YPSILANTI COMMUNITY UTILITIES AUTHORITY

DRINKING WATER REVOLVING FUND

PROJECT PLAN

Prepared by

Ypsilanti Community Utilities Authority

Ypsilanti, Michigan

May 23, 2024

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I. INTRODUCTION

The Ypsilanti Community Utilities Authority (YCUA) was formed in 1974 when the Charter Township of Ypsilanti and the City of Ypsilanti combined their respective water departments. In addition to the Charter Township of Ypsilanti and City of Ypsilanti, YCUA provides water and/or wastewater services to other portions of eastern Washtenaw County as well as western Wayne County.

YCUA purchases water from the Great Lakes Water Authority (GLWA) and distributes it to approximately 120,000 people. In addition to distributing water and providing wastewater collection and treatment to the founding member communities (the Township and City), YCUA also supplies water to and accepts and treats wastewater from Augusta Township, Pittsfield Township, Superior Township, and portions of York Township, Canton Township and Van Buren Township. YCUA also provides wastewater treatment for Sumpter Township and the Western Townships Utilities Authority, which collects wastewater from the Townships of Canton, Plymouth and Northville in Wayne County. YCUA executed a wastewater service contract with Salem Township but is not yet receiving any sewage flow. The total population of the member and all contract communities, both water and wastewater, is almost 328,000 people. The total population of the communities in the YCUA water service area is just over 151,000 people. The YCUA combined water and wastewater service area is shown on Figure 1 with the wastewater-only contract communities shaded orange.

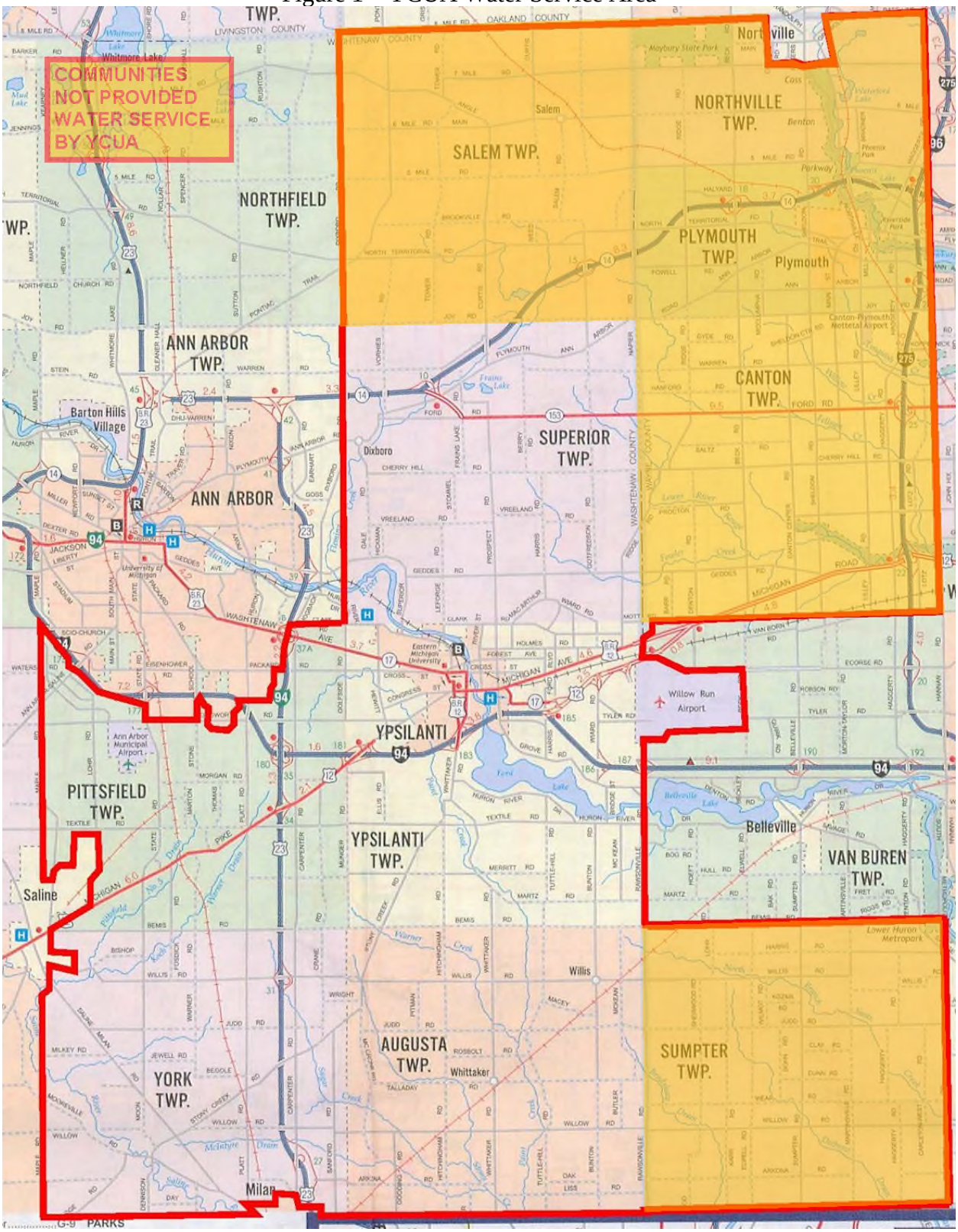
YCUA is responsible for operation and maintenance of the public water supply facilities within the Charter Township of Ypsilanti and the City of Ypsilanti. This includes approximately 24 miles of transmission mains, approximately 345 miles of distribution mains, 6 booster pump stations, 4 ground storage reservoirs with a total capacity of 15 million gallons and 2 elevated storage tanks with a total capacity of 1.25 million gallons. More details regarding the existing public water supply system are included in Appendix A.

II. PROJECT BACKGROUND

A. Delineation of Study Area

The study area for this Project Plan encompasses the entire YCUA water service area shown on Figure 1. However, the Project Plan will focus solely on the City of Ypsilanti and the Charter Township of Ypsilanti as those are essentially the only areas in which YCUA is responsible for operation and maintenance of public water supply facilities. Located at Township 3 South, Range 7 East on the public land survey system, Ypsilanti Township is a square 6 miles by 6 miles. The City of Ypsilanti comprises approximately 4 square miles of land and is almost entirely surrounded by the Township except for portions of the northern border that adjoin Superior Township.

Figure 1 – YCUA Water Service Area



B. Land Use

Existing land uses in the study area include residential, commercial, industrial, agricultural, and recreational. Per the Southeast Michigan Council of Governments (SEMCOG) Land Use data (as published on their internet website), the existing land

uses in YCUA water service area as of the year 2020 were distributed as shown in Table 1.

Table 1 – Existing Land Uses

Land Use	Total Area (acres)	Percent of Study Area	Percent of Developed Area
Single-Family Residential	14,443.7	13.2%	16.7%
Multi-Family Residential	2,068.9	1.9%	2.4%
Retail	1,141.9	1.0%	1.7%
Office	537.8	0.5%	0.7%
Hospitality	200.5	0.2%	0.2%
Medical	458.3	0.5%	0.6%
Institutional	2,552.8	2.1%	2.7%
Industrial	2,339.3	2.0%	2.6%
Agricultural	54,332.5	49.1%	62.0%
Cemetery	351.6	0.3%	0.4%
Parking	78.7	0.1%	0.1%
Extractive	5.1	0.0%	0.0%
Transportation/Communication/Utility	1,994.7	1.9%	2.4%
Developed Total	86,505.9	79.2%	
Recreation / Open Space	6,268.5	5.7%	
Vacant	20,526.9	18.8%	
Water	1,989.4	1.8%	
Total	109,262.2	100%	

The existing land uses in the member communities were distributed as shown in Table 2.

