telephone

Plan Completed/Updated and Reviewed

James Ebeling Name and Signature		10-1-19 Date Completed
1750 WSSN	Village of Decatur Water Supply Name	Van Buren County

For EGLE Use Only
Sample site plan reviewed by EGLE.
☐ No revisions necessary.
☐ Revisions necessary as indicated.
Contact EGLE with questions.

EGLE Staff:

Date:

MICHIGAN COMMUNITY WATER SUPPLY LEAD AND COPPER TAP SAMPLING POOL

>>> REVIEW INSTRUCTIONS ON PAGES 4 AND 5 BEFORE COMPLETING FORM BELOW <<<

WSSN: 1750 Supply Name: Village of Decatur Page 1 of ____

Standard Number of Sites Required: 20 Reduced Number of Sites Required: 10

Site No.	Address	Tier Level	Category	Structure Type	Service Line Material	Interior Plumbing Material	Site Validation Method
00	*Ex: 0000 Any Street – Any Town, MI*	*1*	*A*	*SFR*	*L*	*C*	*Visual*
01	210 N. Williams Decatur MI	1	A	SFR	LG	C	owner Visual
02	304 E St. Marys Decatur MI	1	A	SFR	LG	G P	owner visual
03	204 E Edgarbergen Decatur MI	1	A	SFR	LG	C	owner visual
04	400 W. St. Marys Decatur MI	1	A	SFR	LG	G	owner visual
05	403 W. St Marys Decatur MI	1	A	SFR	LG	G	owner visual
06	319 Clark st. Decatur MI	1	A	SFR	LG	P	Visual
07	318 Clark st Decatur MI	1	A	SFR	LG	C	owner Visual
08	314 Clark st Decatur MI	1	A	SFR	LG	G P	owner visual
09	304 W. Edgarbergen Decatur MI	1	A	SFR	LG	C	owner visual
10	435 Lee AVE. Decatur MI	1	A	SFR	LG	C	owner visual
11	303 E. ST Marys Decatur MI	1	A	SFR	LG	C	owner visual
12	501 S George st Decatur MI	1	A	SFR	LG	G C	owner visual
13	401 clark st Decatur	1	A	SFR	LG	G C	owner visual
14	212 E St marys Decatur MI	1	A	SFR	LG	G	owner visual
15	417 E. Edgarbergen Decatur MI	1	A	SFR	LG	G	owner visual
16	410 W. Edgarbergen Decatur MI	1	A	SFR	LG	C	owner visual
17	100 Pine st Decatur MI	1	A	SFR	LG	G	owner visual
18							
19							
20							

Use next page to record additional sampling sites.

Plan Completed By

James Ebeling
Name

Forman
Title

James Ebeling
Signature

12-22-20
Date

For MDEQ Use Only
- ☐ Plan Accepted
- ☐ Revisions necessary as indicated

Staff: Date:

Appendix E

Water Tower Inspection Report

Dixon Engineering, Inc.

Maintenance Inspection

200,000 Gallon Spheroid

Decatur, Michigan

Inspection Performed: September 11, 2020
Reviewed by Joseph T. Hoban, P.E.: October 3, 2020

Dixon Engineering Inc.
1104 Third Ave. Lake Odessa, MI 48849

Phone (616) 374-3221
Fax (616) 374-7116
http://www.dixonengineering.net
dixon@dixonengineering.net

CONCLUSIONS:

1. The exterior coating is a fluoropolymer overcoat system. The coating is in good condition overall. Coating deterioration includes erosion on the roof.

2. The dry interior coating is an epoxy system. The coating is in good condition overall. Coating deterioration includes spot failures to the substrate and rust bleedthrough on the platforms and access tube.

3. The wet interior coating is an epoxy system. The coating is in good condition overall. Below the high-water level coating deterioration includes pinhole failures on the sidewall. Above the high-water level coating is deteriorating at the open lap seams.

RECOMMENDATIONS (IMMEDIATE WORK):

EGLE may allow some of the required changes to be delayed until the next paint project. These items are listed as immediate work since they are currently out of compliance.

1. Install a suspended ring, impressed current cathodic protection system in the wet interior. The estimated cost is $25,000.

2. Replace the damaged aviation lights. The estimated cost is $6,000.

3. Modify the overflow pipe discharge so it points downward to bring it into compliance with current EGLE requirements (note that having a downward discharge to meet requirements will cause the air gap to be out of compliance. We recommend requesting which action should be performed from EGLE). Install a flap gate at the new discharge. The estimated cost is $3,000.

4. Install a gasket on the wet interior roof hatch to meet current EGLE requirements. The cost would be incidental to the next painting project or could be performed by in-house personnel.

5. Replace the roof vent with a pressure vacuum vent to meet current EGLE requirements. The estimated cost is $6,000.

6. Install a threaded coupling on the fill/draw pipe for a chemical feed line as required by the EGLE. The cost would be incidental to the next painting project or can be performed by in-house personnel.

RECOMMENDATIONS (WITH THE NEXT PAINT PROJECT):

Annually inspect the roof vent, hatches, and any other health or security items on the structure. The work could be performed by in-house personnel or contracted as part of a regular maintenance program.

Complete the recommended work in four years. The repairs and upgrades should be completed during the next major tank rehabilitation project when coating repairs are made.

1. High pressure water clean and overcoat the exterior with a fluoropolymer system. The estimated cost is $70,000.

2. Spot power tool clean the coating failures in the dry interior. Spot repaint all prepared surfaces with an epoxy coating system. The estimated cost is $3,000.

3. Recoat the foundation to help prevent deterioration. The cost would be incidental to exterior painting.

4. Install a ladder extension at the condensate platform and relocate the opening cover hinges. The estimated cost is $2,000.

5. Install a handhold at the wet interior roof hatch, access tube roof hatch, and painter's (bird) hatch. The handhold would assist the climber while entering and exiting the openings. The cost would be incidental to the next painting project.

6. Install a rigging lug on the transition cone above the top platform opening. The cost would be incidental to the next painting project.

7. Install a fall prevention device extension to the ground on the basebell ladder. The estimated cost is $1,000.

8. Tighten the fall prevention device on the riser ladder. The cost would be incidental to the next coating project.

9. The expansion joint was covered with insulation and was not visible for inspection. The type of joint should be verified. If it is determined to be a glandular expansion joint, then replace with it a bellows type joint. The estimated cost is $15,000.

A DISCUSSION ON RESCUE AND RETRIEVAL OPERATIONS FROM ELEVATED PEDESTAL STORAGE TANKS

Working on elevated water storage tanks is inherently dangerous. OSHA regulations give guidelines for the climbing on elevated structures. Contractors and Engineers/Consultants are responsible for their own employees, but even with safety training and proper equipment, accidents can occur. Most rescue squads are local or neighboring fire departments, with some departments having more experience than others. Water storage tanks are designed to store water and are not suited for rescue or retrieval convenience. We recommend that you meet with your local rescue personnel and draft a rescue plan. A copy of the plan should be kept at the tank and with the rescue crew.

OSHA does not require 30 inch manways or hatches, but for rescue purposes 30 inch openings would allow enough room for a rescue basket with an injured person on it to pass through. Smaller openings may not be sufficient for retrieval.

Rescue personnel would gain access to the injured person using the existing ladders while attached to fall prevention devices. If possible, the basket would be lowered through the riser and out the opening in the bottom. If needed, the rescue crew would work from the roof inside a handrail. A tripod would be used to attach a winch to the basket. If the basket cannot fit through the riser then it would need to be raised to the roof.

From the roof it is possible to lower the basket over the side to ground level, but that would require a very large winch and increased loading on the attachment point. On a rainy, windy, or snowy day, the objective would be to get rescue personnel off the roof as soon as possible, so lowering through the dry interior is preferred. A helicopter rescue would need to be performed if it is not possible to lower the rescue basket down the dry interior.

Upgrades intended to make a rescue easier are included in this report. Dixon recommends 30 inch manways or hatches where possible, and fall prevention devices on all ladders.

COST SUMMARY:

Exterior overcoat	$70,000
Dry interior spot repaint	3,000
Cathodic protection system	25,000
Aviation lights	6,000
Overflow discharge modification	3,000
Condensate ladder extension	2,000
Fall prevention device extension - basebell	1,000
Pressure vacuum roof vent	6,000
Expansion joint	15,000
Sub Total	$131,000
Engineering and Contingencies	$25,000
Total	$156,000

Notes: Safety improvements other than fall prevention devices are optional and can be delayed. Best price for safety improvements would be obtained by including them with the next painting project.

INSPECTION:

On September 11, 2020 Dixon Engineering Inc. performed a maintenance inspection on the 200,000 gallon spheroid elevated water storage tank owned by the Village of Decatur, Michigan. Purposes of the inspection were to evaluate the interior and exterior coating's performance and life expectancy, assess the condition of metal surfaces and appurtenances, review safety and health aspects, and make budgetary recommendations for continued maintenance of the tank. All recommendations with budgeting estimates for repairs are incorporated in this report.

The inspection was performed by Kyle Lay, ROV Operator. The inspector was assisted by Chris Evans, Staff Technician.

The wet interior inspection was completed with a remotely operated vehicle (ROV). Video of the inspection and still photos are included with this report. No cleaning was performed in the wet interior during the ROV inspection.

GENERAL INFORMATION:

The tank was built in 1979 by Universal Tank and Iron Works with a height to low-water level of 110 feet.

CONDITIONS AND RECOMMENDATIONS:

EXTERIOR COATING CONDITIONS:

Information on file with DIXON indicates that the exterior was last painted in 2009. The exterior was pressure washed and spot power tool cleaned to SSPC-SP11 commercial condition. The coating applied was a fluoropolymer overcoat system. The coating is in good condition overall.

The basebell coating is in good condition with no significant failures. There are a few coating touch-ups throughout the basebell that are in good condition.

The riser, bowl, and sidewall coating in good condition with no significant failures. There is lettering that states "DECATUR" on the sidewall in two locations. There is a pirate's head logo on the sidewall in one location. The bowl is covered with light mildew growth.

The roof coating is in good condition with minor erosion of the topcoat.

Good adhesion was noted on the ASTM X-cut test areas. If overcoating is not performed within the next two years, additional adhesion testing should be performed.

EXTERIOR COATING RECOMMENDATIONS:

Budget for overcoating in four years. The typical overcoat frequency for modern urethane systems is fifteen years. There is always a risk in overcoating the exterior, but we have had several successful projects when performed in the timeframe noted. The risk of poor adhesion of the overcoat system gets higher as the existing system gets older. Current adhesion showed the existing coating would support an additional coating system.

The recommended procedure is to high pressure water clean (5,000-10,000 psi) the exterior to remove any poorly adhered coating and any contaminants. Coating failures to the substrate would be spot power tool cleaned to bare metal (SSPC-SP11) condition. All sharp edges would be feathered into the surrounding coating.

The coating system would consist of a spot prime coat on the bare metal, a full coat of epoxy, followed by a full coat of urethane and a topcoat of fluoropolymer. The fluoropolymer system offers excellent abrasion resistance with high gloss and sheen retention needed for dark and bright colors. The expected life of this system is fifteen years. The tank would be removed from service during the coating project. This is necessary to reduce condensation on the tank's surface. Fluoropolymer coatings have a minimum temperature requirement for application and are sensitive to moisture during the curing process. If moisture is present during the curing process, the appearance will become cloudy with little or no gloss. The estimated cost is $70,000.

DRY INTERIOR COATING CONDITIONS:

The dry interior on this structure is defined as the non-water contact surfaces, consisting of the basebell, riser, transition cone, and access tube.

Information on file with DIXON indicated the dry interior was last painted in 2014. The dry interior was abrasive blast cleaned to SSPC-SP6 commercial condition. The coating applied was an epoxy system. The coating is in good condition overall.

The basebell and riser coating are in good condition with no significant failures.

The coating on the topside of the platforms is in good condition with only a few spot failures and rust bleedthrough throughout.

The transition cone coating is in good condition with a few small areas of rust bleedthrough.

The access tube coating is in good condition with rust bleedthrough and rust streaking along the cable support bands.

DRY INTERIOR COATING RECOMMENDATIONS:

Spot power tool clean the coating failures to a (SSPC-SP11) condition and spot repaint with an epoxy system. The work should be performed with an exterior painting project. The estimated cost is $3,000.

WET INTERIOR COATING CONDITIONS:

Information on file with DIXON indicated the wet interior was last painted in 2014. The wet interior was abrasive blast cleaned to SSPC-SP10 near-white condition. The coating applied was an epoxy system.

The roof coating is in good condition with only a few areas of topcoat delamination and rust bleedthrough along the lap seams. The roof contains open lap seams that have started to rust and streak. Rusting is typical for a roof where the lap seams are open and not seal welded. The presence of rust in the lap seams is not a concern but should be monitored during future inspections for additional corrosion growth.

The sidewall coating is in good condition with numerous pinhole failures near the high-water line. There is no significant coating damage at the high-water level which would be the area most affected by ice movement.

The access tube coating is in good condition no significant failures. There is no significant damage at the high-water level.

The bowl was covered with approximately 12 inches of sediment that limited the amount of surface visible with the ROV and could not be inspected.

The surfaces below the normal operating water level are covered with mineral staining which does not affect the integrity of the coating system.

WET INTERIOR COATING RECOMMENDATIONS:

The existing coating system has not deteriorated to the point where replacement is warranted assuming a cathodic protection system is installed. A cathodic protection system would adequately protect all areas below the high-water level where the coating has deteriorated. Reinspect in five years to update conditions and recommendations.

CATHODIC PROTECTION CONDITIONS:

There is no cathodic protection system in the wet interior. The tank does not have attachment clips or a pressure fitting installed for a future cathodic protection installation.

CATHODIC PROTECTION RECOMMENDATIONS:

Install an impressed current cathodic protection system in one to two years. The system is designed with a horizontal ring configuration suspended into the lower one third of the tank connected to the sidewall or access tube. This design is considered ice-free as formation of ice normally occurs at the high-water level and some along the sidewall. As long as the tank is operated in the upper one half of its capacity, the probability of ice damage is very low. The anode used is a platinized niobium or titanium wire with a design life of approximately ten years. The system also incorporates copper/copper sulfate reference anodes.

The system is automatically controlled by monitoring the water-to-tank potential. It provides protection to the exposed steel surfaces. Cathodic protection operates by inhibiting galvanic cell corrosion where steel is exposed. The system creates an equipotential across the tank and drives the tank potential down to a point (-850 millivolts) where corrosion is essentially nonexistent. Only surfaces that are in contact with water are protected because water acts as the electrolyte for the circuit. Therefore, areas of the roof and upper sidewall are not protected by the system. The estimated cost is $25,000.

FOUNDATION AND ANCHOR BOLT CONDITIONS:

The exposed concrete foundation is in good condition with no significant deterioration. The foundation is coated. The coating is in good condition with no significant failures.

There are sixteen anchor bolts evenly spaced on the baseplate around the basebell. The anchor bolts are in good condition with no significant deterioration of the nuts or bolts.

FOUNDATION AND ANCHOR BOLT RECOMMENDATIONS:

Recoat the exposed concrete with an epoxy coating system to help prevent deterioration. The cost would be incidental to exterior painting.

GROUT CONDITIONS:

The grout between the baseplate and the foundation is in good condition with none damaged or missing.

ROOF HANDRAIL, PAINTER'S RAILING, AND ROOF RIGGING CONDITIONS:

There is a handrail on the roof surrounding the roof hatches and the vent. The handrail is in good condition. There is a painter's railing that surrounds the roof handrail. The painter's railing is in good condition.

There are roof rigging couplings for safety and staging lines during wet interior coating work.

LIGHTING CONDITIONS:

The tank has a double aviation light on the roof that is in fair condition. There is a photocell that will switch the lights on when it's dark outside. It could not be determined if the lights are operational. The photocell was covered by the inspector, but the light did not turn on. Sometimes the photocell will not switch the light on until it has been dark for several minutes. The aviation light has one damaged globe that is taped to the mount.

There are light fixtures located in the dry interior. Some of the lights are burned out.

LIGHTING RECOMMENDATIONS:

Replace the damaged aviation lights with a new double red light if they are required by the FAA. We assume that if lights are on the tank, then they are required. The FAA can be petitioned to verify if the lights are needed. The estimated cost for replacement is $6,000.

OVERFLOW PIPE CONDITIONS:

The overflow pipe extends along the access tube in the dry interior, down through the dry riser, and exits near the bottom of the basebell. The discharge end of the overflow pipe is screened. The screen is in good condition but is oversized. The pipe discharges to a splash pad. The air gap meets the required 12-24 inches. The discharge area is in good condition.

OVERFLOW PIPE RECOMMENDATIONS:

Modify the overflow pipe discharge to bring it into compliance with current EGLE requirements. The discharge must be in a downward position and must have a 24 mesh screen. Install a screened overflow flap gate at the discharge. The flap gate would allow water to discharge even if the screen becomes covered with debris or frosted over. The gate is designed to stay closed to prevent rodents or birds from entering the pipe. (Note that having a downward discharge to meet requirements will cause the air gap to be out of compliance. We recommend requesting which action should be performed from EGLE). The estimated cost is $3,000.

HATCH AND MANWAY CONDITIONS:

There is a 30 inch diameter roof hatch to the wet interior that is in good condition. The hinged cover is in good condition. There is no handhold next to the hatch to aid the climber while entering and exiting the opening. The hatch was not secured. There was no gasket on the hatch.

There is a 30 inch diameter roof hatch into the dry interior that is in good condition. The hinged cover is in good condition. There is no handhold next to the hatch to aid the climber while entering and exiting the opening.