Table 2 – Existing Land Uses By Member Community

Land Use	City	Township	Total
Single-Family Residential	719.7	3,912.4	4,632.1
Multi-Family Residential	228.5	837.5	1,066.0
Retail	67.6	420.7	488.3
Office	40.0	115.0	155.0
Hospitality	9.7	71.5	81.2
Medical	34.0	100.8	134.8
Institutional	312.6	595.8	908.4
Industrial	143.3	897.4	1,040.7
Agricultural	13.6	3,890.1	3,903.7
Cemetery	89.3	42.7	132.0
Parking	57.5	17.7	75.2
Extractive	0	5.1	5.1
Transportation/Communication/Utility	33.8	673.8	707.6
Developed Total	2,022.5	13,544.7	15,567.2
Recreation / Open Space	272.9	1,964.2	2,237.1
Vacant	755.2	2,284.9	6,256.9
Water	157.5	1,216.8	1,3,74.3
Total	2,935.2	20,263.3	23,198.5

Both the Shape Ypsilanti Master Plan, originally adopted by the City Council October 16, 2013, with the most recent update adopted May 4, 2021, and the 2040 Ypsilanti Township Master Plan, adopted by the Township Board of Trustees March 3, 2020, are intended to guide how development occurs in both municipalities in order to meet the goals of each community.

The City and northern portions of the Township have both been almost completely built-out for quite some time. During the past three decades the primary land use changes in the study area have occurred in the southern half of the Township and have been the conversion of agricultural and vacant land to single family residential. It is felt that the City of Ypsilanti will experience some redevelopment as former commercial and/or industrial properties are converted to residential or mixed uses. In the Township it is anticipated that the remaining agricultural and vacant land will continue to be converted to primarily residential uses.

Similar trends in land use change to those experienced in the Charter Township of Ypsilanti have been seen in most, if not all, of YCUA contract customers, particularly Pittsfield Township and the communities that comprise the Western Townships Utilities Authority. Copies of the various documents are not included in this Project Plan but are on file with both YCUA and the contract communities.

C. Population Projections

Population data and projections for the study area have been obtained from the SEMCOG 2045 Regional Development Forecast Projections. Note that the population data presented for the service area in Table 3 corresponds to the definition included in the Drinking Water Revolving Funds Project Plan Preparation Guidance (Preparation Guidance) published by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), which states that the service area is the area to be served by the proposed project.

Table 3 – Population Data

Area	2020	2030	2040	2045
City of Ypsilanti	22,926	23,412	24,290	24,480
Ypsilanti Township	55,055	56,198	60,371	61,121
Member Communities	77,981	79,610	84,661	85,601
Augusta Township	6,968	9,868	12,178	12,207
Pittsfield Township	41,850	47,019	52,337	55,486
Superior Township	13,607	16,285	18,689	19,330
York Township	10,695	15,494	17,207	17,334
Study Area Total	151,101	168.276	185,072	189,958
Year-Round	151,101	168,276	185,072	189,958
Seasonal	N/A	N/A	N/A	N/A

In particular, the City is expected to have an almost 6.8% increase in population between 2020 and 2045 while the Township population is projected to increase by approximately 11.1% during the same period. The population of the entire water service area is expected to increase by approximately 25.7% between 2020 and 2045 with the largest percentage increases projected in Augusta Township, Pittsfield Township, Superior Township, York Township and Ypsilanti Township.

D. Water Demand

The current YCUA Water System Master Plan, issued during August 2018, included existing and future water demands projected at 5-years and 20-years. Demands throughout the entire YCUA water service area were projected to increase approximately 10% during the 20-year planning period. However, given that current demands remain roughly the same as those experienced during 2018, it is felt the demand increase projected in the Master Plan can simply be shifted to match the 20-year planning period for this Project Plan. A copy of the executive summary of the current YCUA Water System Master Plan is included in Appendix B.

E. Existing Facilities

As noted previously, municipal water supply in the study area dates back to the late nineteenth century in the City and World War II in the Township. Prior to 2001, most of the infrastructure had not been replaced or upgraded since it was originally installed. However, the residents of the City of Ypsilanti voted in 2001 to rehabilitate the pavement on all local roads within the City. As part of this work, all water mains within local road rights-of-way that had not been previously upgraded from original installation were replaced. Consequently, approximately 90% of the local streets within the City have water mains that are approximately 20 years old with the water mains in the other 10% of local streets typically being less than 35 years old. The water mains in the City that have not been replaced are located within those road rights-of-way that are not solely under the jurisdiction of the City and are eligible for State and/or Federal funds for road rehabilitation. These roads, which comprise the main transportation arteries within the City, also contain some of the larger water mains in the City. A general layout of the existing water supply system, showing transmission mains, pump stations, and the storage facilities within the City and the Township is shown on Figure 2.

1. The entire YCUA water service area is supplied water from three connections to the GLWA water supply system. YCUA does not provide any water treatment.

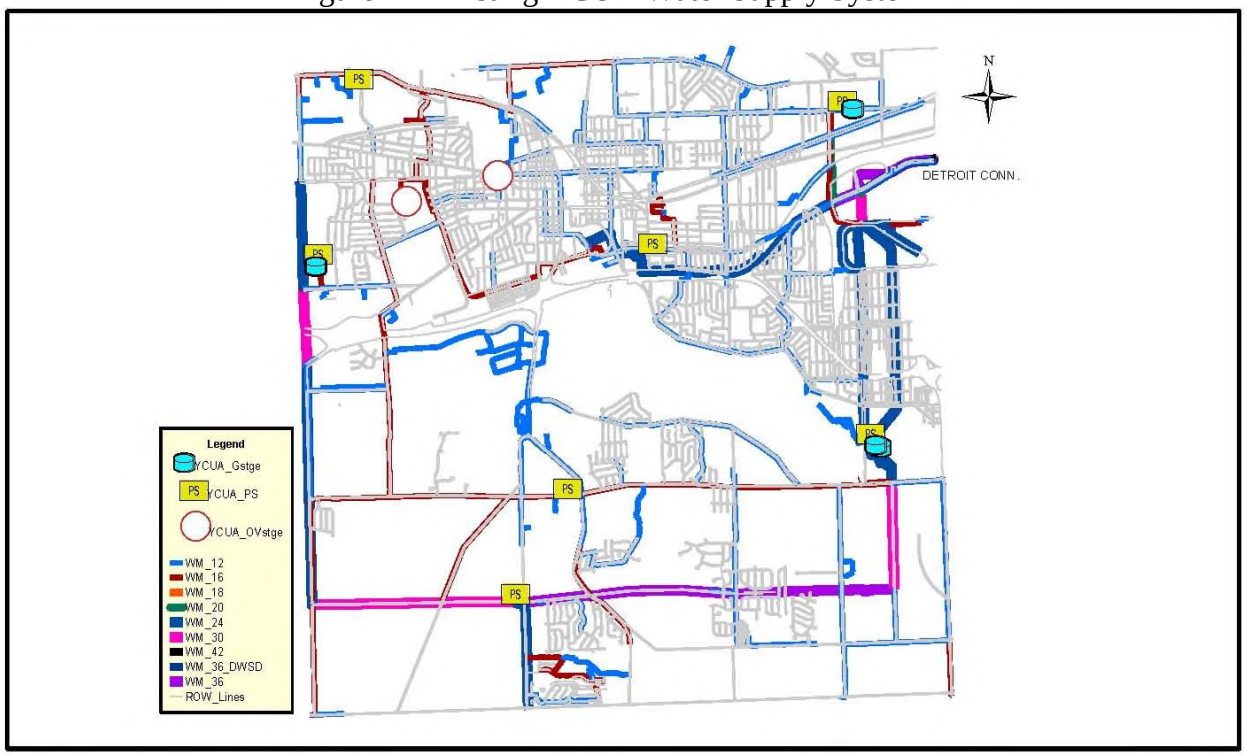
2. Existing storage is adequate for the system during the planning period. Improvements to the pump stations in the YCUA water supply system are a major component of the proposed work included in this Project Plan.