There is a 14 x 18 inch manway in the transition cone to the wet interior that is in good condition. The manway gasket showed no signs of leakage and the bolts are in good condition.

There is a service door in the basebell that is in good condition. The door operated properly during the inspection.

There is a painter's hatch (bird hatch) at the top of the riser that is in good condition. There is no safety handhold above the hatch.

The condensate platform ladder opening is 30 inch diameter. The opening is equipped with a hinged cover. There is a safety handhold next to the opening.

The top platform ladder opening is 30 inch square. The opening is equipped with a hinged cover. There is a safety handhold next to the opening.

There is not a rigging attachment point on the transition for rescue retrieval line attachment.

HATCH AND MANWAY RECOMMENDATIONS:

Install a gasket on the wet interior roof hatch to meet current EGLE requirements. The cost would be incidental to the next painting project or could be performed by in-house personnel.

Install a ladder extension at the condensate platform to assist entering and exiting the opening. The existing cover hinges will need to be relocated to fit the new ladder extension. The estimated cost is $2,000.

Install a handhold at the wet interior roof hatch, access tube roof hatch, and painter's (bird) hatch. The handhold would assist the climber while entering and exiting the openings. The cost would be incidental to the next painting project.

Install a rigging lug on the bowl above the top platform opening. The lug would serve as an attachment point for a winch/pulley during rescue. The cost would be incidental to the next painting project.

VENT CONDITIONS:

The roof vent is a flow through design that is in fair condition. The screen is in fair condition. The screen mesh size is larger than the recommended 24 mesh. This is a possible entry point for insects, though none were observed inside the tank.

VENT RECOMMENDATIONS:

Replace the roof vent with a screened pressure vacuum vent to meet current EGLE requirements. The new vent would have a movable plate that would allow air to flow in and out of the tank even if the screens become plugged or frosted over. The vent would have a rain shield to prevent rainwater from entering the storage tank during high winds. The estimated cost is $6,000.

LADDER CONDITIONS:

The dry interior ladders are located in the basebell, riser, and access tube. The ladders are in good condition. The ladders meet current OSHA size requirements. All of the ladders are equipped with rail-type fall prevention devices that are in good condition.

The basebell ladder fall prevention device starts approximately 10 feet off the ground.

The fall prevention device on the riser ladder is loose.

There is a wet interior ladder from the roof to the bowl that is in good condition. The ladder meets OSHA size requirements. The ladder is equipped with a cable-type fall prevention device. The device was not used during the inspection.

LADDER RECOMMENDATIONS:

Extend the prevention device to the ground on the basebell ladder. The estimated cost is $1,000.

Tighten the fall prevention device on the riser ladder. The cost would be incidental to the next coating project.

FILL/DRAW PIPE CONDITIONS:

The tank fills and draws from a single pipe. The pipe routes through the dry interior into the bottom of the transition cone and extends approximately 24 inches into the wet interior. There is a deflector plate over top of the pipe in the wet interior.

There is a sample tap on the fill/draw pipe located in the basebell. The tap has a smooth end, faces downward, and is inside a heated box.

There is not a threaded coupling on the fill/draw pipe for future attachment of a chemical feed line.

FILL/DRAW PIPE RECOMMENDATIONS:

Install a threaded coupling for a chemical feed line on the fill/draw pipe to meet current EGLE requirements. The work would be incidental to the next painting project.

EXPANSION JOINT CONDITIONS:

The fill/draw pipe is equipped with an expansion joint that is located at the top of the riser. The glandular style of expansion joint can seize if corrosion forming at the joint stops the joint from moving as designed. The expansion joint was covered with insulation and was not visible for inspection but it has been noted in previous Dixon inspection reports to be a glandular style joint.

EXPANSION JOINT RECOMMENDATIONS:

If the expansion joint seizes it cannot take up the longitudinal movement of the fill/draw pipe and the transition cone will flex to compensate for this movement. With enough flexing, the weld at the transition cone could crack and cause a leak.

The type of joint should be verified. If it is a glandular expansion joint, then replace with it a bellows type joint. The estimated cost is $15,000.

INSULATION CONDITIONS:

The fill/draw pipe is covered with rigid foam insulation. The insulation is covered with an aluminum jacket that is in good condition.

MUD VALVE CONDITIONS:

There is a mud valve located in the bottom of the tank to aid in removal of sediment during inspections and routine maintenance. The mud valve was not operated during the inspection.

CONDENSATE DRAIN CONDITIONS:

There is a condensate drain line that routes from the platform to the overflow pipe. There is a check valve in the line to stop backflow during overflow conditions. The line is in good condition. The drain opening appeared to be operational.

WET INTERIOR METAL CONDITIONS:

The steel structure is in good condition overall. No pitting was observed at the coating failures on the sidewall.

There is a stiffener located at the equator of the sidewall. The stiffener is in good condition.

DIXON ENGINEERING, INC.
STEEL TANK FIELD INSPECTION REPORT
PEDESTAL TANK

DATE: **September 11, 2020**

OWNER: **Village of Decatur**
CLIENT CODE: **22-80-01-01**
LOCATION: Address: **160 Eli Street**
City: **Decatur**
State: **Michigan**
TANK SIZE: Capacity: **200,000 gallons**
Bottom (LWL): **110 feet (from nameplate)**
Head range: **30 feet (from nameplate)**
CONSTRUCTION:
Type: **Spheroid**
YEAR CONSTRUCTED: **1979**
MANUFACTURER: **Universal Tank & Iron Works**
CONTRACT NUMBER: **6688-200**
USE: **Potable water and fire protection**

COATING HISTORY	EXTERIOR	WET INTERIOR	DRY INTERIOR
YEAR COATED	**2009**	**2014**	**2014 (entire)**
CONTRACTOR	**L & T Painting**	**L.C. United**	**L.C. United**
SYSTEM	**Fluoropolymer**	**Epoxy**	**Epoxy**
SURFACE PREPARATION	**SSPC-SP11**	**SSPC-SP10**	**SSPC-SP6**
MANUFACTURER	**Tnemec**	**Tnemec**	**Tnemec**
HEAVY METAL COATING SAMPLES	**No**	**No**	**No**
HEAVY METAL BEARING	**No**	**No**	**No**

PERSONNEL: Inspector and ROV operator **Kyle Lay**, Top person **Chris Evans**
METHOD OF INSPECTION: **ROV**

SITE CONDITIONS

Fenced: **Yes**
Site large enough for contractor's equipment: **Yes**
Control building: **No**
Antenna control site: **No**

Neighborhood: **Residential, DPW**
Power lines within 50 feet: **Yes (estimated distance 50 feet)**
Are power lines attached to the structure: **No**
Would power lines interfere with containment: **No**
Site drainage: **Away from tank**
Indications of underground leakage: **No**
Shrub, tree, etc. encroachment: **No**

EXPOSED PIPING

N/A

FOUNDATION

Foundation exposed: **Yes**
Exposed height: **1-14 inches**
Exposed foundation condition: **Good**
Damage or deterioration: **No**
Foundation coated: **Yes**
Coating condition: **Good**
Grout condition: **Good**
Undermining of foundation: **No**

EXTERIOR COATING

Basebell:

Topcoat condition: **Good**
Previous system condition: **Good**
Describe coating: **No significant coating deterioration**
Dry film thickness: **17-25 mils**
Adhesion: **5A**
Metal condition: **Good**
Basebell comments: **Some coating touch-ups present that are a slightly different shade of brown but are in good condition**

Riser:

Topcoat condition: **Good**
Previous system condition: **Good**
Describe coating: **No significant coating deterioration**
Mildew growth: **No**
Metal condition: **Good**

Bowl:

Topcoat condition: **Good**
Previous system condition: **Good**

EXTERIOR COATING

Describe coating: **No significant coating deterioration**
Mildew growth: **Yes**
Metal condition: **Good**

Sidewall:

Lettering: **Yes**
Number: **2**
Lettering content: **DECATUR**
Logo: **Yes**
Number: **1**
Describe logo: **Pirate's head**
Topcoat condition: **Good**
Previous system condition: **Good**
Describe coating: **No significant coating deterioration**
Metal condition: **Good**

Roof:

Topcoat condition: **Good**
Previous coat/system condition: **Good**
Describe coating: **Erosion**
Dry film thickness: **20-22 mils**
Adhesion: **5A**
Metal condition: **Good**

EXTERIOR APPURTENANCES

Basebell Door:

Size: **30 x 60 inches**
Metal condition: **Good**
Door comments: **Minor corrosion on hinges**

Anchor Bolts:

Number: **16**
Diameter: **1½ inches**
Location: **Exterior**
Metal condition: **Good**

Overflow Pipe:

Diameter: **6 inches**
Metal condition: **Good**
Discharge orientation: **Horizontal**
Screen condition: **Good**

EXTERIOR APPURTENANCES

Percent of screen open: **100**
Mesh size: **4**
Flap gate: **No**
Air gap: **Yes**
Lowest part of discharge to the ground distance: **14½ inches**
Height to basebell: **14½ inches**
Overflow discharges to: **Concrete pad**
Condition: **Good**

Roof Handrail:

Diameter: **12 feet**
Height: **43¾ inches**
Midrail height: **22½ inches**
Kick plate height: **4½ inches**
Vertical post type: **Angle**
Size: **2½ x 2½ inches**
Top rail type: **Angle**
Size: **2½ x 2½ inches**
Midrail type: **Angle**
Size: **2½ x 2½ inches**
Metal condition: **Good**

Painter's Rail:

Diameter: **18 feet**
Are butt welds at braces: **Yes**
Metal condition: **Good**

Roof Rigging Points:

Number: **16**
Couplings covered: **Yes**
Covered with: **Plugs**
Metal condition: **Good**

Removable Cathodic Caps:

N/A

Wet Interior Roof Hatch:

Neck size: **30 inches**
Distance from center of the tank (to outer edge): **52 inches**
Shape: **Round**
Handhold at opening: **No**

EXTERIOR APPURTENANCES

Curb height: **4 inches**
Cover overlap: **2 inches**
Gasket on cover/neck cover: **No**
Hatch security: **None**
Metal condition: **Good**
Hatch comments: **Slight rust bleedthrough on inside of hatch**

Dry Interior Roof Hatch:

Neck size: **30 inches**
Shape: **Round**
Handhold at opening: **No**
Hatch security: **Chain and clip**
Metal condition: **Good**

Bolted Ventilation Hatch:

N/A

Access Tube Air Gap:

N/A

Roof Vent:

Number: **1**
Distance from center of the tank (to outer edge): **5 feet 9 inches**
Type: **Flow-through**
Neck diameter: **14 inches**
Vertical screen condition: **Good**
Mesh size: **12**
Metal condition: **Good**

Aviation Lights:

Design: **Double red**
Location: **Free-standing mount**
Functioning: **Unknown**
Globe condition: **Fair**
Photoelectric cell: **Yes**
Aviation light comments: **One globe taped to mount**

Antennas:

N/A

EXTERIOR APPURTENANCES

Electrical:

Electrical conduit condition: **Good**
Exposed wiring: **No**

DRY INTERIOR COATING

Basebell:

Coating condition: **Good**
Describe coating: **No significant coating deterioration**
Metal condition: **Good**
Floor: **Concrete**
Drain line present: **Yes**

Condensate Platform:

Platform design: **Full**
Coating condition: **Good**
Describe coating: **Spot coating failures to substrate, rust bleedthrough**
Metal condition: **Good**
Ladder opening size: **30 inches**
Shape: **Round**
Opening covered: **Yes**
Handhold at opening: **Yes**
Drain: **Yes**
Size: **3 inches**
Type: **To overflow**
Check valve: **Yes**

Riser above the Condensate Platform:

Coating condition: **Good**
Describe coating: **No significant coating deterioration**
Dry film thickness: **11-12 mils**
Metal condition: **Good**

Top Platform:

Platform design: **Full**
Material: **Steel plate**
Coating condition: **Good**
Describe coating: **Rust bleedthrough**
Metal condition: **Good**
Ladder opening size: **30 inches**
Shape: **Square**
Opening covered: **Yes**

DRY INTERIOR COATING

Handhold at opening: **Yes**

Riser above the Top Platform:

Coating condition: **Good**
Describe coating: **No significant coating deterioration**
Dry film thickness: **12-13 mils**
Metal condition: **Good**

Transition Cone:

Coating condition: **Good**
Describe coating: **Spot coating failures to substrate, rust bleedthrough**
Metal condition: **Good**
Rigging lug above opening: **No**

Access Tube:

Diameter: **34 inches**
Topcoat condition: **Good**
Prime coat condition: **Good**
Describe coating: **Rust bleedthrough**
Dry film thickness: **8-11 mils**
Metal condition: **Good**
Access tube comments: **Rust bleedthrough around cable routing brackets going up access tube**

DRY INTERIOR APPURTENANCES

Electrical:

Lights functioning: **Yes**
Additional lights needed: **No**
Electrical outlet/conduit condition: **Good**
Used during inspection: **No**
Electrical comments: **Some bulbs are burned out in the riser**

Sample Tap:

Location: **In basebell**
Pipe diameter greater than ¼ inch: **No**
12 inches or more above the ground/floor: **Yes**
Down turned: **Yes**
Smooth end: **Yes**
In heated box: **Yes**
Condition: **Good**

DRY INTERIOR APPURTENANCES

Threaded Coupling (for chemical feed on the fill/draw pipe):

N/A

Expansion Joint:

Location: **Top of fill pipe**
Accessible for inspection: **No**
Expansion joint comments: **Covered in insulation, could not inspect**

Fill Pipe Insulation:

Type: **Styrofoam**
Condition: **Good**
Seams loose: **No**
Insulation cover: **Yes**
Type: **Aluminum**
Condition: **Good**

Basebell Ladder:

Toe clearance: **7 inches or greater**
Width of rungs: **16 inches**
Thickness of rungs: **¾ inch**
Shape of rungs: **Round**
Metal condition: **Good**
Fall prevention device: **Yes**
Type: **Rail**
Function properly: **Yes**
Cage: **Yes – ladder support acts as a cage**
Diameter: **30 x 30 inches (usable)**
Ladder comments: **Rail glide starts approximately 10 feet above ground level**

Riser Ladder:

Toe clearance: **7 inches or greater**
Width of rungs: **16 inches**
Thickness of rungs: **¾ inch**
Shape of rungs: **Round**
Metal condition: **Good**
Fall prevention device: **Yes**
Type: **Rail**
Function properly: **Yes**
Cage: **No**

DRY INTERIOR APPURTENANCES

Ladder comments: **Riser fall prevention is loose on ladder and needs to be tightened**

Painter's (bird) Hatch:

Size: **24 inches**

Handhold above hatch: **No**

Metal condition: **Good**

Hatch security: **None**

Manway to Wet Interior:

Size: **14 x 18 inches**

Location: **In transition cone**

Coating condition: **Good**

Metal condition: **Good**

Mud Valve:

Number: **1**

Type: **Babco**

Discharge material: **Hose**

Discharge slope: **Downward**

Functioning properly: **Not used during inspection**

Metal condition: **Good**

Access Tube Ladder:

Toe clearance: **7 inches or greater**

Width of rungs: **16 inches**

Thickness of rungs: **¾ inch**

Shape of rungs: **Round**

Metal condition: **Good**

Fall prevention device: **Yes**

Type: **Rail**

Function properly: **Yes**

WET INTERIOR COATING

Roof:

Topcoat condition: **Good**

Primer coating condition: **Good**

Describe coating: **Delaminating, rust bleedthrough**

Metal condition: **Good**

Lap seams: **Open**

Condition of lap seams: **Good**

WET INTERIOR COATING

Roof comments: **A few areas of rust streaking at the lap seam.**

Sidewall:

Topcoat condition: **Good**
Primer coating condition: **Good**
Describe coating: **Spot coating failures to substrate**
Mineral deposits: **Moderate**
Metal condition: **Good**
Active pitting: **No**
Previous pitting: **No**
Sidewall comments: **Numerous pinholes near high-water line on the sidewall panels.**

Access Tube:

Topcoat condition: **Good**
Primer coating condition: **Good**
Describe coating: **No significant coating deterioration**
Mineral deposits: **Light**
Metal condition: **Good**
Active pitting: **No**
Previous pitting: **No**

Tank Bottom:

Covered in sediment could not inspect with ROV
Type: **Bowl**
Sediment depth: **12-24 inches**

WET INTERIOR APPURTENANCES

Ladder:

Toe clearance: **Less than 7 inches**
Width of rungs: **16 inches**
Thickness of rungs: **¾ inch**
Shape of rungs: **Round**
Shape of side rails: **Flat**
Metal condition: **Good**
Fall prevention device: **Yes**
Type: **Cable**
Function Properly: **Unknown, not used during the inspection**
Ladder comments: **Cable appears to be a bit loose on wet ladder**

WET INTERIOR APPURTENANCES

Cathodic Protection:

N/A – no clips or pressure fitting

Roof Stiffeners:

N/A

Sidewall Stiffeners:

Number: **1**
Location: **Equator**
Coating condition: **Good**
Metal condition: **Good**

Overflow Pipe Inlet:

Type: **Weir box**
Metal condition: **Good**

Fill Pipe:

Diameter: **12 inches (estimated)**
Height above transition cone: **24 inches (estimated)**
Deflector over end: **Yes**
Type: **Plate**
Metal condition: **Good**

Separate Draw Pipe:

N/A

Mixer:

N/A

Field Inspection Report is prepared from the contractor's viewpoint. It contains information the contractor needs to prepare his bid for any repair or recoating. The engineer uses it to prepare the engineering report. Cost estimates are more accurate if the contractor's problems can be anticipated. While prepared from the contractor's viewpoint, the only intended beneficiary is the owner. These reports are completed with diligence, but the accuracy is not guaranteed. The contractor is still advised to visit the site.

200,000 gallon spheroid located in the
Village of Decatur, Michigan.

1) The foundation is in good condition.

2) Same.

3) Typical anchor bolt is in good condition.

4) The overflow pipe discharges to a concrete splash pad.

5) The overflow screen is in good condition.

6) The basebell door is in good condition.

7) The basebell coating is in good condition with no significant failures.

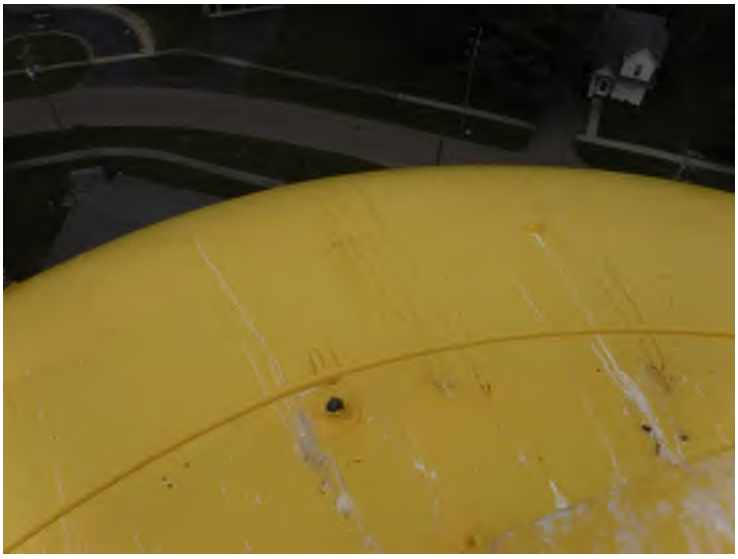
8) Same.

9) The riser coating is in good condition with no significant failures.

10) The bowl is covered with light mildew growth.

11) The sidewall coating is in good condition with no significant failures.

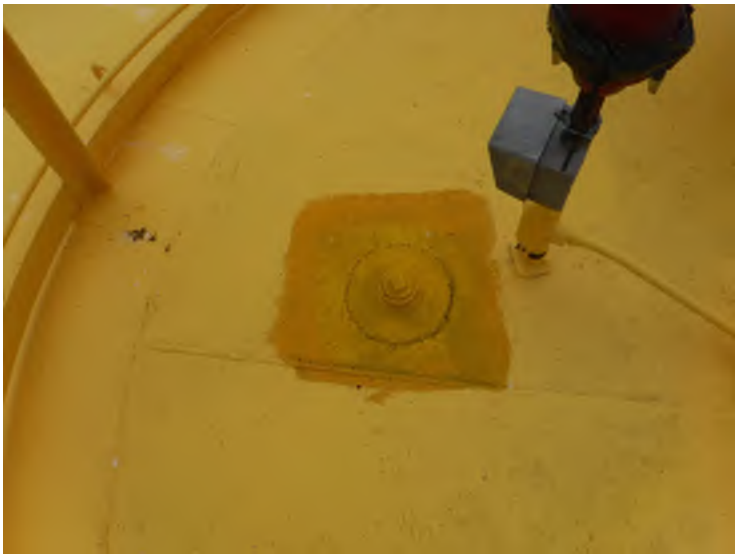
12) Same.



13) The roof coating is in good condition overall.

14) Same.

15) The roof handrail is in good condition.



16) Typical rigging coupling is in good condition.

17) One of the aviation light globes is being held in place with electrical tape.

18) The roof vent screen is intact. The vent is a flow through design.

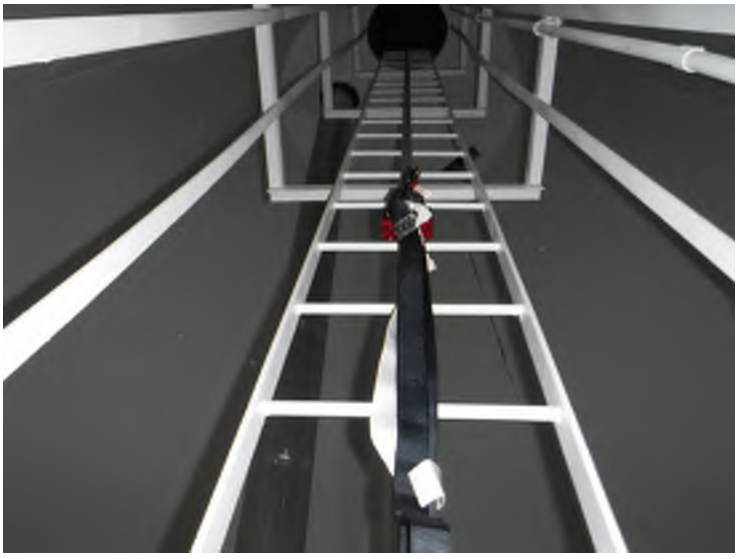
19) There is no gasket on the wet interior hatch.

20) The basebell coating is in good condition with no significant failures.

21) Same.

22) Same.

23) There is a heated room in the basebell housing controls.

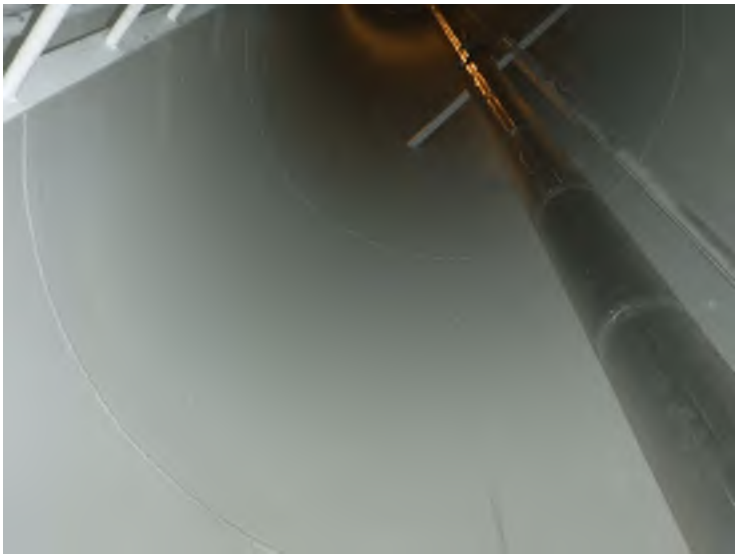


24) The basebell ladder fall prevention starts halfway up the ladder.

25) The condensate drain routes to the overflow pipe and is in good condition.

26) There is rust bleedthrough and a few minor spot failures on the condensate platform.

27) The condensate platform opening and cover are in good condition.



28) The riser coating is in good condition with no significant failures.

29) The riser ladder is in good condition. The ladder is equipped with a fall prevention device.

30) Minor coating failures on the top platform. The top platform opening and cover are in good condition.

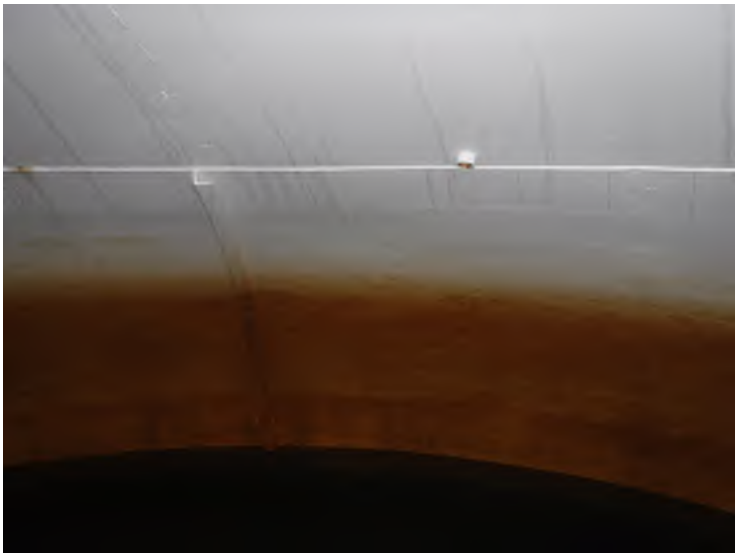
31) The mud valve appears to be in good condition.

32) The wet interior manway in the transition cone is in good condition.

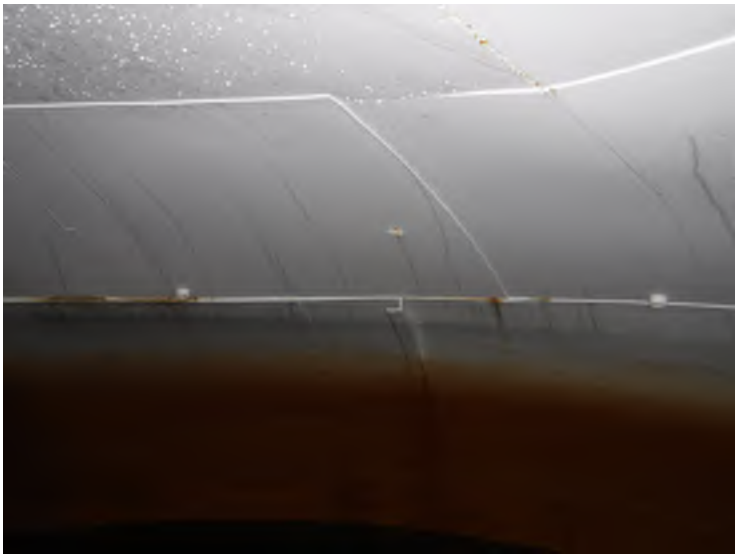
33) There is rust bleedthrough and streaking at the antenna cable attachment brackets in the access tube.

34) Same.

35) The access tube ladder is in good condition. The ladder is equipped with a fall prevention device.

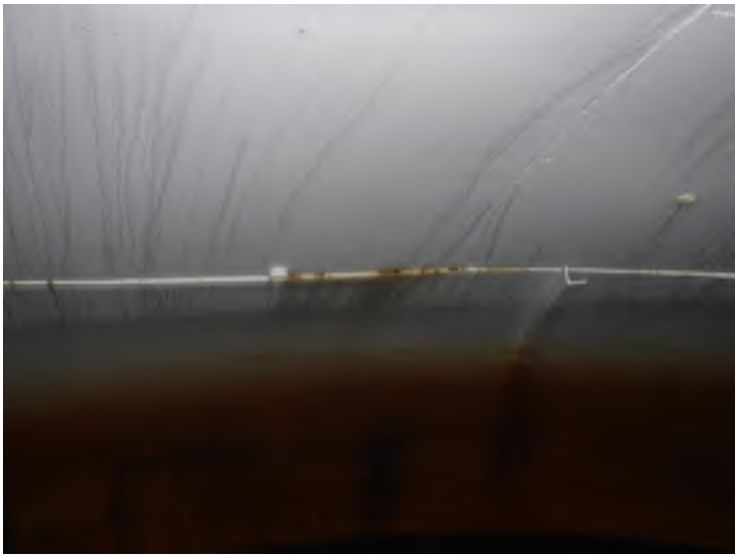


36) The wet interior roof coating is in good condition overall.



37) There is minor corrosion at the open lap seams.

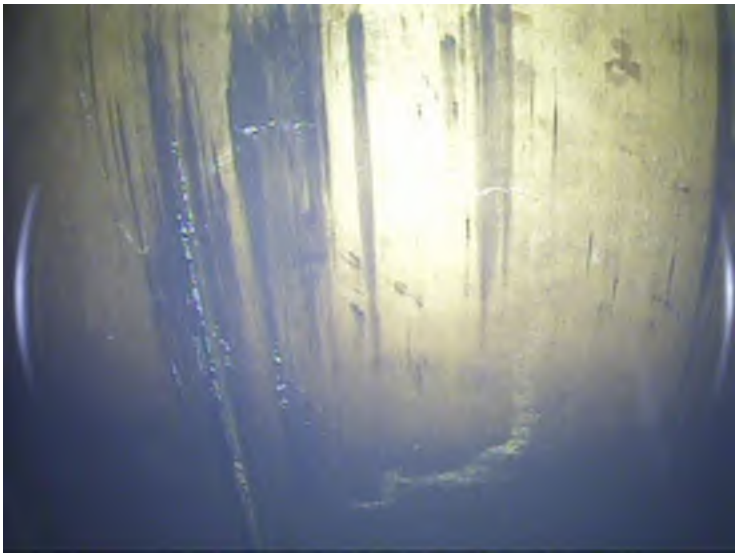
38) Same.



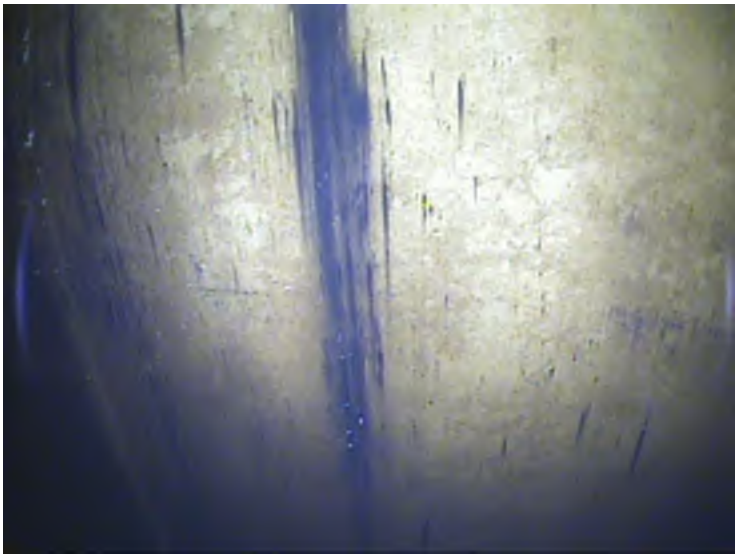
39) The overflow weir box is in good condition.

40) The roof viewed from the ROV.

41) The sidewall coating is in good condition overall.



42) Pinhole coating failures on the sidewall.



43) Same.

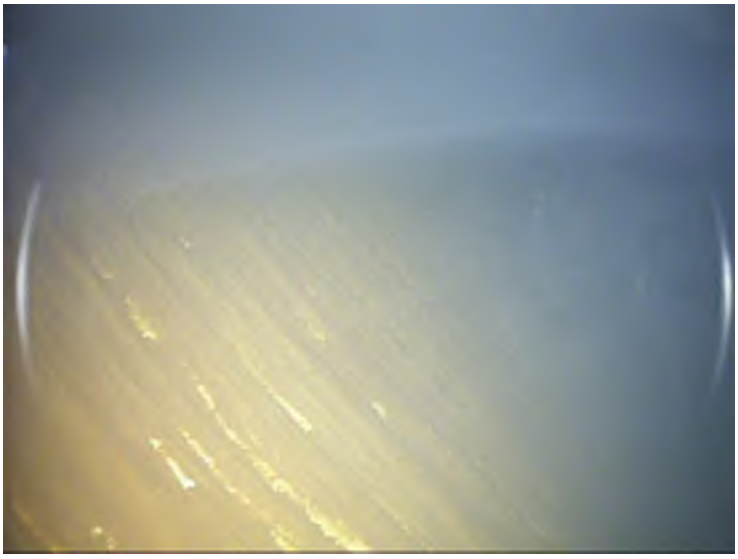
44) The sidewall stiffener is in good condition.

45) Same.

46) The access tube coating is in good condition with no significant failures.

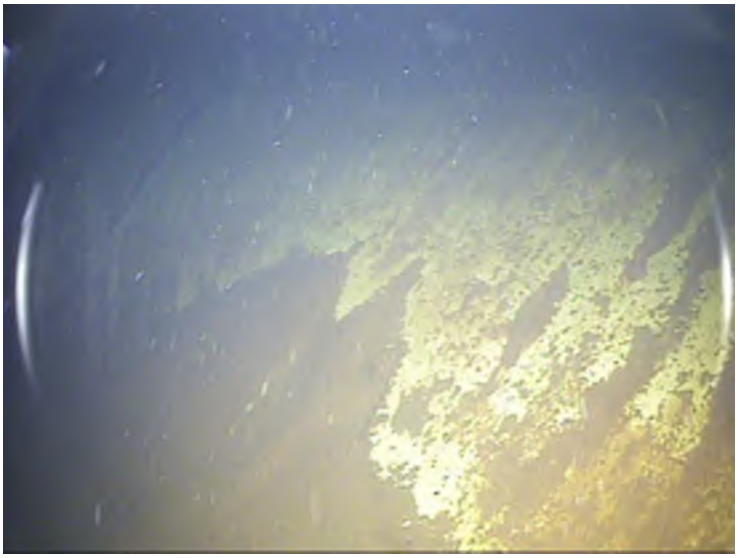
47) Same.

48) The wet interior ladder is in good condition. The ladder is equipped with a fall prevention device.



49) There is sediment accumulated on the lower sidewall and bowl.

50) Same.



51) The fill/draw pipe is in good condition. There is a deflector plate at the end of the pipe.

Appendix F

Insurance Services Organization (ISO) Report

Public Protection Classification

(PPC©)

Summary Report

Decatur FPSA

MICHIGAN

Prepared by

Insurance Services Office, Inc.
1000 Bishops Gate Blvd., Ste. 300
P.O. Box 5404
Mt. Laurel, New Jersey 08054-5404
1-800-444-4554

Report Created April 25, 2022

Effective August 1, 2022

PPC is a registered trademark of Insurance Services Office, Inc.