3. Since the late 1950s, water services installed in the YCUA water supply system have been almost exclusively copper pipe. However, primarily prior to the late 1950s, other materials were also used for water services. These other materials, which include lead, galvanized iron, and plastic are much more prone to fail than copper. The majority of the lead and galvanized pipes are located on the customer's side of the service line between the curb stop and the building. A summary of the current inventory is included in Appendix A. Lead service line replacement (LSLR) is as a major component of the proposed work included in this Project Plan.

4. Pipe in the YCUA transmission and distribution system is comprised of many different materials. Since the early 1970s, new pipe installations have been almost exclusively ductile iron, with notable exceptions being a prestressed concrete cylinder pipe transmission main and several distribution main replacement projects that used high-density polyethylene pipe or polyvinyl

chloride (PVC) pipe installed via trenchless methods - pipe-bursting or horizontal directional drilling. Prior to the 1970s, a wide range of pipe material was installed in the system. The majority of the other material is cast iron pipe, although there is also a significant amount of asbestos concrete pipe. These other materials, most of which have not been replaced since they were originally installed, are much more prone to fail than the newer, more reliable materials. The distribution main replacements included in this Project Plan include a failure-prone asbestos cement pipe along Clark Road in the Township, an extremely old, undersized cast iron pipe along Harriet Street in the City, and three neighborhoods in the Township that are old and predominately undersized pipes. Any distribution mains smaller than 8" diameter will be replaced with 8" diameter pipe, which has been the minimum allowable pipe size for new construction in the YCUA water supply system for several decades. Pipes 8" in diameter and larger will be replaced with new pipe of the same size.

Figure 2 – Existing YCUA Water Supply System



5. The majority of the meters in the YCUA water supply system have exceeded their design life. Replacement of the meters with newer, more reliable technology is a major component of the proposed work included in this Project Plan.

6. Approximately 25 years ago the YCUA Water Distribution Department significantly changed their standard procedures for operating the water supply system. More efficient use of the pumping and storage facilities has resulted in a substantial decrease in the number of water main breaks experienced on an annual basis. However, it is felt that the operational changes have maximized the useful life of the older facilities in the system. As growth of the water supply system has traditionally outpaced maintenance staffing and investment, maintenance of the system has tended to generally be reactive in nature. However, in recent years YCUA has also implemented preventative maintenance

procedures, such as valve exercising, to extend the operational lives of all facilities, old and new, in the system.

7. System Climate Resiliency

   The improvements proposed for the booster pump stations include either replacement of existing backup power or addition of new backup power and will increase the climate resiliency of the water supply system.

F. Summary of Project Need

1. Compliance Status

   YCUA operates and maintains the water supply system in compliance with the drinking water standards defined in the Administrative Rules for Act 399.

2. Orders

   YCUA is not currently under any court, federal or state enforcement orders.

3. Water Quality Problems

   Drinking water quality is currently not a problem in the YCUA system. The improvements included in this Project Plan are proposed to ensure that drinking water quality remains sufficient in the future.

4. Projected Needs

   The YCUA Water System Master Plan included recommended capital improvements for both the first five years following completion of the study as well as the full twenty year planning period. While this Project Plan is also based on the full twenty year planning period as the Water System Master Plan, a total of 28 separate subprojects have been identified for implementation during the next four fiscal years and are included in this Project Plan. Detailed analysis of the alternatives and impacts associated with each subproject is included in Appendix C. Table 4 shows the improvements anticipated during the next four years and the preliminary opinion of probable project cost.

Table 4 – Water Supply System Improvements 2024-2027

Project Name	Year	Division	Cost Opinion
West Warner Water Main Loop	2025	City	$180,000.00
LSLR - Public Right-of-Way	2025	City	$124,000.00
Water Meter Upgrades - City	2025	City	$2,266,800.00
Harriet Street Water Main Replacement - West	2025	City	$458,000.00
Clark Road Pump Station Improvements	2025	Township	$1,300,000.00
Water Meter Upgrades - Township	2025	Township	$7,850,000.00
East Michigan Avenue Water Main Loop	2025	Township	$541,000.00
LSLR - Private Property	2025	Township	$165,000.00
Textile Road Pump Station Improvements	2025	Township	$1,450,000.00
West Sugarbrook Area	2025	Township	$5,207,300.00
Stadium Meadows Water Main Loop	2026	City	$324,400.00
LSLR - Full Repleacement	2026	City	$212,000.00
Harriet Street Water Main Replacement - East	2026	City	$419,000.00
East Gault Village Area	2026	Township	$8,002,100.00

LSLR - Private Property	2026	Township	$170,000.00
Bridge Road Pump Station Generator	2026	Township	$700,000.00
Ohio to Oregon Water Main Loop	2026	Township	$309,000.00
Hart Place Water Main Loop	2027	City	$204,510.00
Cornell Road Water Main Replacement	2027	City	$1,373,000.00
West Gault Village Area	2027	Township	$5,744,000.00
Merritt Road Pump Station Improvements	2027	Township	$750,000.00
Clark Road Water Main Replacement	2027	Township	$1,516,900.00
LSLR - Private Property	2027	Township	$175,000.00
Leforge Road Water Main Improvements	2028	City	$203,900.00
LSLR - Full Repleacement	2028	City	$239,000.00
Wilson Water Main Loop	2028	Township	$504,800.00
LSLR - Private Property	2028	Township	$180,000.00

G. Identification of Potential Alternatives

1. No Action

This alternative is not acceptable as not acting would likely result in adverse impacts to water quality and potentially public health if and when aging equipment or pipes fail.

2. Optimum Performance of Existing Facilities

It is felt that the preventative maintenance programs currently executed by YCUA staff have optimized the performance and life of the existing facilities. It is felt that further optimization without significant capital improvements is not practical, consequently, this alternative is effectively the same as taking no action and is not acceptable.

3. Regional Alternatives

YCUA already serves as a functioning regional alternative with existing intermunicipal service agreements in place with the contract communities.

III. PRINCIPAL ALTERNATIVES

Due to the age and condition of the existing water supply facilities, it was determined that the only acceptable alternative is replacement and upgrade. The primary reasons leading to this conclusion are the location and age of the various pipes and/or facilities, the limited space and grade available to allow for consideration of other options, and the need to maintain water supply to customers currently served by the existing infrastructure.

A. Cost-Effective Analysis

Due to the limited scope of feasible alternatives for the various subprojects, detailed monetary analyses were not performed.

B. Environmental Evaluation

As stated previously, the improvements included in this Project Plan will not have any significant, long-term adverse environmental impacts.

1. Cultural Resources

   YCUA is not aware of any existing historical or archaeological sites within the study area, and in particular in the vicinity of any of the proposed project areas. If necessary, the State Historical Preservation Office as well as local and regional planning agencies will be contacted to verify these assumptions. Copies of all pertinent correspondence both issued and received by YCUA related to this Project Plan are included in Appendix D.

2. The Natural Environment

   The climate of the study area is a representative of southeast Michigan. Precipitation, temperature, and other adverse weather conditions affect some of the subprojects included in this Project Plan by limiting most underground construction work to the period between early April and mid-November on an annual basis. The natural features, such as soil, air and water quality, will not have an adverse impact on implementation of the improvements specified in this Project Plan. Similarly, the improvements included in this Project Plan will not have any significant, long-term adverse impacts on the natural features in the study area.

C. Mitigation

No long-term environmental impacts are anticipated from any of the proposed improvements. Short-term, construction-related nuisance impacts such as dust, noise, and traffic will be minimized by appropriately crafted contract specifications.