Background Information

Introduction

ISO collects and evaluates information from communities in the United States on their structure fire suppression capabilities. The data is analyzed using our Fire Suppression Rating Schedule (FSRS) and then a Public Protection Classification (PPC©) grade is assigned to the community. The surveys are conducted whenever it appears that there is a possibility of a PPC change. As such, the PPC program provides important, up-to-date information about fire protection services throughout the country.

The FSRS recognizes fire protection features only as they relate to suppression of first alarm structure fires. In many communities, fire suppression may be only a small part of the fire department's overall responsibility. ISO recognizes the dynamic and comprehensive duties of a community's fire service, and understands the complex decisions a community must make in planning and delivering emergency services. However, in developing a community's PPC grade, only features related to reducing property losses from structural fires are evaluated. Multiple alarms, simultaneous incidents and life safety are not considered in this evaluation. The PPC program evaluates the fire protection for small to average size buildings. Specific properties with a Needed Fire Flow in excess of 3,500 gpm are evaluated separately and assigned an individual PPC grade.

A community's investment in fire mitigation is a proven and reliable predictor of future fire losses. Statistical data on insurance losses bears out the relationship between excellent fire protection – as measured by the PPC program – and low fire losses. So, insurance companies use PPC information for marketing, underwriting, and to help establish fair premiums for homeowners and commercial fire insurance. In general, the price of fire insurance in a community with a good PPC grade is substantially lower than in a community with a poor PPC grade, assuming all other factors are equal.

ISO is an independent company that serves insurance companies, communities, fire departments, insurance regulators, and others by providing information about risk. ISO's expert staff collects information about municipal fire suppression efforts in communities throughout the United States. In each of those communities, ISO analyzes the relevant data and assigns a PPC grade – a number from 1 to 10. Class 1 represents an exemplary fire suppression program, and Class 10 indicates that the area's fire suppression program does not meet ISO's minimum criteria.

ISO's PPC program evaluates communities according to a uniform set of criteria, incorporating nationally recognized standards developed by the National Fire Protection Association and the American Water Works Association. A community's PPC grade depends on:

- **Needed Fire Flows**, which are representative building locations used to determine the theoretical amount of water necessary for fire suppression purposes.
- **Emergency Communications**, including emergency reporting, telecommunicators, and dispatching systems.
- **Fire Department**, including equipment, staffing, training, geographic distribution of fire companies, operational considerations, and community risk reduction.
- **Water Supply**, including inspection and flow testing of hydrants, alternative water supply operations, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires up to 3,500 gpm.

PPC is a registered trademark of Insurance Services Office, Inc.

Data Collection and Analysis

ISO has evaluated and classified over 39,000 fire protection areas across the United States using its FSRS. A combination of meetings between trained ISO field representatives and the dispatch center coordinator, community fire official, and water superintendent is used in conjunction with a comprehensive questionnaire to collect the data necessary to determine the PPC grade. In order for a community to obtain a grade better than a Class 9, three elements of fire suppression features are reviewed. These three elements are Emergency Communications, Fire Department, and Water Supply.

A review of the **Emergency Communications** accounts for 10% of the total classification. This section is weighted at **10 points,** as follows:

- Emergency Reporting 3 points
- Telecommunicators 4 points
- Dispatch Circuits 3 points

A review of the **Fire Department** accounts for 50% of the total classification. ISO focuses on a fire department's first alarm response and initial attack to minimize potential loss. The fire department section is weighted at **50 points,** as follows:

- Engine Companies 6 points
- Reserve Pumpers 0.5 points
- Pump Capacity 3 points
- Ladder/Service Companies 4 points
- Reserve Ladder/Service Trucks 0.5 points
- Deployment Analysis 10 points
- Company Personnel 15 points
- Training 9 points
- Operational considerations 2 points
- Community Risk Reduction 5.5 points (in addition to the 50 points above)

A review of the **Water Supply** system accounts for 40% of the total classification. ISO reviews the water supply a community uses to determine the adequacy for fire suppression purposes. The water supply system is weighted at **40 points,** as follows:

- Credit for Supply System 30 points
- Hydrant Size, Type & Installation 3 points
- Inspection & Flow Testing of Hydrants 7 points

PPC is a registered trademark of Insurance Services Office, Inc.

There is one additional factor considered in calculating the final score – **Divergence**.

Even the best fire department will be less than fully effective if it has an inadequate water supply. Similarly, even a superior water supply will be less than fully effective if the fire department lacks the equipment or personnel to use the water. The FSRS score is subject to modification by a divergence factor, which recognizes disparity between the effectiveness of the fire department and the water supply.

The Divergence factor mathematically reduces the score based upon the relative difference between the fire department and water supply scores. The factor is introduced in the final equation.

PPC Grade

The PPC grade assigned to the community will depend on the community's score on a 100-point scale:

PPC	Points
1	90.00 or more
2	80.00 to 89.99
3	70.00 to 79.99
4	60.00 to 69.99
5	50.00 to 59.99
6	40.00 to 49.99
7	30.00 to 39.99
8	20.00 to 29.99
9	10.00 to 19.99
10	0.00 to 9.99

The classification numbers are interpreted as follows:

- Class 1 through (and including) Class 8 represents a fire suppression system that includes an FSRS creditable dispatch center, fire department, and water supply.
- Class 8B is a special classification that recognizes a superior level of fire protection in otherwise Class 9 areas. It is designed to represent a fire protection delivery system that is superior except for a lack of a water supply system capable of the minimum FSRS fire flow criteria of 250 gpm for 2 hours.
- Class 9 is a fire suppression system that includes a creditable dispatch center, fire department but no FSRS creditable water supply.
- Class 10 does not meet minimum FSRS criteria for recognition, including areas that are beyond five road miles of a recognized fire station.

PPC is a registered trademark of Insurance Services Office, Inc.

New PPC program changes effective July 1, 2014

We have revised the PPC program to capture the effects of enhanced fire protection capabilities that reduce fire loss and fire severity in Split Class 9 and Split Class 8B areas (as outlined below). This new structure benefits the fire service, community, and property owner.

New classifications
Through ongoing research and loss experience analysis, we identified additional differentiation in fire loss experience within our PPC program, which resulted in the revised classifications. We based the differing fire loss experience on the fire suppression capabilities of each community. The new PPC classes will improve the predictive value for insurers while benefiting both commercial and residential property owners. Here are the new classifications and what they mean.

Split classifications
When we develop a split classification for a community — for example 5/9 — the first number is the class that applies to properties within 5 road miles of the responding fire station and 1,000 feet of a creditable water supply, such as a fire hydrant, suction point, or dry hydrant. The second number is the class that applies to properties within 5 road miles of a fire station but beyond 1,000 feet of a creditable water supply. We have revised the classification to reflect more precisely the risk of loss in a community, replacing Class 9 and 8B in the second part of a split classification with revised designations.

What's changed with the new classifications?
We've published the new classifications as "X" and "Y" — formerly the "9" and "8B" portion of the split classification, respectively. For example:

- A community currently displayed as a split 6/9 classification will now be a split 6/6X classification; with the "6X" denoting what was formerly classified as "9".
- Similarly, a community currently graded as a split 6/8B classification will now be a split 6/6Y classification, the "6Y" denoting what was formerly classified as "8B".
- Communities graded with single "9" or "8B" classifications will remain intact.

Prior Classification	New Classification
1/9	1/1X
2/9	2/2X
3/9	3/3X
4/9	4/4X
5/9	5/5X
6/9	6/6X
7/9	7/7X
8/9	8/8X
9	9

Prior Classification	New Classification
1/8B	1/1Y
2/8B	2/2Y
3/8B	3/3Y
4/8B	4/4Y
5/8B	5/5Y
6/8B	6/6Y
7/8B	7/7Y
8/8B	8/8Y
8B	8B

PPC is a registered trademark of Insurance Services Office, Inc.

What's changed?
As you can see, we're still maintaining split classes, but it's how we represent them to insurers that's changed. The new designations reflect a reduction in fire severity and loss and have the potential to reduce property insurance premiums.

Benefits of the revised split class designations

- To the fire service, the revised designations identify enhanced fire suppression capabilities used throughout the fire protection area
- To the community, the new classes reward a community's fire suppression efforts by showing a more reflective designation
- To the individual property owner, the revisions offer the potential for decreased property insurance premiums

New water class
Our data also shows that risks located more than 5 but less than 7 road miles from a responding fire station with a creditable water source within 1,000 feet had better loss experience than those farther than 5 road miles from a responding fire station with no creditable water source. We've introduced a new classification —10W — to recognize the reduced loss potential of such properties.

What's changed with Class 10W?
Class 10W is property-specific. Not all properties in the 5-to-7-mile area around the responding fire station will qualify. The difference between Class 10 and 10W is that the 10W-graded risk or property is within 1,000 feet of a creditable water supply. Creditable water supplies include fire protection systems using hauled water in any of the split classification areas.

What's the benefit of Class 10W?
10W gives credit to risks within 5 to 7 road miles of the responding fire station and within 1,000 feet of a creditable water supply. That's reflective of the potential for reduced property insurance premiums.

What does the fire chief have to do?
Fire chiefs don't have to do anything at all. The revised classifications went in place automatically effective July 1, 2014 (July 1, 2015 for Texas).

What if I have additional questions?
Feel free to contact ISO at 800.444.4554 or email us at PPC-Cust-Serv@iso.com.

PPC is a registered trademark of Insurance Services Office, Inc.

Distribution of PPC Grades

The 2020 published countrywide distribution of communities by the PPC grade is as follows:

Assistance

The PPC program offers help to communities, fire departments, and other public officials as they plan for, budget, and justify improvements. ISO is also available to assist in the understanding of the details of this evaluation.

The PPC program representatives can be reached by telephone at (800) 444-4554. The technical specialists at this telephone number have access to the details of this evaluation and can effectively speak with you about your questions regarding the PPC program. What's more, we can be reached via the internet at www.isomitigation.com/talk/.

We also have a website dedicated to our Community Hazard Mitigation Classification programs at www.isomitigation.com. Here, fire chiefs, building code officials, community leaders and other interested citizens can access a wealth of data describing the criteria used in evaluating how cities and towns are protecting residents from fire and other natural hazards. This website will allow you to learn more about the PPC program. The website provides important background information, insights about the PPC grading processes and technical documents. ISO is also pleased to offer Fire Chiefs Online — a special, secured website with information and features that can help improve your PPC grade, including a list of the Needed Fire Flows for all the commercial occupancies ISO has on file for your community. Visitors to the site can download information, see statistical results and also contact ISO for assistance.

In addition, on-line access to the FSRS and its commentaries is available to registered customers for a fee. However, fire chiefs and community chief administrative officials are given access privileges to this information without charge.

To become a registered fire chief or community chief administrative official, register at www.isomitigation.com.

PPC Review

ISO concluded its review of the fire suppression features being provided for Decatur FPSA. The resulting community classification is **Class 04/4Y**.

If the classification is a single class, the classification applies to properties with a Needed Fire Flow of 3,500 gpm or less in the community. If the classification is a split class (e.g., 6/XX):

- The first class (e.g., "6" in a 6/XX) applies to properties within 5 road miles of a recognized fire station and within 1,000 feet of a fire hydrant or alternate water supply.
- The second class (XX or XY) applies to properties beyond 1,000 feet of a fire hydrant but within 5 road miles of a recognized fire station.
- Alternative Water Supply: The first class (e.g., "6" in a 6/10) applies to properties within 5 road miles of a recognized fire station with no hydrant distance requirement.
- Class 10 applies to properties over 5 road miles of a recognized fire station.
- Class 10W applies to properties within 5 to 7 road miles of a recognized fire station with a recognized water supply within 1,000 feet.
- Specific properties with a Needed Fire Flow in excess of 3,500 gpm are evaluated separately and assigned an individual classification.

FSRS Feature	Earned Credit	Credit Available
Emergency Communications		
414. Credit for Emergency Reporting	**3.00**	**3**
422. Credit for Telecommunicators	**4.00**	**4**
432. Credit for Dispatch Circuits	**2.70**	**3**
440. Credit for Emergency Communications	**9.70**	**10**
Fire Department		
513. Credit for Engine Companies	**5.96**	**6**
523. Credit for Reserve Pumpers	**0.00**	**0.50**
532. Credit for Pump Capacity	**3.00**	**3**
549. Credit for Ladder Service	**1.77**	**4**
553. Credit for Reserve Ladder and Service Trucks	**0.00**	**0.50**
561. Credit for Deployment Analysis	**9.37**	**10**
571. Credit for Company Personnel	**2.80**	**15**
581. Credit for Training	**2.58**	**9**
730. Credit for Operational Considerations	**2.00**	**2**
590. Credit for Fire Department	**27.48**	**50**
Water Supply		
616. Credit for Supply System	**22.32**	**30**
621. Credit for Hydrants	**2.92**	**3**
631. Credit for Inspection and Flow Testing	**3.20**	**7**
640. Credit for Water Supply	**28.44**	**40**
Divergence	**-3.23**	**--**
1050. Community Risk Reduction	**3.71**	**5.50**
Total Credit	**66.10**	**105.50**

Emergency Communications

Ten percent of a community's overall score is based on how well the communications center receives and dispatches fire alarms. Our field representative evaluated:

- Communications facilities provided for the general public to report structure fires
- Enhanced 9-1-1 Telephone Service including wireless
- Computer-aided dispatch (CAD) facilities
- Alarm receipt and processing at the communication center
- Training and certification of telecommunicators
- Facilities used to dispatch fire department companies to reported structure fires

	Earned Credit	Credit Available
414. Credit Emergency Reporting	**3.00**	3
422. Credit for Telecommunicators	**4.00**	4
432. Credit for Dispatch Circuits	**2.70**	3
Item 440. Credit for Emergency Communications:	**9.70**	**10**

Item 414 - Credit for Emergency Reporting (3 points)

The first item reviewed is Item 414 "Credit for Emergency Reporting (CER)". This item reviews the emergency communication center facilities provided for the public to report fires including 911 systems (Basic or Enhanced), Wireless Phase I and Phase II, Voice over Internet Protocol, Computer Aided Dispatch and Geographic Information Systems for automatic vehicle location. ISO uses National Fire Protection Association (NFPA) 1221, *Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems* as the reference for this section.

Item 410. Emergency Reporting (CER)	Earned Credit	Credit Available
A./B. Basic 9-1-1, Enhanced 9-1-1 or No 9-1-1 For maximum credit, there should be an Enhanced 9-1-1 system, Basic 9-1-1 and No 9-1-1 will receive partial credit.	**20.00**	**20**
1. E9-1-1 Wireless Wireless Phase I using Static ALI (automatic location identification) Functionality (10 points); Wireless Phase II using Dynamic ALI Functionality (15 points); Both available will be 25 points	**25.00**	**25**
2. E9-1-1 Voice over Internet Protocol (VoIP) Static VoIP using Static ALI Functionality (10 points); Nomadic VoIP using Dynamic ALI Functionality (15 points); Both available will be 25 points	**25.00**	**25**
3. Computer Aided Dispatch Basic CAD (5 points); CAD with Management Information System (5 points); CAD with Interoperability (5 points)	**15.00**	**15**
4. Geographic Information System (GIS/AVL) The PSAP uses a fully integrated CAD/GIS management system with automatic vehicle location (AVL) integrated with a CAD system providing dispatch assignments. The individual fire departments being dispatched do not need GIS/AVL capability to obtain this credit.	**15.00**	**15**
Review of Emergency Reporting total:	**100.00**	**100**

Item 422- Credit for Telecommunicators (4 points)

The second item reviewed is Item 422 "Credit for Telecommunicators (TC)". This item reviews the number of Telecommunicators on duty at the center to handle fire calls and other emergencies. All emergency calls including those calls that do not require fire department action are reviewed to determine the proper staffing to answer emergency calls and dispatch the appropriate emergency response. The 2013 Edition of NFPA 1221, *Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems,* recommends that ninety-five percent of emergency calls shall be answered within 15 seconds and ninety-nine percent of emergency calls shall be answered within 40 seconds. In addition, NFPA recommends that eighty percent of emergency alarm processing shall be completed within 60 seconds and ninety-five percent of alarm processing shall be completed within 106 seconds of answering the call.

To receive full credit for operators on duty, ISO must review documentation to show that the communication center meets NFPA 1221 call answering and dispatch time performance measurement standards. This documentation may be in the form of performance statistics or other performance measurements compiled by the 9-1-1 software or other software programs that are currently in use such as Computer Aided Dispatch (CAD) or Management Information System (MIS).

Item 420. Telecommunicators (CTC)	Earned Credit	Credit Available
A1. Alarm Receipt (AR) Receipt of alarms shall meet the requirements in accordance with the criteria of NFPA 1221	**20.00**	**20**
A2. Alarm Processing (AP) Processing of alarms shall meet the requirements in accordance with the criteria of NFPA 1221	**20.00**	**20**
B. Emergency Dispatch Protocols (EDP) Telecommunicators have emergency dispatch protocols (EDP) containing questions and a decision-support process to facilitate correct call categorization and prioritization.	**20.00**	**20**
C. Telecommunicator Training and Certification (TTC) Telecommunicators meet the qualification requirements referenced in NFPA 1061, *Standard for Professional Qualifications for Public Safety Telecommunicator,* and/or the Association of Public-Safety Communications Officials - International (APCO) *Project 33.* Telecommunicators are certified in the knowledge, skills, and abilities corresponding to their job functions.	**20.00**	**20**
D. Telecommunicator Continuing Education and Quality Assurance (TQA) Telecommunicators participate in continuing education and/or in-service training and quality-assurance programs as appropriate for their positions	**20.00**	**20**
Review of Telecommunicators total:	**100.00**	**100**

Item 432 - Credit for Dispatch Circuits (3 points)

The third item reviewed is Item 432 “Credit for Dispatch Circuits (CDC)”. This item reviews the dispatch circuit facilities used to transmit alarms to fire department members. A “Dispatch Circuit” is defined in NFPA 1221 as “A circuit over which an alarm is transmitted from the communications center to an emergency response facility (ERF) or emergency response units (ERUs) to notify ERUs to respond to an emergency”. All fire departments (except single fire station departments with full-time firefighter personnel receiving alarms directly at the fire station) need adequate means of notifying all firefighter personnel of the location of reported structure fires. The dispatch circuit facilities should be in accordance with the general criteria of NFPA 1221. “Alarms” are defined in this Standard as “A signal or message from a person or device indicating the existence of an emergency or other situation that requires action by an emergency response agency”.

There are two different levels of dispatch circuit facilities provided for in the Standard – a primary dispatch circuit and a secondary dispatch circuit. In jurisdictions that receive 730 alarms or more per year (average of two alarms per 24-hour period), two separate and dedicated dispatch circuits, a primary and a secondary, are needed. In jurisdictions receiving fewer than 730 alarms per year, a second dedicated dispatch circuit is not needed. Dispatch circuit facilities installed but not used or tested (in accordance with the NFPA Standard) receive no credit.

The score for Credit for Dispatch Circuits (CDC) is influenced by monitoring for integrity of the primary dispatch circuit. There are up to 0.90 points available for this Item. Monitoring for integrity involves installing automatic systems that will detect faults and failures and send visual and audible indications to appropriate communications center (or dispatch center) personnel. ISO uses NFPA 1221 to guide the evaluation of this item. ISO's evaluation also includes a review of the communication system's emergency power supplies.

Item 432 “Credit for Dispatch Circuits (CDC)” = 2.70 points

Fire Department

Fifty percent of a community's overall score is based upon the fire department's structure fire suppression system. ISO's field representative evaluated:

- Engine and ladder/service vehicles including reserve apparatus
- Equipment carried
- Response to reported structure fires
- Deployment analysis of companies
- Available and/or responding firefighters
- Training

	Earned Credit	Credit Available
513. Credit for Engine Companies	**5.96**	6
523. Credit for Reserve Pumpers	**0.00**	0.5
532. Credit for Pumper Capacity	**3.00**	3
549. Credit for Ladder Service	**1.77**	4
553. Credit for Reserve Ladder and Service Trucks	**0.00**	0.5
561. Credit for Deployment Analysis	**9.37**	10
571. Credit for Company Personnel	**2.80**	15
581. Credit for Training	**2.58**	9
730. Credit for Operational Considerations	**2.00**	2
Item 590. Credit for Fire Department:	**27.48**	**50**

Basic Fire Flow

The Basic Fire Flow for the community is determined by the review of the Needed Fire Flows for selected buildings in the community. The fifth largest Needed Fire Flow is determined to be the Basic Fire Flow. The Basic Fire Flow has been determined to be 3500 gpm.

Item 513 - Credit for Engine Companies (6 points)

The first item reviewed is Item 513 "Credit for Engine Companies (CEC)". This item reviews the number of engine companies, their pump capacity, hose testing, pump testing and the equipment carried on the in-service pumpers. To be recognized, pumper apparatus must meet the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus* which include a minimum 250 gpm pump, an emergency warning system, a 300 gallon water tank, and hose. At least 1 apparatus must have a permanently mounted pump rated at 750 gpm or more at 150 psi.

The review of the number of needed pumpers considers the response distance to built-upon areas; the Basic Fire Flow; and the method of operation. Multiple alarms, simultaneous incidents, and life safety are not considered.

The greatest value of A, B, or C below is needed in the fire district to suppress fires in structures with a Needed Fire Flow of 3,500 gpm or less: **3 engine companies**

a) **1 engine companies** to provide fire suppression services to areas to meet NFPA 1710 criteria or within 1½ miles.

b) **3 engine companies** to support a Basic Fire Flow of 3500 gpm.

c) **3 engine companies** based upon the fire department's method of operation to provide a minimum two engine response to all first alarm structure fires.

The FSRS recognizes that there are **3 engine companies** in service.

The FSRS also reviews Automatic Aid. Automatic Aid is considered in the review as assistance dispatched automatically by contractual agreement between two communities or fire districts. That differs from mutual aid or assistance arranged case by case. ISO will recognize an Automatic Aid plan under the following conditions:

- It must be prearranged for first alarm response according to a definite plan. It is preferable to have a written agreement, but ISO may recognize demonstrated performance.
- The aid must be dispatched to all reported structure fires on the initial alarm.
- The aid must be provided 24 hours a day, 365 days a year.

FSRS Item 512.D "Automatic Aid Engine Companies" responding on first alarm and meeting the needs of the city for basic fire flow and/or distribution of companies are factored based upon the value of the Automatic Aid plan (up to 1.00 can be used as the factor). The Automatic Aid factor is determined by a review of the Automatic Aid provider's communication facilities, how they receive alarms from the graded area, inter-department training between fire departments, and the fire ground communications capability between departments.

For each engine company, the credited Pump Capacity (PC), the Hose Carried (HC), the Equipment Carried (EC) all contribute to the calculation for the percent of credit the FSRS provides to that engine company.

Item 513 "Credit for Engine Companies (CEC)" = 5.96 points

Item 523 - Credit for Reserve Pumpers (0.50 points)

The item is Item 523 “Credit for Reserve Pumpers (CRP)”. This item reviews the number and adequacy of the pumpers and their equipment. The number of needed reserve pumpers is 1 for each 8 needed engine companies determined in Item 513, or any fraction thereof.

Item 523 “Credit for Reserve Pumpers (CRP)” = 0.00 points

Item 532 – Credit for Pumper Capacity (3 points)

The next item reviewed is Item 532 “Credit for Pumper Capacity (CPC)”. The total pump capacity available should be sufficient for the Basic Fire Flow of 3500 gpm. The maximum needed pump capacity credited is the Basic Fire Flow of the community.

Item 532 “Credit for Pumper Capacity (CPC)” = 3.00 points

Item 549 – Credit for Ladder Service (4 points)

The next item reviewed is Item 549 “Credit for Ladder Service (CLS)”. This item reviews the number of response areas within the city with 5 buildings that are 3 or more stories or 35 feet or more in height, or with 5 buildings that have a Needed Fire Flow greater than 3,500 gpm, or any combination of these criteria. The height of all buildings in the city, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies. Response areas not needing a ladder company should have a service company. Ladders, tools and equipment normally carried on ladder trucks are needed not only for ladder operations but also for forcible entry, ventilation, salvage, overhaul, lighting and utility control.

The number of ladder or service companies, the height of the aerial ladder, aerial ladder testing and the equipment carried on the in-service ladder trucks and service trucks is compared with the number of needed ladder trucks and service trucks and an FSRS equipment list. Ladder trucks must meet the general criteria of NFPA 1901, *Standard for Automotive Fire Apparatus* to be recognized.

The number of needed ladder-service trucks is dependent upon the number of buildings 3 stories or 35 feet or more in height, buildings with a Needed Fire Flow greater than 3,500 gpm, and the method of operation.

The FSRS recognizes that there are **1 ladder companies** in service. These companies are needed to provide fire suppression services to areas to meet NFPA 1710 criteria or within 2½ miles and the number of buildings with a Needed Fire Flow over 3,500 gpm or 3 stories or more in height, or the method of operation.

The FSRS recognizes that there are **0 service companies** in service.

Item 549 “Credit for Ladder Service (CLS)” = 1.77 points

Item 553 – Credit for Reserve Ladder and Service Trucks (0.50 points)

The next item reviewed is Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)". This item considers the adequacy of ladder and service apparatus when one (or more in larger communities) of these apparatus are out of service. The number of needed reserve ladder and service trucks is 1 for each 8 needed ladder and service companies that were determined to be needed in Item 540, or any fraction thereof.

Item 553 "Credit for Reserve Ladder and Service Trucks (CRLS)" = 0.00 points

Item 561 – Deployment Analysis (10 points)

Next, Item 561 "Deployment Analysis (DA)" is reviewed. This Item examines the number and adequacy of existing engine and ladder-service companies to cover built-upon areas of the city.

To determine the Credit for Distribution, first the Existing Engine Company (EC) points and the Existing Engine Companies (EE) determined in Item 513 are considered along with Ladder Company Equipment (LCE) points, Service Company Equipment (SCE) points, Engine-Ladder Company Equipment (ELCE) points, and Engine-Service Company Equipment (ESCE) points determined in Item 549.

Secondly, as an alternative to determining the number of needed engine and ladder/service companies through the road-mile analysis, a fire protection area may use the results of a systematic performance evaluation. This type of evaluation analyzes computer-aided dispatch (CAD) history to demonstrate that, with its current deployment of companies, the fire department meets the time constraints for initial arriving engine and initial full alarm assignment in accordance with the general criteria of in NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments.*

A determination is made of the percentage of built upon area within 1½ miles of a first-due engine company and within 2½ miles of a first-due ladder-service company.

Item 561 "Credit Deployment Analysis (DA)" = 9.37 points

Item 571 – Credit for Company Personnel (15 points)

Item 571 "Credit for Company Personnel (CCP)" reviews the average number of existing firefighters and company officers available to respond to reported first alarm structure fires in the city.

The on-duty strength is determined by the yearly average of total firefighters and company officers on-duty considering vacations, sick leave, holidays, "Kelley" days and other absences. When a fire department operates under a minimum staffing policy, this may be used in lieu of determining the yearly average of on-duty company personnel.

Firefighters on apparatus not credited under Items 513 and 549 that regularly respond to reported first alarms to aid engine, ladder, and service companies are included in this item as increasing the total company strength.

Firefighters staffing ambulances or other units serving the general public are credited if they participate in fire-fighting operations, the number depending upon the extent to which they are available and are used for response to first alarms of fire.

On-Call members are credited on the basis of the average number staffing apparatus on first alarms. Off-shift career firefighters and company officers responding on first alarms are considered on the same basis as on-call personnel. For personnel not normally at the fire station, the number of responding firefighters and company officers is divided by 3 to reflect the time needed to assemble at the fire scene and the reduced ability to act as a team due to the various arrival times at the fire location when compared to the personnel on-duty at the fire station during the receipt of an alarm.

The number of Public Safety Officers who are positioned in emergency vehicles within the jurisdiction boundaries may be credited based on availability to respond to first alarm structure fires. In recognition of this increased response capability the number of responding Public Safety Officers is divided by 2.

The average number of firefighters and company officers responding with those companies credited as Automatic Aid under Items 513 and 549 are considered for either on-duty or on-call company personnel as is appropriate. The actual number is calculated as the average number of company personnel responding multiplied by the value of AA Plan determined in Item 512.D.

The maximum creditable response of on-duty and on-call firefighters is 12, including company officers, for each existing engine and ladder company and 6 for each existing service company.

Chief Officers are not creditable except when more than one chief officer responds to alarms; then extra chief officers may be credited as firefighters if they perform company duties.

The FSRS recognizes **0.00 on-duty personnel** and an average of **13.43 on-call personnel** responding on first alarm structure fires.

Item 571 "Credit for Company Personnel (CCP)" = 2.80 points

Item 581 – Credit for Training (9 points)

Training	Earned Credit	Credit Available
A. Facilities, and Use For maximum credit, each firefighter should receive 18 hours per year in structure fire related subjects as outlined in NFPA 1001.	**9.66**	**35**
B. Company Training For maximum credit, each firefighter should receive 16 hours per month in structure fire related subjects as outlined in NFPA 1001.	**1.86**	**25**
C. Classes for Officers For maximum credit, each officer should be certified in accordance with the general criteria of NFPA 1021. Additionally, each officer should receive 12 hours of continuing education on or off site.	**6.00**	**12**
D. New Driver and Operator Training For maximum credit, each new driver and operator should receive 60 hours of driver/operator training per year in accordance with NFPA 1002 and NFPA 1451.	**2.33**	**5**
E. Existing Driver and Operator Training For maximum credit, each existing driver and operator should receive 12 hours of driver/operator training per year in accordance with NFPA 1002 and NFPA 1451.	**3.38**	**5**
F. Training on Hazardous Materials For maximum credit, each firefighter should receive 6 hours of training for incidents involving hazardous materials in accordance with NFPA 472.	**0.41**	**1**
G. Recruit Training For maximum credit, each firefighter should receive 240 hours of structure fire related training in accordance with NFPA 1001 within the first year of employment or tenure.	**5.00**	**5**
H. Pre-Fire Planning Inspections For maximum credit, pre-fire planning inspections of each commercial, industrial, institutional, and other similar type building (all buildings except 1-4 family dwellings) should be made annually by company members. Records of inspections should include up-to date notes and sketches.	**0.00**	**12**

Item 580 "Credit for Training (CT)" = 2.58 points

Item 730 – Operational Considerations (2 points)

Item 730 "Credit for Operational Considerations (COC)" evaluates fire department standard operating procedures and incident management systems for emergency operations involving structure fires.

Operational Considerations	Earned Credit	Credit Available
Standard Operating Procedures The department should have established SOPs for fire department general emergency operations	**50**	**50**
Incident Management Systems The department should use an established incident management system (IMS)	**50**	**50**
Operational Considerations total:	**100**	**100**

Item 730 "Credit for Operational Considerations (COC)" = 2.00 points

Water Supply

Forty percent of a community's overall score is based on the adequacy of the water supply system. The ISO field representative evaluated:

- the capability of the water distribution system to meet the Needed Fire Flows at selected locations up to 3,500 gpm.
- size, type and installation of fire hydrants.
- inspection and flow testing of fire hydrants.

	Earned Credit	Credit Available
616. Credit for Supply System	**22.32**	30
621. Credit for Hydrants	**2.92**	3
631. Credit for Inspection and Flow Testing	**3.20**	7
Item 640. Credit for Water Supply:	**28.44**	**40**

Item 616 – Credit for Supply System (30 points)

The first item reviewed is Item 616 "Credit for Supply System (CSS)". This item reviews the rate of flow that can be credited at each of the Needed Fire Flow test locations considering the supply works capacity, the main capacity and the hydrant distribution. The lowest flow rate of these items is credited for each representative location. A water system capable of delivering 250 gpm or more for a period of two hours plus consumption at the maximum daily rate at the fire location is considered minimum in the ISO review.

Where there are 2 or more systems or services distributing water at the same location, credit is given on the basis of the joint protection provided by all systems and services available.

The supply works capacity is calculated for each representative Needed Fire Flow test location, considering a variety of water supply sources. These include public water supplies, emergency supplies (usually accessed from neighboring water systems), suction supplies (usually evidenced by dry hydrant installations near a river, lake or other body of water), and supplies developed by a fire department using large diameter hose or vehicles to shuttle water from a source of supply to a fire site. The result is expressed in gallons per minute (gpm).

The normal ability of the distribution system to deliver Needed Fire Flows at the selected building locations is reviewed. The results of a flow test at a representative test location will indicate the ability of the water mains (or fire department in the case of fire department supplies) to carry water to that location.

The hydrant distribution is reviewed within 1,000 feet of representative test locations measured as hose can be laid by apparatus.

For maximum credit, the Needed Fire Flows should be available at each location in the district. Needed Fire Flows of 2,500 gpm or less should be available for 2 hours; and Needed Fire Flows of 3,000 and 3,500 gpm should be obtainable for 3 hours.

Item 616 "Credit for Supply System (CSS)" = 22.32 points

Item 621 – Credit for Hydrants (3 points)

The second item reviewed is Item 621 "Credit for Hydrants (CH)". This item reviews the number of fire hydrants of each type compared with the total number of hydrants.

There are a total of 125 hydrants in the graded area.

620. Hydrants, - Size, Type and Installation	Number of Hydrants
A. With a 6 -inch or larger branch and a pumper outlet with or without 2½ -inch outlets	114
B. With a 6 -inch or larger branch and no pumper outlet but two or more 2½ -inch outlets, or with a small foot valve, or with a small barrel	10
C./D. With only a 2½ -inch outlet or with less than a 6 -inch branch	1
E./F. Flush Type, Cistern, or Suction Point	0

Item 621 "Credit for Hydrants (CH)" = 2.92 points

Item 630 – Credit for Inspection and Flow Testing (7 points)

The third item reviewed is Item 630 "Credit for Inspection and Flow Testing (CIT)". This item reviews the fire hydrant inspection frequency, and the completeness of the inspections. Inspection of hydrants should be in accordance with AWWA M-17, *Installation, Field Testing and Maintenance of Fire Hydrants.*

Frequency of Inspection (FI): Average interval between the 3 most recent inspections.

Frequency	Points
1 year	30
2 years	20
3 years	10
4 years	5
5 years or more	No Credit

Note: The points for inspection frequency are reduced by 10 points if the inspections are incomplete or do not include a flushing program. An additional reduction of 10 points are made if hydrants are not subjected to full system pressure during inspections. If the inspection of cisterns or suction points does not include actual drafting with a pumper, or back-flushing for dry hydrants, 20 points are deducted.

Total points for Inspections = 3.20 points

Frequency of Fire Flow Testing (FF): Average interval between the 3 most recent inspections.

Frequency	Points
5 years	40
6 years	30
7 years	20
8 years	10
9 years	5
10 years or more	No Credit

Total points for Fire Flow Testing = 0.00 points

Item 631 "Credit for Inspection and Fire Flow Testing (CIT)" = 3.20 points

Divergence = -3.23

The Divergence factor mathematically reduces the score based upon the relative difference between the fire department and water supply scores. The factor is introduced in the final equation.