D. Implementability and Public Participation

The public was provided opportunities to comment on the proposed improvements included in this Project Plan. There were no objections to the proposed improvements as they are proposed for locations that are already used as water supply facilities or are currently served by existing water mains and are intended to allow YCUA to more efficiently and cost-effectively operate the system.

E. Technical Considerations

1. Growth Capacity
   As stated previously, the improvements included in this Project Plan are based on accommodating the long term water demands of both the member communities and contract customers.

2. Reliability
   Improvements proposed in this Project Plan include system redundancy to increase the reliability of the system.

IV. SELECTED ALTERNATIVES

A. Description

Comprehensive descriptions of the proposed improvements, including detailed presentation of the relative design parameters and factors controlling the design, are

included in Appendix C. Key points pertaining to those items are provided in the following sections.

1. Relevant Design Parameters

   Improvements to the existing equipment at the water booster pump stations will result in more energy-efficient operation and better control of the system. The water main replacement and extension projects will result in more reliable operation of the system as the likelihood for pipe failure or inadequate flow due to undersized pipes or dead-end mains will be minimized.

2. Controlling Factors

   The primary factors controlling the design of the various improvements included in this Project Plan are the space available for construction of improvements as well as the ability to continue operating the water supply system while the improvements are being implemented.

3. Maps

   All of the various subprojects proposed for implementation between 2024 and 2027 are located at existing water supply facility sites or within existing water utility corridors. Detailed maps of each subproject are included in Appendix C.

4. Schedule for Design and Construction

   As noted previously, the improvements detailed in this Project Plan are scheduled for implementation over the next four years. Although it would be premature to propose date-specific schedules for each improvement, is the intent of YCUA to design the projects in such a manner that the competitive bidding process can be conducted early in the calendar year with construction operations completed during the typical construction season of the same calendar year – most likely the second quarter of each fiscal year. Scheduling of the various improvements for each fiscal year will be coordinated with EGLE staff in order to be consistent with annual DWRF funding timelines. Experience from past Revolving Fund projects indicates that scheduling will not be problematic. A typical project schedule is presented in Table 5.

Table 5 – Typical Project Schedule

Milestone	Approximate Completion Date
Submittal of Draft User Charge System	Late August
Submittal of Draft Plans and Specifications	3rd week of September
Submittal of Final User Charge System	2nd week of October
Submittal of Final Plans and Specifications	3rd week of November
Submittal of DWRF Application Parts I and II	Last week of November
Publication of Bid Advertisement	First week of December
MDEQ Approval of User Charge System	
Issuance of Construction Permit	2nd week of December
Opening of Bids	2nd week of January
Tentative Award of Contract	4th week of January
Submittal of DWRF Application Part III	Last week of January

MDEQ Order of Approval	Last week of February
Construction Start	Early May
Construction Complete	Approximately 1 year after start

5. Monetary Cost Estimate

   A summary of all estimated costs for planning, design, and construction for each subproject was identified in Table 4. More detailed breakdowns of the cost opinion for each subproject identified for implementation during the planning period is included in Appendix C.

6. User Costs

   Tables 6 and 7 present the estimated annual user costs for typical residential customers in the City and Township divisions, respectively. Please note that the separate improvements included in Table 4 have been combined by scheduled implementation year in Tables 6 and 7. In addition, the following assumptions were made common to the analysis for each Division:

   a. Projected revenues for are based on the current YCUA budget and includes projected water sales, half each of projected surcharge and construction reserve funds as well as portions of other operating revenues attributable to the water supply system in the City and Township divisions, respectively.
   b. Typical water bills are based on the average customer usage in the member communities and the current water rate. Usage is measured by the customer's domestic water meter. In the member communities average usage has historically equated to 12 units of water during a two-month billing cycle. Note that 1 unit is equal to 100 cubic feet of water. Please note that the typical bill information presented for the contract customers is based on the current and projected water use rates in the Township division. Each contract customer is responsible for establishing their own water use rate.
   c. Total project costs include planning, design and construction costs as presented for each alternative in Table 4. Operation and maintenance costs are not included in Table 4 as it is felt that implementation of the selected improvements will actually reduce the amount of YCUA effort required to operate and maintain the system and allow for more efficient use of these resources throughout the system.
   d. Annual debt retirement requirements are based on a 2% annual interest rate and a twenty-year amortization period.
   e. Typical water bills for future years are based on a 3% increase to the water bill plus the prior year annual debt retirement.
   f. The percent increase required to generate the revenue to satisfy the annual debt retirement is based on the annual debt retirement divided by the projected revenue for a given year. It is conservatively assumed that increased revenue required to satisfy annual DWRF debt retirement requirements will be obtained entirely from increases to water use rates in both the member communities as well as all contract customers.
   g. More detailed information pertaining to the cost impacts of the proposed improvements on the member communities and contract customers is presented in Appendix C, including which projects benefit only certain customers and the associated calculations and assumptions used to generate the estimated debt retirement requirements and impacts to typical residential sewer bills.

Table 6 – Estimated Debt Retirement – City Division

Year	Projected Revenue	Total Project Costs	Annual Debt Retirement	Percent Increase	Typical Water Bill	Increase to Typical Water Bill
2023	$5,513,121.50	$0.00	$0.00	0.0%	$94.97	$0.00
2024	$5,696,240.00	$3,028,800.00	$185,231.47	3.3%	$101.00	$3.28
2025	$5,887,393.50	$536,400.00	$32,804.46	0.6%	$104.61	$0.58
2026	$6,106,953.50	$1,577,510.00	$96,475.33	1.6%	$109.45	$1.73
2027	$6,334,882.50	$442,900.00	$27,086.31	0.4%	$113.21	$0.48

Table 7 – Estimated Debt Retirement – Township Division

Year	Projected Revenue	Total Project Costs	Annual Debt Retirement	Percent Increase	Typical Water Bill	Increase to Typical Water Bill
2023	$18,529,432.50	$0.00	$0.00	0.0%	$61.98	$0.00
2024	$19,148,315.00	$16,513,300.00	$1,009,899.23	5.3%	$67.20	$3.54
2025	$19,810,503.00	$9,181,100.00	$561,485.94	2.8%	$71.18	$2.02
2026	$20,561,492.00	$8,185,900.00	$500,622.78	2.4%	$75.10	$1.83
2027	$21,341,548.50	$684,800.00	$41,880.12	0.2%	$77.50	$0.15

For example, the proposed improvements to be implemented during 2024-2025 in the Township division are estimated to cost $16,513,300.00, with an annual debt retirement of $1,009,899.23. The Township division projected total water revenue for fiscal year 2024-2025 is $19,148,315.00. The debt retirement would require an increase in revenue of approximately 5.3% based on the total projected water revenue in the Township division. An average residential customer in the member communities uses 12 units of water during a two-month period and is expected to have a water bill of $67.20 during 2024-2025. A 5.2% increase would raise the water bill by $3.54 for the two-month billing period, or approximately $1.77 per month.

V. ENVIRONMENTAL EVALUATION

A. Historical/Archaeological/Tribal Resources

The improvements included in this Project Plan are replacement or upgrade of existing water supply system infrastructure. The improvements will enhance the operational efficiency of the water system and generally will not adversely impact the natural environment.

B. Water Quality

The proposed improvements included in this Project Plan will only serve to sustain the current water quality and allow YCUA to continue to meet drinking water standard objectives.

C. Land/Water Interface

The proposed improvements included in this Project Plan will not have any impact on wetlands, floodplains, or rivers and streams.

D. Endangered Species

No federal and/or state threatened or endangered species or state special concern species of flora or fauna are expected to be impacted by the proposed improvements included in this Project Plan.

E. Agricultural Land

The proposed improvements included in this Project Plan will not affect agricultural resources in any way.

F. Social/Economic Impact

The proposed improvements included in this Project Plan are not expected to have any significant impacts on the social economics of the study area.

G. Construction/Operational Impact

Construction impacts caused by the proposed improvements included in this Project Plan will be limited to short-term construction-related mitigation items. As the proposed improvements are essentially replacement in-kind of existing facilities, there will be no change to the minor operational impacts currently experienced.

H. Indirect Impacts

The improvements included in this Project Plan are targeted water supply facilities or public rights-of-way. The improvements specified for these areas will not indirectly result in additional development within the study area.

None of the improvements included in this Project Plan will traverse undeveloped areas that do not already have access to the public water supply system. The future land use predicted for the member communities indicates that these areas will be developed. The improvements included in this Project Plan for these areas will allow the water supply system to remain reliable as the development occurs.

VI. MITIGATION MEASURES

A. General

As stated previously, most adverse impacts to the environment will be avoided or minimized with appropriate design. Mitigation to any short-term and/or long-term impacts will be in accordance with local, county, and state requirements.

B. Short-Term Construction-Related Mitigation

The contract documents for each separate subproject will be developed as YCUA does for all capital improvements and will include the necessary details and language to control traffic, dust, noise, and soil erosion and sedimentation.

C. Mitigation of Long-Term Impacts

Prudent design measures will avoid long-term or irreversible adverse impacts. Where it will not be feasible to completely avoid impacts, alternative construction techniques will be utilized to minimize the type and duration of the adverse impacts.

1. General Construction

   The improvements included in this Project Plan are all at existing water utility sites and corridors. Consequently, the improvements will not impact sensitive environments.

2. Siting Decisions

   As stated previously, the improvements identified herein will be located at existing water utility sites and corridors, which already contain the existing water supply system infrastructure to be replaced or upgraded.

3. Operational Impacts

   Impacts occurring as a result of facility operation, including noise and operational accidents, will be minimized both during design of the improvements as well as during use of the completed facilities, when YCUA standard operating procedures will govern the means and methods utilized to maintain the infrastructure.

D. Mitigation of Indirect Impacts

As stated previously, the improvements included in this Project Plan were identified in conjunction with the future land use predicted within the member communities as well as the current and projected water demands of the contract customers. Consequently, the improvements are considered not to create indirect impacts but instead be proactive in order to avoid adverse impacts to the water supply system resulting from new development. And, as noted earlier, water demand within the study area is projected to grow modestly within the planning period.

VII. PUBLIC PARTICIPATION

Successful implementation of any public works project requires involvement by the citizens and property owners from the outset of planning through the completion of construction. Similar to past Revolving Fund project plans, YCUA believes that a team-related approach will help involve the public and maximize the contributions of all towards a successful project. Table 8 includes key team members who assisted in preparation of this Project Plan.

Table 8 – YCUA DWRF Team

Name	Title	Organization
Lance Wood	Project Manager	EGLE
Sean Brown	Area Engineer	EGLE
Mike Bodary	Chairperson	YCUA Board of Commissioners
Luke Blackburn	Executive Director	YCUA
Ryan Stetler	Director of Maintenance Operations	YCUA
Sean Knapp	Director of Service Operations	YCUA
Eric Sizemore	Water System Supervisor	YCUA
Scott Westover, P.E.	Director of Engineering	YCUA

A. Formal Public Hearing

Copies of the Public Hearing Notice, Proof of Publication, and Public Hearing Transcript are included in Appendix E.

B. Adoption of the Project Plan

A copy of the YCUA Board of Commissioners resolution adopting the Project Plan and designating an authorized representative is included in Appendix F. Also included as part of Appendix F are a completed *Project Plan Submittal Form* and separate *Priority Ranking Worksheets* for the City and Township, respectively, as required by the Preparation Guidance. The final item included in Appendix F are electronic mail messages regarding the DWRF scoring system exchanged during September 2023 between YCUA Executive Director Luke Blackburn and Brian Thurston, P.E., Assistant Director of the Drinking Water and Environmental Health Division of EGLE. The electronic mail messages are included to support the points awarded included on both *Priority Ranking Worksheets.*

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APPENDIX A - EXISTING FACILITIES

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Ypsilanti Community Utilities Authority
Drinking Water Revolving Fund
Project Plan
Existing Water Supply Infrastructure

Water Mains

	Water Main Diameter (inches)	Length (Feet)	Length (Miles)
Distribution	smaller than 4	28,996	5.49
	4	72,492	13.73
	6	299,583	56.74
	8	836,741	158.47
	10	33,496	6.34
	12	375,399	71.10
	16	173,497	32.86
	Distribution Total	1,820,204	344.74
Transmission	20	3,424	0.65
	24	73,601	13.94
	30	22,994	4.35
	36	24,631	4.66
	Transmission Total	124,650	23.61
	Water Main Total	1,944,854	368.34

Water Services

Material	YCUA side	Customer side	Notes
Copper	19,756	16,435	
PVC	7	184	
Ductile	55	53	
Steel	0	3	
AC	0	0	
Brass	0	0	
Galv	5	338	
Lead	142	105	14 are lead on both sides
Cast Iron	3	7	
Unknown	5	2,816	
GPCTL	-	36	Galvanized previously connected to lead

Pumping Stations

Name	Location	City or Township	Firm Capacity	Pump Horsepower	Year Constructed
Holmes Road	2615 Holmes Rd.	Township	4 MGD	2 @ 100 hp w/ VFD	1966
Bridge Road	2365 Bridge Rd.	Township	23 MGD	2 @ 150 hp w VFD, 4 @ 300 hp (2 w/ VFD)	1991
Ellsworth Road	2960 Ellsworth Rd.	Township	3 MGD	2 @ 75 hp w/ VFD	1970
Textile Road	7527 Textile Rd.	Township	5 MGD	1 @ 30 hp, 1 @ 75 hp, 1 @ 100 hp	1961
Merritt Road	6929 Merritt Rd.	Township	11 MGD	3 @ 150 hp (2 w/ VFD), 1 @ 200 hp w/ VFD	1986
Clark Road	2445 Huron River Dr.	Township	1 MGD	1 @ 30 hp, 1 @ 50 hp	1975

Storage

Name	Location	City or Township	Type	Capacity (gallons)	Year Constructed
Holmes	2615 Holmes Rd.	Township	Ground	2,000,000	1966
Bridge North	2365 Bridge Rd.	Township	Ground	5,000,000	1991
Bridge South	2365 Bridge Rd.	Township	Ground	5,000,000	1969
Ellsworth	2960 Ellsworth Rd.	Township	Ground	3,000,000	1970
Stone Tower	303 N. Summit	City	Elevated	250,000	1890
Shadford	1861 Cross St.	City	Elevated	1,000,000	1957