Community Risk Reduction

	Earned Credit	Credit Available
1025. Credit for Fire Prevention and Code Enforcement (CPCE)	**1.17**	2.2
1033. Credit for Public Fire Safety Education (CFSE)	**1.56**	2.2
1044. Credit for Fire Investigation Programs (CIP)	**0.98**	1.1
Item 1050. Credit for Community Risk Reduction	**3.71**	**5.50**

Item 1025 – Credit for Fire Prevention Code Adoption and Enforcement (2.2 points)	Earned Credit	Credit Available
Fire Prevention Code Regulations (PCR)	10.00	10

Evaluation of fire prevention code regulations in effect.		
Fire Prevention Staffing (PS) Evaluation of staffing for fire prevention activities.	**1.28**	**8**
Fire Prevention Certification and Training (PCT) Evaluation of the certification and training of fire prevention code enforcement personnel.	**4.25**	**6**
Fire Prevention Programs (PCP) Evaluation of fire prevention programs.	**5.80**	**16**
Review of Fire Prevention Code and Enforcement (CPCE) subtotal:	**21.33**	**40**

Item 1033 – Credit for Public Fire Safety Education (2.2 points)	**Earned Credit**	**Credit Available**
Public Fire Safety Educators Qualifications and Training (FSQT) Evaluation of public fire safety education personnel training and qualification as specified by the authority having jurisdiction.	**5.50**	**10**
Public Fire Safety Education Programs (FSP) Evaluation of programs for public fire safety education.	**22.78**	**30**
Review of Public Safety Education Programs (CFSE) subtotal:	**28.28**	**40**

Item 1044 – Credit for Fire Investigation Programs (1.1 points)	**Earned Credit**	**Credit Available**
Fire Investigation Organization and Staffing (IOS) Evaluation of organization and staffing for fire investigations.	**8.00**	**8**
Fire Investigator Certification and Training (IQT) Evaluation of fire investigator certification and training.	**3.90**	**6**
Use of National Fire Incident Reporting System (IRS) Evaluation of the use of the National Fire Incident Reporting System (NFIRS) for the 3 years before the evaluation.	**6.00**	**6**
Review of Fire Investigation Programs (CIP) subtotal:	**17.90**	**20**

Summary of PPC Review
for
Decatur FPSA

FSRS Item	Earned Credit	Credit Available
Emergency Communications		
414. Credit for Emergency Reporting	**3.00**	**3**
422. Credit for Telecommunicators	**4.00**	**4**
432. Credit for Dispatch Circuits	**2.70**	**3**
440. Credit for Emergency Communications	**9.70**	**10**
Fire Department		
513. Credit for Engine Companies	**5.96**	**6**
523. Credit for Reserve Pumpers	**0.00**	**0.5**
532. Credit for Pumper Capacity	**3.00**	**3**
549. Credit for Ladder Service	**1.77**	**4**
553. Credit for Reserve Ladder and Service Trucks	**0.00**	**0.5**
561. Credit for Deployment Analysis	**9.37**	**10**
571. Credit for Company Personnel	**2.80**	**15**
581. Credit for Training	**2.58**	**9**
730. Credit for Operational Considerations	**2.00**	**2**
590. Credit for Fire Department	**27.48**	**50**
Water Supply		
616. Credit for Supply System	**22.32**	**30**
621. Credit for Hydrants	**2.92**	**3**
631. Credit for Inspection and Flow Testing	**3.20**	**7**
640. Credit for Water Supply	**28.44**	**40**
Divergence	**-3.23**	**--**
1050. Community Risk Reduction	**3.71**	**5.50**
Total Credit	**66.10**	**105.5**

Final Community Classification = 04/4Y

PPC is a registered trademark of Insurance Services Office, Inc.

Appendix G

Hydraulic Analysis

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2021 AVG DAILY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-01

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2021 AVG DAILY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-02

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2021 MAX DAILY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-03
OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2021 MAX DAILY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-04

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2021 PEAK HOURLY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-05

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2021 PEAK HOURLY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-06

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 AVG DAILY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-07

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 AVG DAILY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-08

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 MAX DAILY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-09

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 MAX DAILY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-10

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 PEAK HOURLY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-11

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 PEAK HOURLY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-12

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 AVG DAILY FLOW WITH 5-YEAR IMPROVEMENTS
STATIC PRESSURE

JOB No. 202108

202108-13
OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 AVG DAILY FLOW WITH 5-YEAR IMPROVEMENTS
FIRE FLOW

JOB No. 202108

202108-14

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 MAX DAILY FLOW WITH 5-YEAR IMPORVEMENTS
STATIC PRESSURE

JOB No. 202108

202108-15

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 MAX DAILY FLOW WITH 5-YEAR IMPROVEMENTS
FIRE FLOW

JOB No. 202108

202108-16

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 PEAK HOURLY FLOW WITH 5-YEAR IMPROVEMENTS
STATIC PRESSURE

JOB No. 202108

202108-17
OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2026 PEAK HOURLY FLOW WITH 5-YEAR IMPROVEMENTS
FIRE FLOW

JOB No. 202108

202108-18

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 AVG DAILY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-19

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 AVG DAILY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-20

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 MAX DAILY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-21

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 MAX DAILY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-22

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 PEAK HOURLY FLOW ON CURRENT SYSTEM
STATIC PRESSURE

JOB No. 202108

202108-23

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 PEAK HOURLY FLOW ON CURRENT SYSTEM
FIRE FLOW

JOB No. 202108

202108-24

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 AVG DAILY FLOW WITH 20-YEAR IMPROVEMENTS
STATIC PRESSURE

JOB No. 202108

202108-25

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 AVG DAILY FLOW WITH 20-YEAR IMPROVEMENTS
FIRE FLOW

JOB No. 202108

202108-26

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 MAX DAILY FLOW WITH 20-YEAR IMPROVEMENTS
STATIC PRESSURE

JOB No. 202108

202108-27

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 MAX DAILY FLOW WITH 20-YEAR IMPROVEMENTS
FIRE FLOW

JOB No. 202108

202108-28

OF 30

LEGEND

STATIC PRESSURE (psi)

- 40
- 45
- 50
- 55
- 60
- 65
- 70

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 PEAK HOURLY FLOW WITH 20-YEAR IMPROVEMENTS
STATIC PRESSURE

JOB No. 202108

202108-29

OF 30

LEGEND

AVAILABLE FIRE FLOW (GPM)

- 500
- 1000
- 1500
- 2000
- 2500
- 3000
- 3500

N

0 400 600 800

1 inch = 400 ft.

WIGHTMAN

BENTON HARBOR
269.927.0100

KALAMAZOO
269.327.3532

ALLEGAN
269.673.8465

ROYAL OAK
248.791.1371

www.gowightman.com

PROJECT NAME:

WATER RELIABILITY STUDY

VILLAGE OF DECATUR
114 N. PHELPS STREET
DECATUR, MI 49045

00 4/28/2022 AP
HYDRAULIC MODELING RESULTS

REVISIONS

THE REPRODUCTION, COPYING OR OTHER USE OF THIS DRAWING WITHOUT WRITTEN CONSENT IS PROHIBITED.
© WIGHTMAN & ASSOCIATES, INC.

DATE: MAY 2022

SCALE: 1" = 400'

2041 PEAK HOURLY FLOW WITH 20-YEAR IMPROVEMENTS
FIRE FLOW

JOB No. 202108

202108-30

OF 30

Appendix H

Water AMP Capital Improvements Plan

Summary of Drinking Water Capital Improvement Projects

Village of Decatur

Year	Project Name	Estimated Cost
2022	Austin Boulevard and Pine Street Water Main	$210,000
2022	Cedar Street - Pine to Phelps	$175,000
2022	George Street Water Main	$242,000
2022	Kinney Street and Douglas Drive Water Main	$192,000
2022	Lee Avenue and Memory Lane Water Main	$185,000
2022	Pine Street Water Main	$207,000
2022	Water Tapping Machine	$5,000
2024	Hand Held Meter Reader	$9,000
2024	Well 4 Pump Maintenance - 2024	$19,000
2024	White Oak Street Water Main	$135,000
2025	Miscellaneous Hydrant Replacements	$44,000
2025	Rosewood Avenue Water Main	$70,000
2025	Well 3 Rehabilitation	$25,000
2025	Well 4 VFD Replacement	$7,000
2026	Beers Street Water Main - 2026	$144,000
2027	Beers Street Water Main - 2027	$130,000
2028	Beers Street Water Main - 2028	$108,000
2028	Recoat the Elevated Storage Tank - Exterior	$69,000
2028	Well 2 Pump Maintenance - 2028	$19,000
2029	Well 3 Pump Maintenance - 2029	$19,000
2029	Williams Street Water Main	$116,000
2030	Replace Well 3 and 4 Standby Generator	$65,000
2030	Water Meter Replacement - 2030	$100,000
2032	Well 4 Pump Maintenance - 2032	$19,000
2033	Replace Well 2 and Well 3 Control Panels	$11,000
2033	Water Meter Replacement - 2033	$100,000
2033	Well 4 Maintenance	$4,000
2034	Well 2 Building Maintenance	$4,000
2034	Well 3 Maintenance	$4,000
2035	Replace Portable Generator for Well 2	$32,000
2035	Replace Well 4 Control Panel	$6,000
2036	Edgar Bergen Boulevard and N. East Street Water Main	$410,000
2036	Well 2 Pump Maintenance - 2036	$19,000

Capital Improvement Project List Continued On Next Page

(269) 673-8465 — 1670 Lincoln Road, Allegan, MI
(269) 927-0100 — 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 — 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Summary of Drinking Water Capital Improvement Projects (cont.)

Village of Decatur

Year	Project Name	Estimated Cost
2037	Recoat the Elevated Storage Tank - Interior	$88,000
2037	Well 3 Pump Maintenance - 2037	$19,000
2037	Well 3 VFD Replacement	$7,000
2038	John Street Water Main	$216,000

Total Estimated Project Cost for Twenty Year Drinking Water CIP =	$3,234,000

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

This Page Intentionally Left Blank

(269) 673-8465 1670 LINCOLN ROAD, ALLEGAN, MI
(269) 927-0100 2303 PIPESTONE ROAD, BENTON HARBOR, MI
(269) 327-3532 9835 PORTAGE ROAD, PORTAGE, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2022**
Total Project Cost:	**$210,000**

Project Title: Austin Boulevard and Pine Street Water Main

System: Drinking Water

Project Description

Replace the existing 4-inch water main running under Pine Street from Cedar Street to Williams Street and under Austin Boulevard from Kinney Road to Memory Lane with 6-inch water main.

Project Justification/Benefit

The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. In addition, there have been three recent water main breaks in this area, all of which resulted from shear forces likely due to poor quality soil used for backfill when the water main was originally installed. Replacing the water main will allow for good quality backfill to be installed and for the pipe to be properly bedded, reducing the likelihood of further water main breaks.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	210,000
TOTAL	**$**	**210,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Austin Boulevard and Pine Street Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
715	FT	Water Main, DI, 6 inch, Tr Det G - Pine	$ 100	$ 71,500
740	FT	Water Main, DI, 6 inch, Tr Det G - Austin	$ 100	$ 74,000

Project Costs		
Construction Costs (Subtotal)	$	145,500
Engineering 7 %	$	10,200
Construction Observation 8 %	$	11,700
Contingency 25 %	$	41,900
TOTAL	**$**	**210,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2022**
Total Project Cost:	**$175,000**

Project Title: Cedar Street - Pine to Phelps

System: Drinking Water

Project Description

Replace the existing 4-inch water main running under Cedar Street from Pine Street to N. Phelps Street with 6-inch water main.

Project Justification/Benefit

The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. In addition, there have been four recent water main breaks in this area, all of which resulted from shear forces likely due to poor quality soil used for backfill when the water main was originally installed. Replacing the water main will allow for good quality backfill to be installed and for the pipe to be properly bedded, reducing the likelihood of further water main breaks.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	175,000
TOTAL	**$**	**175,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Cedar Street - Pine to Phelps

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1,215	FT	Water Main, DI, 6 inch, Tr Det G	$ 100	$ 121,500

Project Costs		
Construction Costs (Subtotal)	$	121,500
Engineering 7 %	$	8,600
Construction Observation 8 %	$	9,800
Contingency 25 %	$	35,000
TOTAL	**$**	**175,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2022**
Total Project Cost:	**$242,000**

Project Title: George Street Water Main

System: Drinking Water

Project Description
Replace the existing 4-inch water main running under George Street from Mason Street to the southeast Village limits with 8-inch water main.

Project Justification/Benefit
The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. In addition, due to this line being a dead end pipe, the latest Water Reliability Study indicated an 8-inch pipe is necessary to provide the recommended fire flows along the length of the pipe. Increasing the existing 4-inch water main to 8-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	242,000
TOTAL	**$**	**242,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: George Street Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1,600	FT	Water Main, DI, 8 inch, Tr Det G	$ 105	$ 168,000

Project Costs		
Construction Costs (Subtotal)	$	168,000
Engineering 7 %	$	11,800
Construction Observation 8 %	$	13,500
Contingency 25 %	$	48,400
TOTAL	**$**	**242,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2022**
Total Project Cost:	**$192,000**

Project Title: Kinney Street and Douglas Drive Water Main

System: Drinking Water

Project Description

Replace the existing 4-inch water main running under Kinney Street and Douglas Drive from Pine Street to Austin Boulevard with 6-inch water main.

Project Justification/Benefit

The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. In addition, there has been a recent water main break in this area, which resulted from shear forces likely due to poor quality soil used for backfill when the water main was originally installed. Replacing the water main will allow for good quality backfill to be installed and for the pipe to be properly bedded, reducing the likelihood of further water main breaks.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	192,000
TOTAL	**$**	**192,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Kinney Street and Douglas Drive Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
660	FT	Water main, DI, 6 inch, Tr Det G - Kinney	$ 100	$ 66,000
670	FT	Water main, DI, 6 inch, Tr Det G - Douglas	$ 100	$ 67,000

Project Costs		
Construction Costs (Subtotal)	$	133,000
Engineering 7 %	$	9,400
Construction Observation 8 %	$	10,700
Contingency 25 %	$	38,300
TOTAL	**$**	**192,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2022**
Total Project Cost:	**$185,000**

Project Title: Lee Avenue and Memory Lane Water Main

System: Drinking Water

Project Description
Replace the existing 4-inch water main running under Lee Avenue from Pine Street to Austin Boulevard and under Memory Lane from Cedar Street to Austin Boulevard with 6-inch water main.

Project Justification/Benefit
The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. In addition, there have been two recent water main breaks in this area, all of which resulted from shear forces likely due to poor quality soil used for backfill when the water main was originally installed. Replacing the water main will allow for good quality backfill to be installed and for the pipe to be properly bedded, reducing the likelihood of further water main breaks.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	185,000
TOTAL	**$**	**185,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Lee Avenue and Memory Lane Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
670	FT	Water main, DI, 6 inch, Tr Det G - Lee	$ 100	$ 67,000
610	FT	Water main, DI, 6 inch, Tr Det G - Memory	$ 100	$ 61,000

Project Costs		
Construction Costs (Subtotal)	$	128,000
Engineering 7 %	$	9,000
Construction Observation 8 %	$	10,300
Contingency 25 %	$	36,900
TOTAL	**$**	**185,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2022**
Total Project Cost:	**$207,000**

Project Title: Pine Street Water Main

System: Drinking Water

Project Description
Replace the existing 4-inch water main running under Pine Street from Cedar Street to Lake Drive with 6-inch water main.

Project Justification/Benefit
The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. In addition, there have been three recent water main breaks in this area, all of which resulted from shear forces likely due to poor quality soil used for backfill when the water main was originally installed. Replacing the water main will allow for good quality backfill to be installed and for the pipe to be properly bedded, reducing the likelihood of further water main breaks.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	207,000
TOTAL	**$**	**207,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Pine Street Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1,435	FT	Water Main, DI, 6 inch, Tr Det G - Pine	$ 100	$ 143,500

Project Costs		
Construction Costs (Subtotal)	$	143,500
Engineering 7 %	$	10,100
Construction Observation 8 %	$	11,500
Contingency 25 %	$	41,300
TOTAL	**$**	**207,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2022**
Total Project Cost:	**$5,000**

Project Title: Water Tapping Machine

System: Drinking Water

Project Description
Buy a new water tapping machine.

Project Justification/Benefit
The current water tapping machine was purchased in 1995. Water tapping machines have an intended useful life of approximately 22 years and the current machine is on the verge of complete failure.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	5,000
TOTAL	**$**	**5,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Water Tapping Machine

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Water Taping Machine	$ 4,000	$ 4,000

Project Costs			
Construction Costs (Subtotal)		$	4,000
Engineering	0 %	$	-
Construction Observation	0 %	$	-
Contingency	25 %	$	1,000
TOTAL		**$**	**5,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2024**
Total Project Cost:	**$9,000**

Project Title: Hand Held Meter Reader

System: Drinking Water

Project Description
Buy a hand held meter reader.

Project Justification/Benefit
Water meter readers are subject to a rough environment and potentially have a short life span. Purchasing an additional water meter reader will provide a level of redundancy in the ability to automatically read water meters. Doing the readings automatically increases the accuracy of reading the individual water meters and reduces the amount of labor required to do so.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	9,000
TOTAL	**$**	**9,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Hand Held Meter Reader

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Hand held meter reader	$ 7,000	$ 7,000

Project Costs			
Construction Costs (Subtotal)		$	7,000
Engineering	0 %	$	-
Construction Observation	0 %	$	-
Contingency	25 %	$	1,800
TOTAL		**$**	**9,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2024**
Total Project Cost:	**$19,000**

Project Title: Well 4 Pump Maintenance - 2024

System: Drinking Water

Project Description
Remove the pump from Well 4, rehabilitate the pump, and rehabilitate or replace the motor.

Project Justification/Benefit
Regular pump maintenance can extend the life of a well pump and restore performance to near- or like-new conditions. Recommended maintenance intervals are 8 to 10 years and the pump for Well 4 was last rehabilitated in 2012.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	19,000
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 4 Pump Maintenance - 2024

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 4 pump and motor maintenance	$ 15,000	$ 15,000

Project Costs		
Construction Costs (Subtotal)	$	15,000
Engineering 0 %	$	-
Construction Observation 0 %	$	-
Contingency 25 %	$	3,800
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2024**
Total Project Cost:	**$135,000**

Project Title: White Oak Street Water Main

System: Drinking Water

Project Description

Replace the existing 4-inch water main running under White Oak Street from Champion Street to Sorbak Lane with 6-inch water main.

Project Justification/Benefit

The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. In addition, this water main was installed at a relatively shallow depth and there have been three recent water main breaks in this area. Replacing the water main will allow for the main to be installed deeper and to have good quality backfill installed, reducing the likelihood of further water main breaks.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	135,000
TOTAL	**$**	**135,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: White Oak Street Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
900	FT	Water Main, DI, 6 inch, Tr Det G	$ 100	$ 90,000

Project Costs			
Construction Costs (Subtotal)		$	90,000
Engineering	10 %	$	9,000
Construction Observation	10 %	$	9,000
Contingency	25 %	$	27,000
TOTAL		**$**	**135,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2025**
Total Project Cost:	**$44,000**

Project Title: Miscellaneous Hydrant Replacements

System: Drinking Water

Project Description

Replace existing hydrants that have issues such as leaking nuts and/or no pumper heads.

Project Justification/Benefit

Some of the existing fire hydrants in the Village have mechanical issues such as leaking nuts, or are older-model hydrants lacking modern pumper head connections. Replacing these hydrants separate from a water main project would alleviate mechanical issues with the fire hydrants in the Village and would bring the hydrants up to current standards, increasing their ability to provide enough flow in the event of a fire.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	44,000
TOTAL	**$**	**44,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Miscellaneous Hydrant Replacements

Quantity	Unit of Measure	Item	Unit Price	Subtotal
10	EA	Hydrant Replacement	$ 3,500	$ 35,000

Project Costs		
Construction Costs (Subtotal)		$ 35,000
Engineering	0 %	$ -
Construction Observation	0 %	$ -
Contingency	25 %	$ 8,800
TOTAL		**$ 44,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2025**
Total Project Cost:	**$70,000**

Project Title: Rosewood Avenue Water Main

System: Drinking Water

Project Description

Replace the existing 4-inch water main running under Rosewood Avenue from Shady Lane to Edgar Bergen Boulevard with 6-inch water main.

Project Justification/Benefit

The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. In addition, this water main has had two recent water main breaks. Replacing the water main will allow for any underlying issues contributing to the breaks to be addressed, reducing the likelihood of further water main breaks.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	70,000
TOTAL	**$**	**70,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Rosewood Avenue Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
400	FT	Water Main, DI, 6 inch, Tr Det G	$ 100	$ 40,000

Project Costs			
Construction Costs (Subtotal)		$	40,000
Engineering	25 %	$	10,000
Construction Observation	15 %	$	6,000
Contingency	25 %	$	14,000
TOTAL		**$**	**70,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2025**
Total Project Cost:	**$25,000**

Project Title: Well 3 Rehabilitation

System: Drinking Water

Project Description
Chemically clean and rehabilitate Well 3.

Project Justification/Benefit
The screens of drinking water wells can become clogged over time with mineral deposits and/or biomass growth, while the surrounding strata can become clogged with clay or silt. These issues cause the performance of a well to deteriorate. Periodic chemical cleaning and well rehabilitation will restore the performance (specific capacity) of the well to near- or like-new conditions and extend the useful life of the well.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	25,000
TOTAL	**$**	**25,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 3 Rehabilitation

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 3 Rehabilitation	$ 20,000	$ 20,000

Project Costs			
Construction Costs (Subtotal)		$	20,000
Engineering	0 %	$	-
Construction Observation	0 %	$	-
Contingency	25 %	$	5,000
TOTAL		**$**	**25,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2025**
Total Project Cost:	**$7,000**

Project Title: Well 4 VFD Replacement

System: Drinking Water

Project Description
Replace the variable frequency drive (VFD) for Well 4.

Project Justification/Benefit
VFDs used in water service have an expected useful life of approximately 20 years. Planning for replacement of the VFD, though it is not in need of replacement now, will ensure that sufficient capital exists when replacement becomes necessary.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	7,000
TOTAL	**$**	**7,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 4 VFD Replacement

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 4 VFD	$ 5,000	$ 5,000

Project Costs		
Construction Costs (Subtotal)		$ 5,000
Engineering	0 %	$ -
Construction Observation	0 %	$ -
Contingency	25 %	$ 1,300
TOTAL		**$ 7,000**

(269) 673-8465 1670 LINCOLN ROAD, ALLEGAN, MI
(269) 927-0100 2303 PIPESTONE ROAD, BENTON HARBOR, MI
(269) 327-3532 9835 PORTAGE ROAD, PORTAGE, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2026**
Total Project Cost:	**$144,000**

Project Title: Beers Street Water Main - 2026

System: Drinking Water

Project Description

Replace the existing 4-inch and 2-inch water main running under Beers Street from S. Williams Street to the dead end with 6-inch water main.

Project Justification/Benefit

The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch and 2-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	144,000
TOTAL	**$**	**144,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Beers Street Water Main - 2026

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1,000	FT	Water Main, DI, 6 inch, Tr Det G	$ 100	$ 100,000

Project Costs			
Construction Costs (Subtotal)		$	100,000
Engineering	7 %	$	7,000
Construction Observation	8 %	$	8,000
Contingency	25 %	$	28,800
TOTAL		**$**	**144,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2027**
Total Project Cost:	**$130,000**

Project Title: Beers Street Water Main - 2027

System: Drinking Water

Project Description
Replace the existing 6-inch water main running under Beers Street from George Street to Phelps Street.

Project Justification/Benefit
This segment of water main has been targeted for replacement in conjunction with a road project due to the age of the pipe. In addition, it is believed that sections (or the entire length) of this water main are actually 4-inch diameter. The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing any existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	130,000
TOTAL	**$**	**130,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Beers Street Water Main - 2027

Quantity	Unit of Measure	Item	Unit Price	Subtotal
900	FT	Water Main, DI, 6 inch, Tr Det G	$ 100	$ 90,000

Project Costs		
Construction Costs (Subtotal)	$	90,000
Engineering 7 %	$	6,300
Construction Observation 8 %	$	7,200
Contingency 25 %	$	25,900
TOTAL	**$**	**130,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2028**
Total Project Cost:	**$108,000**

Project Title: Beers Street Water Main - 2028

System: Drinking Water

Project Description

Replace the existing 6-inch water main running under Beers Street from Park Street to Williams Street.

Project Justification/Benefit

This segment of water main has been targeted for replacement in conjunction with a road project due to the age of the pipe. In addition, it is believed that sections (or the entire length) of this water main are actually 4-inch diameter. The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing any existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	108,000
TOTAL	**$**	**108,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Beers Street Water Main - 2028

Quantity	Unit of Measure	Item	Unit Price	Subtotal
750	FT	Water Main, DI, 6 inch, Tr Det G	$ 100	$ 75,000

Project Costs			
Construction Costs (Subtotal)		$	75,000
Engineering	7 %	$	5,300
Construction Observation	8 %	$	6,000
Contingency	25 %	$	21,600
TOTAL		**$**	**108,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2028**
Total Project Cost:	**$69,000**

Project Title: Recoat the Elevated Storage Tank - Exterior

System: Drinking Water

Project Description
Recoat the exterior of the elevated storage tank.

Project Justification/Benefit
Elevated storage tank coatings are exposed to harsh weather conditions and eventually begin to break down, fading and losing some of their ability to protect the underlying surfaces from corrosion. Periodically cleaning and re-coating the exterior of the elevated storage tank will restore the aesthetics of the tank, extend the life of the coating system, and extend the life of the elevated storage tank itself.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	69,000
TOTAL	**$**	**69,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Recoat the Elevated Storage Tank - Exterior

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Elevated storage tank exterior recoating	$ 50,000	$ 50,000

Project Costs		
Construction Costs (Subtotal)		$ 50,000
Engineering	0 %	$ -
Construction Observation	10 %	$ 5,000
Contingency	25 %	$ 13,800
TOTAL		**$ 69,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2028**
Total Project Cost:	**$19,000**

Project Title: Well 2 Pump Maintenance - 2028

System: Drinking Water

Project Description

Remove the pump from Well 2, rehabilitate the pump, and rehabilitate or replace the motor.

Project Justification/Benefit

Regular pump maintenance can extend the life of a well pump and restore performance to near- or like-new conditions. Recommended maintenance intervals are 8 to 10 years and the pump for Well 2 was last scheduled for rehabilitation in 2020.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	19,000
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 2 Pump Maintenance - 2028

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 2 pump and motor maintenance	$ 15,000	$ 15,000

Project Costs		
Construction Costs (Subtotal)	$	15,000
Engineering 0 %	$	-
Construction Observation 0 %	$	-
Contingency 25 %	$	3,800
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2029**
Total Project Cost:	**$19,000**

Project Title: Well 3 Pump Maintenance - 2029

System: Drinking Water

Project Description
Remove the pump from Well 3, rehabilitate the pump, and rehabilitate or replace the motor.

Project Justification/Benefit
Regular pump maintenance can extend the life of a well pump and restore performance to near- or like-new conditions. Recommended maintenance intervals are 8 to 10 years and the pump for Well 3 was last scheduled for rehabilitation in 2021.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	19,000
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 3 Pump Maintenance - 2029

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 3 pump and motor maintenance	$ 15,000	$ 15,000

Project Costs		
Construction Costs (Subtotal)	$	15,000
Engineering 0 %	$	-
Construction Observation 0 %	$	-
Contingency 25 %	$	3,800
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2029**
Total Project Cost:	**$116,000**

Project Title: Williams Street Water Main

System: Drinking Water

Project Description
Replace the existing 4-inch water main running under Williams Street from Pine Street to St. Mary's Street with 6-inch water main.

Project Justification/Benefit
The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water main to 6-inch will help to increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	116,000
TOTAL	**$**	**116,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Williams Street Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
700	FT	Water Main, DI, 6 inch, Tr Det G	$ 100	$ 70,000

Project Costs			
Construction Costs (Subtotal)		$	70,000
Engineering	20 %	$	14,000
Construction Observation	12 %	$	8,400
Contingency	25 %	$	23,100
TOTAL		**$**	**116,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Year:	**2030**
Total Project Cost:	**$65,000**

Project Title: Replace Well 3 and 4 Standby Generator

System: Drinking Water

Project Description

Replace the 150 kW standby emergency generator for Well 3 and 4.

Project Justification/Benefit

The generator provides backup power to Well 3 and Well 4 in the event of a power outage and is a necessity to ensure that water is available to the Village under all conditions. Standby generators used in water service have an expected useful life of approximately 20 years. Planning on replacement of the generator, though not in need of replacement now, will ensure that sufficient capital exists when replacement becomes necessary.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	65,000
TOTAL	**$**	**65,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Replace Well 3 and 4 Standby Generator

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	150 kW Generator	$ 45,000	$ 45,000

Project Costs		
Construction Costs (Subtotal)	$	45,000
Engineering 10 %	$	4,500
Construction Observation 5 %	$	2,300
Contingency 25 %	$	13,000
TOTAL	**$**	**65,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2030**
Total Project Cost:	**$100,000**

Project Title: Water Meter Replacement - 2030

System: Drinking Water

Project Description
Replace 400 water meters throughout the Village on an as-needed basis.

Project Justification/Benefit
The expected life span for water meters is approximately 20 years. All of the Village water meters were installed in 2013. While the Village plans to replace the water meters as needed (i.e. as the old meters fail), planning on replacement of the meters as a batch project at about the time of the end of their useful life will ensure that sufficient capital exists to purchase the new water meters as needed. To reduce the one time cost of this replacement, the meter purchases have been split over two separate years (2030 and 2033).

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	100,000
TOTAL	**$**	**100,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Water Meter Replacement - 2030

Quantity	Unit of Measure	Item	Unit Price	Subtotal
400	EA	Water Meter	$ 200	$ 80,000

Project Costs		
Construction Costs (Subtotal)		$ 80,000
Engineering	0 %	$ -
Construction Observation	0 %	$ -
Contingency	25 %	$ 20,000
TOTAL		**$ 100,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2032**
Total Project Cost:	**$19,000**

Project Title: Well 4 Pump Maintenance - 2032

System: Drinking Water

Project Description
Remove the pump from Well 4, rehabilitate the pump, and rehabilitate or replace the motor.

Project Justification/Benefit
Regular pump maintenance can extend the life of a well pump and restore performance to near- or like-new conditions. Recommended maintenance intervals are 8 to 10 years and the pump for Well 4 was last scheduled for rehabilitation in 2020.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	19,000
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 4 Pump Maintenance - 2032

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 4 pump and motor maintenance	$ 15,000	$ 15,000

Project Costs		
Construction Costs (Subtotal)	$	15,000
Engineering 0 %	$	-
Construction Observation 0 %	$	-
Contingency 25 %	$	3,800
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2033**
Total Project Cost:	**$11,000**

Project Title: Replace Well 2 and Well 3 Control Panels

System: Drinking Water

Project Description

Plan for replacement of the control panel at Well 2 and Well 3.

Project Justification/Benefit

Electrical equipment used in water service has an expected useful life of approximately 20 years. Planning on replacement of these well control panels, though not in need of replacement now, will ensure that sufficient capital exists when replacement becomes necessary.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	11,000
TOTAL	**$**	**11,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Replace Well 2 and Well 3 Control Panels

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 2 control panel	$ 3,000	$ 3,000
1	EA	Well 3 control panel	$ 3,000	$ 3,000

Project Costs			
Construction Costs (Subtotal)		$	6,000
Engineering	25 %	$	1,500
Construction Observation	15 %	$	900
Contingency	25 %	$	2,100
TOTAL		**$**	**11,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2033**
Total Project Cost:	**$100,000**

Project Title: Water Meter Replacement - 2033

System: Drinking Water

Project Description

Replace 400 water meters throughout the Village on an as-needed basis.

Project Justification/Benefit

The expected life span for water meters is approximately 20 years. All of the Village water meters were installed in 2013. While the Village plans to replace the water meters as needed (i.e. as the old meters fail), planning on replacement of the meters as a batch project at about the time of the end of their useful life will ensure that sufficient capital exists to purchase the new water meters as needed. To reduce the one time cost of this replacement, the meter purchases have been split over two separate years (2030 and 2033).

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	100,000
TOTAL	**$**	**100,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Water Meter Replacement - 2033

Quantity	Unit of Measure	Item	Unit Price	Subtotal
400	EA	Water Meter	$ 200	$ 80,000

Project Costs		
Construction Costs (Subtotal)		$ 80,000
Engineering	0 %	$ -
Construction Observation	0 %	$ -
Contingency	25 %	$ 20,000
TOTAL		**$ 100,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Year:	**2033**
Total Project Cost:	**$4,000**

Project Title: Well 4 Maintenance

System: Drinking Water

Project Description

Perform maintenance on the building for well 4.

Project Justification/Benefit

While there is not much maintenance required on the well buildings, due to their method of construction, some comprehensive building maintenance will be required periodically. The last time major maintenance was done on the well buildings was 2013. As such, a new roof and lighting/electrical upgrades should be anticipated approximately every 20 years to ensure sufficient capital exists to address the maintenance when it is needed.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	4,000
TOTAL	**$**	**4,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 4 Maintenance

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 4 building maintenance	$ 2,500	$ 2,500

Project Costs			
Construction Costs (Subtotal)		$	2,500
Engineering	0 %	$	-
Construction Observation	0 %	$	-
Contingency	25 %	$	700
TOTAL		**$**	**4,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Year:	**2034**
Total Project Cost:	**$4,000**

Project Title: Well 2 Building Maintenance

System: Drinking Water

Project Description

Perform building maintenance on well 2.

Project Justification/Benefit

While there is not much maintenance required on the well buildings, due to their method of construction, some comprehensive building maintenance will be required periodically. The last time major maintenance was done on the well buildings was 2013. As such, a new roof and lighting/electrical upgrades should be anticipated approximately every 20 years to ensure sufficient capital exists to address the maintenance when it is needed.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	4,000
TOTAL	**$**	**4,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 2 Building Maintenance

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 2 Building Maintenance	$ 2,500	$ 2,500

Project Costs		
Construction Costs (Subtotal)	$	2,500
Engineering 0 %	$	-
Construction Observation 0 %	$	-
Contingency 25 %	$	700
TOTAL	**$**	**4,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2034**
Total Project Cost:	**$4,000**

Project Title: Well 3 Maintenance

System: Drinking Water

Project Description
Perform building maintenance on well 3.