APPENDIX B – YCUA WATER MASTER PLAN EXECUTIVE SUMMARY

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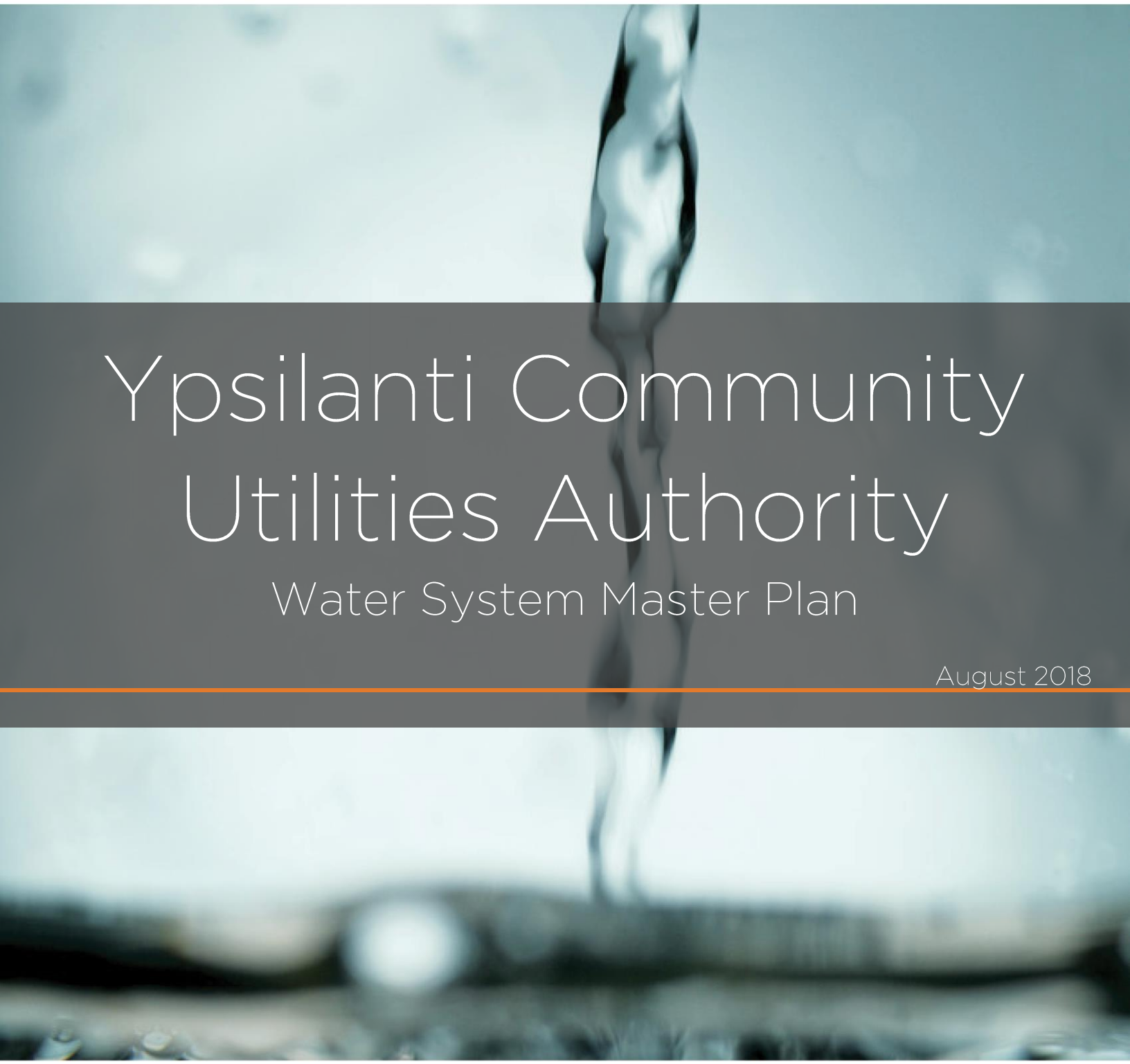

Ypsilanti Community Utilities Authority

Water System Master Plan

August 2018

Water Reliability Study

General Plan

Asset Management Plan

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EXECUTIVE SUMMARY

The Ypsilanti Community Utilities Authority (the Authority) was formed in 1974 when the Charter Township of Ypsilanti (the Township) and the City of Ypsilanti (the City) combined their respective water departments. The Authority administers water services and/or wastewater services to the City of Ypsilanti, Charter Township of Ypsilanti, Pittsfield Township, Augusta Township, Superior Township, Sumpter Township, and the Western Townships Utilities Authority (wastewater only). The Authority purchases water from the Great Lakes Water Authority (GLWA) and delivers to approximately 112,000 people and 22,000 businesses.

The Authority is responsible for operation and maintenance of the public water supply facilities within the Charter Township of Ypsilanti and the City of Ypsilanti. The assets are tracking in the Authority's Geographic Information System (GIS) databases and work order management system, Lucity. Assets include:

- Approximately 330 miles of distribution main (16-inch diameter and smaller) and 24 miles of transmission main (larger than 16-inch diameter)
- Approximately 6,157 system valves
- Approximately 3,146 hydrants
- Four pressure reducing valve (PRV) vaults
- Four ground storage tanks and two elevated storage tanks with a capacity of 16.25 million gallons
- Six booster pumping stations with over 180 separately inventoried assets

The Michigan Department of Environmental Quality (MDEQ) requires that a Water Reliability Study and General Plan be prepared for municipal systems and updated every five years. New requirements in 2017 also include an Asset Management Plan (AMP). OHM Advisors was retained by the Authority to prepare a Water System Reliability Study, General Plan, and AMP. The required elements of the Water Reliability Study include population and water demand projections for existing, 5-year and 20-year planning periods along with a capacity and needs assessment of the water supply and storage components. The General Plan requirements include the creation of a comprehensive water system map, hydraulic analysis of the water system displaying system pressures and available fire protection, and a capital improvement plan for the 5-year and 20-year planning periods. The AMP requires an asset inventory and evaluation of probability and consequence of failure on a per asset basis.

Water Pressure and Available Fire Protection

A hydraulic water model was developed to perform the hydraulic analysis within the City and Township. GLWA connection settings and booster station operating data were input into the model to simulate actual operating conditions. Existing water demand was calculated and peaking factors for maximum day and peak hour were determined from the Authority's water records and SCADA (Supervisory Control and Data Acquisition) data from 2011 to 2017. SEMCOG (Southeast Michigan Council of Governments) future population projections were used to forecast the 5-year and 20-year population and resulting water demand projections. The model was then used to predict anticipated system pressures and available fire protection for these future planning periods.

Generally speaking, both the City and Township have good working pressure and adequate fire protection for the three planning periods. Desired fire protection rates vary depending on the land use. The following

desired rates, based on training material published by the International Fire Service Training Association, were used:

- Single Family Residential = 1,000 gpm
- Multi-Family Residential = 1,500 gpm
- Commercial = 2,500 gpm
- Industrial = 3,500 gpm

Nearly all areas meet or exceed the desired fire protection rates. There are several areas within the City that have less than the desired flow rate due to being serviced by small, dead end mains.

Risk Assessment

The Authority used a methodical risk based approach to prioritizing projects. This approach considered both the Probability of Failure (PoF) or condition and Consequence of Failure (CoF) or criticality as shown in Figure A. Horizontal assets like water main were assigned a condition score, based on the asset's estimated remaining useful life and known break history. The following factors were combined to determine the Authority's CoF for horizontal assets:

- Diameter/Size – the relative size of the asset with respect to the rest of the system.
- Huron River Crossings
- Within the Right-of-Way of major roads – M-12, M-23, 1-94, Wiard Road (Between M-12 and I-94), and Washtenaw Avenue
- Dead Ends
- Top Water Users
- Critical Water Users

Vertical assets within the pumping stations were physically inspected by experienced process design engineers with input from Authority operators. Each vertical asset was assigned an expected failure year, PoF, and CoF.

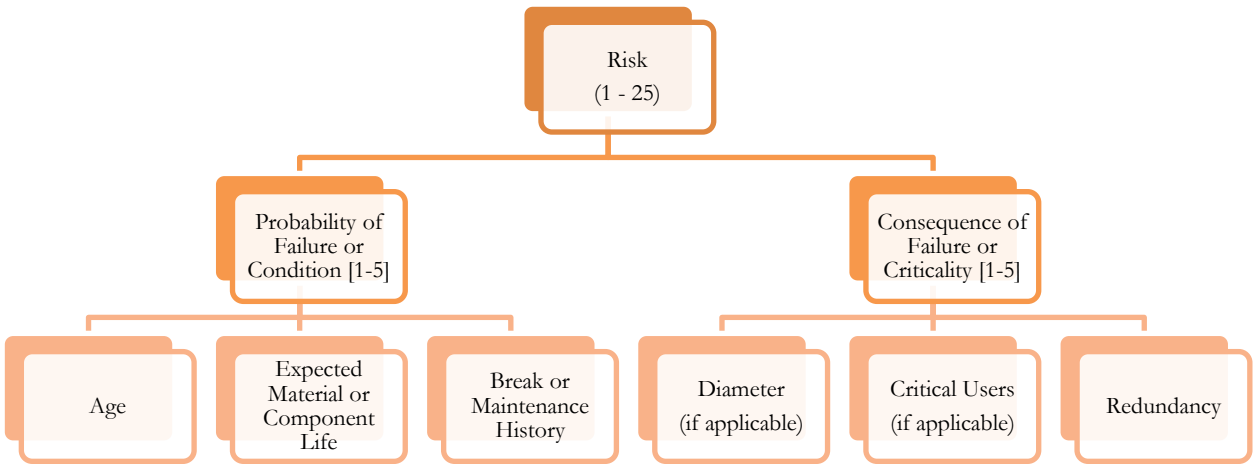

Figure A: Risk Assessment

Most of the Authority's assets are categorized as low or medium risk assets. These assets will continue to degrade over time and their condition will worsen, if no preservation measures are taken, which in turn will shift the distribution of the risk categories.

Level of Service

The Authority, in line with its mission statement outlined below, adopted level of service criteria, which it plans to use as a guideline to manage the water system. These level of service criteria are summarized in Table A.

> ***YCUA is committed to enhancing the safety, health, and quality of life for the people serviced by the water system through effective management and maintenance of its infrastructure. YCUA's overall goal is to have appropriate capital reserves to ensure service to all of their customers.***

Table A: Level of Service Criteria

Key Service Criteria	Target Level of Service
Regulatory Compliance	On-going compliance with all state and federal water quality regulations
Customer Rates	Rates will be reviewed on an annual basis and raised as needed.
Valve Maintenance	Continue advancements in valve exercising program
Hydrant Maintenance	Continue advancements in existing hydrant flushing program

Tracking and assessing of the level of service criteria will be completed as part of routine AMP reviews, and updated as necessary. As new level of service criteria are created, they will be incorporated into future versions of the AMP. With this document serving as the Authority's first iteration in the AMP process, targets and tracking are expected to develop as the Authority implements new digital tracking tools through GIS and Lucity.

Capital Improvements and Rate Sufficiency

A Capital Improvement Plan (CIP) has been completed for the Authority, and it includes recommended improvements based on the analysis of the water system.

The pump station inspections identified remaining useful life, anticipated replacement year, and anticipated replacement years for all assets. Table B summarizes the expected asset replacement costs for each station.

Table B: Pumping Station Asset Replacement Costs

Pumping Station	5-Year (2018-2022)	20-Year (2023-2037)
Bridge Road	$34,800	$1,162,300
Clark Road	$186,700	$66,900
Ellsworth	$28,400	$191,300
Holmes Road	$33,000	$343,000
Merritt Road	$198,300	$751,500
Textile Road	$204,900	$155,700
Total	**$686,100**	**$2,670,700**

Due to the large number of asset replacements needed at the Clark and Textile Road Stations, larger capital projects to replace or upgrade those stations are listed below. Additional larger improvements to the Merritt and Bridge Road Stations are also included below.

- Clark Road Pumping Station Replacement – $672,000
- Textile Road Pumping Station Upgrade – $1,070,000
- Merritt Road Pumping Station Improvements – $376,000
- Bridge Road Pumping Station Improvements – $430,000

A majority of the water main improvements shown in Table C are made due to water main breaks. Projects will be prioritized based on anticipated road projects and coordination with the City of Ypsilanti, Ypsilanti Township, and the Washtenaw County Road Commission.

Table C: CIP Projects

CIP Project	Total Estimated Cost
Fairway Hills	$ 993,600
Washtenaw, Cornell, N Huron River Dr.	$ 3,824,700
North of Washtenaw Golf Club	$ 5,359,500
S Clubview Dr.	$ 414,800
West Willow Neighborhood (North)	$ 1,447,200
5-Year Total =	**$ 12,039,800**
Apple Ridge Park, Bud and Blossom Park neighborhoods	$ 2,207,600
West Willow Neighborhood (West)	$ 1,226,900
Gault Village	$ 9,777,400
S Grove St.	$ 4,946,400
West Willow Neighborhood (South)	$ 2,198,900
E Cross St.	$ 1,634,400
Taft and Jones	$ 423,400
Faithway Baptist Church	$ 1,939,700
West of S Ford Rd.	$ 4,130,500
East of S Ford Rd.	$ 2,652,500
E Michigan Ave	$ 697,700
E Clark Rd.	$ 3,590,600
N Prospect Rd	$ 885,300
20-Year Total =	**$ 36,311,300**

The Authority reviews and updates its financial position annually. The Authority's Board (Board) of Commissioners approves the annual budget and rate increases. The 5-year and 20-year cost considerations will be reviewed and incorporated, as appropriate, in future budgets. Funding gaps that may exist will be addressed at that time. A rate study will be recommended on a routine basis or when significant gaps in funding are realized.

I. PURPOSE AND SCOPE

The purpose of this Water Master Plan is to evaluate the existing municipal water supply, storage, and transmission and distribution systems serving the City of Ypsilanti, Ypsilanti Township, and portions of six other communities served by the Ypsilanti Community Utilities Authority (Authority). Results will include recommendations for improvements to the system necessary to meet the present and future needs of the community.

The Authority purchases drinking water from the Great Lakes Water Authority (GLWA) and distributes it to the City of Ypsilanti and Ypsilanti Township, as well as to Augusta Township, Superior Township, and portions of Pittsfield Township, York Township, Canton Township, and Van Buren Township. The Authority owns and maintains the distribution and transmission system within the City of Ypsilanti and Ypsilanti Township. The Authority also owns and maintains the transmission main from the Township to the prison, forensic center, and the York Township connection which are outside the City and Township.

This report considers the ability of the distribution system to provide the required operating pressure and desired fire protection throughout the City and Township. Planning periods for present day, 5-year, and 20-year projections are included.

The report is intended to satisfy the MDEQ Michigan Safe Drinking Water Act Part 12 Water Reliability Study, Part 16 General Plan Requirements, and Rule 1606 which outlines the requirements for the Asset Management Plan as a part of the General Plan. Sections II through V of this report address the Water Reliability Study, Section VI addresses the General Plan, and Section VII addresses the Asset Management Plan.

The scope of this study included the following:

- Compilation and reporting of current population and number of service connections.
- Compilation and reporting of water production and consumption data for present, 5-year, and 20-year planning periods consisting of average daily demand, maximum daily demand, peak hour demand, and fire demand. Basis for demand projections and annual usage totals are also provided.
- Data collection and system mapping.
- Development of a hydraulic water model using water demand allocation, GLWA pressure reducing valve (PRV) settings, and booster station settings to reflect the actual system operation.
- Water model analysis for average day, maximum day, peak hour, and fire protection demand scenarios under existing, 5-year, and 20-year planning periods.
- Probability of Failure, Consequence of Failure, and Business Risk Exposure calculations.
- Revenue structure, budgeting, and rate sufficiency information.
- Identification of recommended system improvements and cost opinions.

II. EXISTING WATER SYSTEM

A. SERVICE AREA

The City of Ypsilanti and Ypsilanti Township are the founding member communities of the Authority and comprise the main service area. This service area is primarily residential and commercial with some agricultural areas in the southern part of the Township. The City is 4.5 square miles and the Township is 31.8 square miles for a total service area spanning 36.3 square miles. The overall layout of the water main distribution and transmission system is shown in the General Plan Map Figure A-1, Appendix A.

B. WATER SUPPLY OVERVIEW

The primary water service feeds to the City and Township are through two GLWA connections. These connections are located near Willow Run Airport on Ecorse Dr. and Wiard Rd. One connection services the City while the other services the Township.