Project Justification/Benefit
While there is not much maintenance required on the well buildings, due to their method of construction, some comprehensive building maintenance will be required periodically. The last time major maintenance was done on the well buildings was 2013. As such, a new roof and lighting/electrical upgrades should be anticipated approximately every 20 years to ensure sufficient capital exists to address the maintenance when it is needed.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	4,000
TOTAL	**$**	**4,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 3 Maintenance

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 3 building maintenance	$ 2,500	$ 2,500

Project Costs		
Construction Costs (Subtotal)		$ 2,500
Engineering	0 %	$ -
Construction Observation	0 %	$ -
Contingency	25 %	$ 700
TOTAL		**$ 4,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Year:	**2035**
Total Project Cost:	**$32,000**

Project Title: Replace Portable Generator for Well 2

System: Drinking Water

Project Description

Replace the portable generator for Well 2.

Project Justification/Benefit

The portable generator is used for multiple purposes, one of which is to provide backup power to Well 2 in the event of a power outage. This is a necessity to ensure that water is available to the Village under all conditions. Standby generators used in water service have an expected useful life of approximately 20 years. Planning on replacement of the generator, though not in need of replacement now, will ensure that sufficient capital exists when replacement becomes necessary.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	32,000
TOTAL	**$**	**32,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Replace Portable Generator for Well 2

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Portable generator	$ 25,000	$ 25,000

Project Costs			
Construction Costs (Subtotal)		$	25,000
Engineering	0 %	$	-
Construction Observation	0 %	$	-
Contingency	25 %	$	6,300
TOTAL		**$**	**32,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2035**
Total Project Cost:	**$6,000**

Project Title: Replace Well 4 Control Panel

System: Drinking Water

Project Description
Plan for replacement of the control panel at Well 4.

Project Justification/Benefit
Electrical equipment used in water service has an expected useful life of approximately 20 years. Planning on replacement of the well control panel, though not in need of replacement now, will ensure that sufficient capital exists when replacement becomes necessary.

Project Funding Source		
Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	6,000
TOTAL	**$**	**6,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Replace Well 4 Control Panel

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 4 Control Panel	$ 3,000	$ 3,000

Project Costs			
Construction Costs (Subtotal)		$	3,000
Engineering	25 %	$	800
Construction Observation	15 %	$	500
Contingency	25 %	$	1,100
TOTAL		**$**	**6,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2036**
Total Project Cost:	**$410,000**

Project Title: Edgar Bergen Boulevard and N. East Street Water Main

System: Drinking Water

Project Description

Replace the existing 2-inch water main running under Edgar Bergen Boulevard from Phelps Street to School Street with 6-inch water main. Install new 6-inch water main under the portion of Edgar Bergen Boulevard from Phelps Street to School Street where there is currently no water main.

Replace the existing 4-inch water main running under Edgar Bergen Boulevard from School Street to Rogers Street with 6-inch water main.

Install new 6-inch water main from the intersection of Edgar Bergen Boulevard, Prospect Street, and N. East Street southeast under N. East Street where there is currently no water main to the existing 6-inch water main that dead ends on N. East Street northeast of St. Mary's Street.

Project Justification/Benefit

The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 2-inch and 4-inch water mains to 6-inch will help to increase the water flow rate for fire fighting efforts. In addition, installing new water main on Edgar Bergen Boulevard to complete a loop to Phelps Street and on N. East Street to complete a loop to St. Mary's Street will also increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. These new loops will also create more redundancy in the water system and reduce the number of people who would be without water service due to an emergency repair.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	410,000
TOTAL	**$**	**410,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Edgar Bergen Boulevard and N. East Street Water Main

Quantity	Unit of Measure	Item	Unit Price	Subtotal
2,450	FT	Water main, 6 inch, DI, Tr Det G - Edgar Bergen	$ 100	$ 245,000
400	FT	Water main, 6 inch, DI, Tr Det G - N. East Street	$ 100	$ 40,000

Project Costs		
Construction Costs (Subtotal)	$	285,000
Engineering 7 %	$	20,000
Construction Observation 8 %	$	22,800
Contingency 25 %	$	82,000
TOTAL	**$**	**410,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Year:	**2036**
Total Project Cost:	**$19,000**

Project Title: Well 2 Pump Maintenance - 2036

System: Drinking Water

Project Description

Remove the pump from Well 2, rehabilitate the pump, and rehabilitate or replace the motor.

Project Justification/Benefit

Regular pump maintenance can extend the life of a well pump and restore performance to near- or like-new conditions. Recommended maintenance intervals are 8 to 10 years and the pump for Well 2 was last scheduled for rehabilitation in 2028.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	19,000
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 2 Pump Maintenance - 2036

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 2 pump and motor maintenance	$ 15,000	$ 15,000

Project Costs		
Construction Costs (Subtotal)	$	15,000
Engineering 0 %	$	-
Construction Observation 0 %	$	-
Contingency 25 %	$	3,800
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Year:	**2037**
Total Project Cost:	**$88,000**

Project Title: Recoat the Elevated Storage Tank - Interior

System: Drinking Water

Project Description

Recoat both the wet and dry interior of the elevated storage tank.

Project Justification/Benefit

Elevated storage tank coatings eventually begin to break down, losing some of their ability to protect the underlying surfaces from corrosion. Periodically cleaning and re-coating both the wet portion and the dry portion of the interior of the elevated storage tank will extend the life of the coating system, and extend the life of the elevated storage tank itself.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	88,000
TOTAL	**$**	**88,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Recoat the Elevated Storage Tank - Interior

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Elevated storage tank wet interior recoating	$ 60,000	$ 60,000
1	EA	Elevated storage tank dry interior recoating	$ 4,000	$ 4,000

Project Costs		
Construction Costs (Subtotal)	$	64,000
Engineering 0 %	$	-
Construction Observation 10 %	$	6,400
Contingency 25 %	$	17,600
TOTAL	**$**	**88,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Year:	**2037**
Total Project Cost:	**$19,000**

Project Title: Well 3 Pump Maintenance - 2037

System: Drinking Water

Project Description

Remove the pump from Well 3, rehabilitate the pump, and rehabilitate or replace the motor.

Project Justification/Benefit

Regular pump maintenance can extend the life of a well pump and restore performance to near- or like-new conditions. Recommended maintenance intervals are 8 to 10 years and the pump for Well 3 was last scheduled for rehabilitation in 2029.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	19,000
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 3 Pump Maintenance - 2037

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 3 pump and motor maintenance	$ 15,000	$ 15,000

Project Costs		
Construction Costs (Subtotal)	$	15,000
Engineering 0 %	$	-
Construction Observation 0 %	$	-
Contingency 25 %	$	3,800
TOTAL	**$**	**19,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Year:	**2037**
Total Project Cost:	**$7,000**

Project Title: Well 3 VFD Replacement

System: Drinking Water

Project Description

Replace the variable frequency drive (VFD) for Well 3.

Project Justification/Benefit

VFDs used in water service have an expected useful life of approximately 20 years. Planning for replacement of the VFD, though it is not in need of replacement now, will ensure that sufficient capital exists when replacement becomes necessary.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	7,000
TOTAL	**$**	**7,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: Well 3 VFD Replacement

Quantity	Unit of Measure	Item	Unit Price	Subtotal
1	EA	Well 4 VFD	$ 5,000	$ 5,000

Project Costs		
Construction Costs (Subtotal)		$ 5,000
Engineering	0 %	$ -
Construction Observation	0 %	$ -
Contingency	25 %	$ 1,300
TOTAL		**$ 7,000**

(269) 673-8465 1670 LINCOLN ROAD, ALLEGAN, MI
(269) 927-0100 2303 PIPESTONE ROAD, BENTON HARBOR, MI
(269) 327-3532 9835 PORTAGE ROAD, PORTAGE, MI
WWW.WIGHTMAN-ASSOC.COM

CAPITAL IMPROVEMENT PLAN

Village of Decatur

Project Year:	**2038**
Total Project Cost:	**$216,000**

Project Title: John Street Water Main

System: Drinking Water

Project Description

Replace the existing 4-inch water main running under John Street from Pine Street to St. Mary's Street with 6-inch water main. Install new 6-inch water main under the portion of John Street from St. Mary's Street to Delaware Street where there is currently no water main.

Project Justification/Benefit

The minimum water main size allowed in the current version of the Ten States Standards for Water Works in water systems providing fire protection is 6-inch. Increasing the existing 4-inch water mains to 6-inch will help to increase the water flow rate for fire fighting efforts. In addition, installing new water main on John Street to complete a loop between St. Mary's Street and Delaware Street will also increase the water flow rate for fire fighting efforts and can, in conjunction with other projects identified in the most recent Water Reliability Study, help to lower the Insurance Service Office (ISO) rating for the Village which could lower insurance rates for Village residents. The new loop will also create more redundancy in the water system and reduce the number of people who would be without water service due to an emergency repair.

Project Funding Source

Drinking Water Revolving Fund Loan		
Bonds/Grants/Other Financing Source		
Assessments		
Water Fund	$	216,000
TOTAL	**$**	**216,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Village of Decatur

Project Title: John Street Water Main

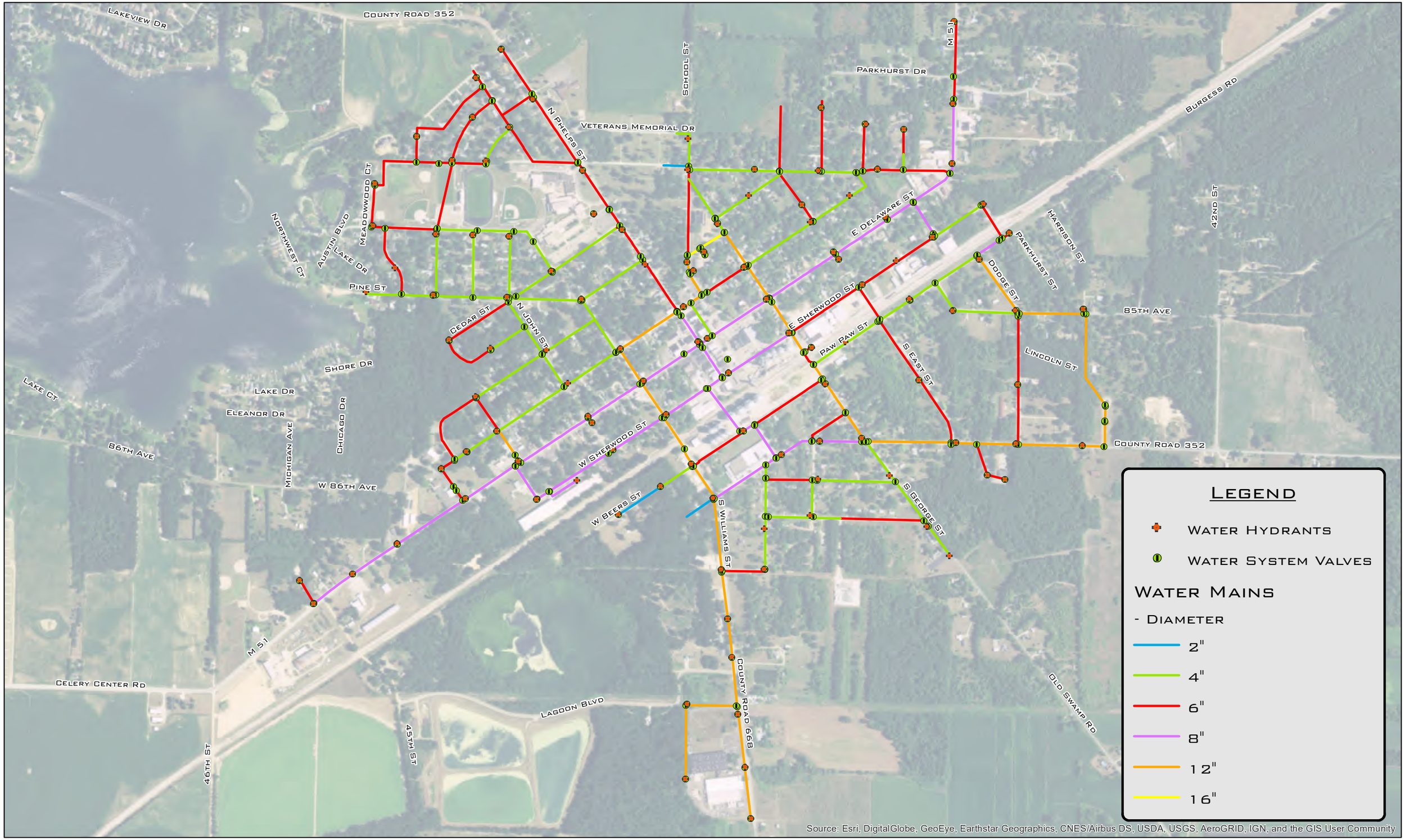
Quantity	Unit of Measure	Item	Unit Price	Subtotal
1,500	FT	Water Main, DI, 6 inch, Tr Det G	$ 100	$ 150,000

Project Costs			
Construction Costs (Subtotal)		$	150,000
Engineering	7 %	$	10,500
Construction Observation	8 %	$	12,000
Contingency	25 %	$	43,200
TOTAL		**$**	**216,000**

(269) 673-8465 1670 Lincoln Road, Allegan, MI
(269) 927-0100 2303 Pipestone Road, Benton Harbor, MI
(269) 327-3532 9835 Portage Road, Portage, MI
WWW.WIGHTMAN-ASSOC.COM

Appendix I

General Plan Maps



Wightman & Associates, Inc.

172173

VILLAGE OF DECATUR

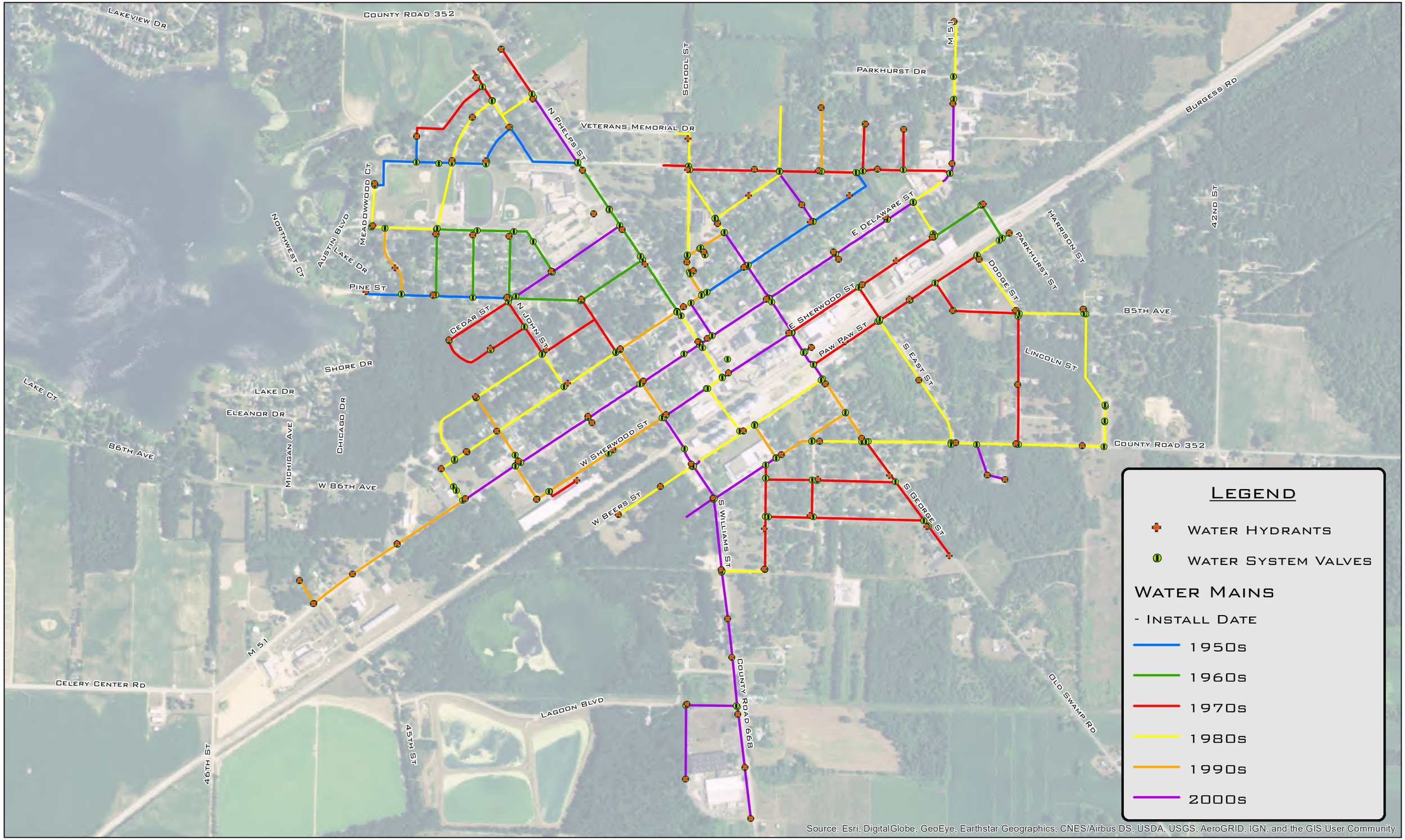
WATER AMP

0 250 500 1,000

1 inch = 850 Feet

WATER SYSTEM - PIPE SIZE

12/14/2017



Legend

- Water Hydrants
- Water System Valves

Water Mains

- Install Date
  - 1950s
  - 1960s
  - 1970s
  - 1980s
  - 1990s
  - 2000s

Wightman & Associates, Inc.

172173

Village of Decatur

Water AMP

0 250 500 1,000

1 inch = 850 Feet

Water System - Install Date

12/13/2017

Wightman & Associates, Inc.

172173

VILLAGE OF DECATUR

WATER AMP

0 250 500 1,000

1 inch = 850 Feet

WATER SYSTEM - MATERIAL

12/13/2017