The GLWA connection servicing the Township (YT-01) has a flow meter and a pressure-reducing valve. The connection servicing the City (YT-02) has a flow meter and a pressure reducing valve (PRV) which is located farther downstream on Tyler Rd. A third connection (YT-03) serves Superior Township. YT-01 is located at Old Ecorse Road and Rawsonville Road/County Line, YT-02 is located at Old Ecorse Road and Thoroughbred Way, and YT-03 is located at Geddes Road and Ridge Road. Flows through these GLWA connections are contractually limited to 24.1 MGD (maximum day) except during cases of an emergency such as fires and/or other natural disasters.

The six pump stations operate such that:

- They will provide appropriate flows and pressures in the water system for the various demand scenarios along with the GLWA connection pressures and flow rates.
- They will ensure that flows through the GLWA connections will not exceed 24.1 MGD except in cases of emergencies.

A listing of the PRVs is shown in Table 1.

Table 1: Pressure Reducing Valves

Location	Size (in)	Existing Setting (psi)	Elevation (ft)	Existing Hydraulic Grade (ft)
Old Ecorse Road (YT-01)	30	85	728	924
Tyler Road	24	76	728	904
Wiard Road	20	81	726	913

The Authority also maintains three connections with Superior to the north, three connections with Augusta to the south, 13 connections with Pittsfield to the West, and one connection each with York, Van Buren, and Canton as illustrated in Figure A-1.

C. STORAGE OVERVIEW

The City of Ypsilanti has two elevated storage tanks and Ypsilanti Township has four ground storage tanks. Their capacities and locations are listed in Table 2 below. There is a total of 16.25 MG (million gallons) of storage within the Authority's system.

Table 2: Storage Tanks

Name	Location	Jurisdiction	Type	Capacity (gallons)	Year Constructed
Holmes	2615 Holmes Rd.	Township	Ground	2,000,000	1966
Bridge North	2365 Bridge Rd.	Township	Ground	5,000,000	1991
Bridge South	2365 Bridge Rd.	Township	Ground	5,000,000	1969
Ellsworth	2960 Ellsworth Rd.	Township	Ground	3,000,000	1970
Stone Tower	303 N. Summit	City	Elevated	250,000	1890
Shadford Tower	1861 Cross St.	City	Elevated	1,000,000	1957

D. TRANSMISSION AND DISTRIBUTION MAINS

The Authority's water system is comprised of 4-inch through 36-inch water mains with a total of 1,870,231 feet or 354 miles of water main. The Authority's water system was installed from the 1880s to the present, with the majority of these mains constructed in the last 40 years. A variety of pipe materials have been used including asbestos cement (AC), cast iron (CI), concrete (Conc), ductile iron (DI), galvanized iron (GI), high-density polyethylene (HDPE), polyvinyl chloride (PVC), steel, and traces of unknown (UNK) material. Water main installed in the 1880s is composed primarily of steel material while the more recently installed main is constructed of ductile iron.

It should be noted that limited gaps or erroneous data exist within the GIS pipe data as it relates to material of construction, and installation date. These will be updated if new information becomes available.

Table 3: Water System Piping Summary

Pipe Diameter (inches)	Total Length	Pipe Material								
	(feet)	AC	CI	Conc	DI	GI	HDPE	PVC	Steel	UNK
4	72,585	-	58,960	-	1,787	1,132	-	4,684	-	6,023
6	292,174	5,991	234,167	-	42,451	-	8	2,838	44	6,673
8	815,094	23,209	99,607	-	634,898	-	3,890	22,450	-	31,041
10	33,066	-	14,993	-	2,090	-	-	5,856	-	10,127
12	362,845	23,227	81,256	-	199,567	-	-	12,407	5,983	40,405
16	171,620	-	76,343	-	60,091	-	-	2,670	-	32,515
18	137	-	137	-	-	-	-	-	-	-
20	3,425	-	-	-	3,425	-	-	-	-	-
24	72,792	-	28,431	16,963	27,398	-	-	-	-	-
30	22,808	-	-	19,149	3,659	-	-	-	-	-
36	23,686	-	-	18,292	5,394	-	-	-	-	-
Percent	-	2.8%	31.8%	2.9%	52.4%	.06%	.21%	2.7%	.32%	6.8%
Total	**1,870,231**	**52,427**	**593,894**	**54,404**	**980,760**	**1,132**	**3,898**	**50,905**	**6,027**	**126,784**

II. POPULATION AND WATER USE

A. POPULATION

The Southeast Michigan Coalition of Governments (SEMCOG) population projections estimate that the City and Township will experience a combined 9% growth in population in the next 20 years. Appendix B contains the SEMCOG profiles for each of the communities served by the Authority. Table 4 summarizes the population projections for the City and Township. Since the Authority only provides water to a portion of the contract customers through a master meter, the total populations of those customers are not included in the population projection.

Table 4: Population Data

Year	City Population	Township Population	Total Population
Current	19,137	53,688	72,825
5-Year	19,187	54,602	73,789
20-Year	20,000	59,584	79,584

B. SERVICE CONNECTIONS and USER CLASS

A summary of the breakdown between residential and industrial/commercial users is shown in Table 5. The Township's users account for a little over 77% of the meters in the system. The contract customers were not considered in this meter count because the Authority uses a master meter at the community boundaries. The Authority does not own or operate the water distribution systems of its customer communities.

Table 5: Meter Count

Meter Size (inch)	City	Township	Allowed Usage (cubic feet)
⅝	4,560	16,305	600
1	231	391	1000
1 ½	131	398	2100
2	205	249	4000
3	16	20	9000
4	23	15	16,200
6	4	10	36,000
8	0	23	66,000
10	1	8	102,000
12	0	1	150,000
30	0	1	
TOTAL	5,171	17,421	

C. EXISTING WATER USAGE

Historical hourly demand data was provided by the Authority from the GLWA's Wholesale Automated Meter Reading (WAMR) portal. System demand is based on data from YT-01, YT-02, and YT-03. Average day, maximum day, and peak hour demand rates for the City and Township (including contract customers) are shown in Tables 6 and 7 in Million Gallons per Day (MGD).

Peaking factors (PF) for maximum day and peak hour usage were calculated for the past three years for both the City and Township. Based on these calculated peaking factors, appropriate peaking factors to use for the City water system were determined to be 1.72 for maximum day and 2.18 for peak hour. Appropriate peaking factors to use for the Township and wholesale customers were determined to be 1.7 for maximum day and 2.56 for peak hour. Pittsfield Township peak hour demands were limited to their contractual maximum demand of 4,450 gpm regardless of system peaking factor.

Table 6: City of Ypsilanti Historic Water Demand Summary

Year	Water Demand				
	Average Day	Maximum Day	Maximum Day PF	Peak Hour	Peak Hour PF
	MGD	MGD		MGD	
2015	2.07	3.25	1.57	4.26	2.06
2016	2.31	3.26	1.41	4.92	2.13
2017	2.06	3.54	1.72	4.50	2.18
PEAKING FACTORS			**1.72**		**2.18**

Table 7: Ypsilanti Township and Wholesale Customers Historic Water Demand Summary

Year	Water Demand				
	Average Day	Maximum Day	Maximum Day PF	Peak Hour	Peak Hour PF
	MGD	MGD		MGD	
2015	7.35	12.48	1.70	18.84	2.56
2016	8.26	13.93	1.69	19.48	2.36
2017	8.16	13.09	1.60	19.55	2.40
PEAKING FACTORS			**1.70**		**2.56**

The Authority has primarily residential water users with some commercial and several large industrial water users in the main water system. The largest water users within the City include Eastern Michigan University and Marsh Plating as well as some apartment complexes. The largest water users within the Township are the Ford Motor plant and an apartment complex. The wholesale customers are also major users within the system. The largest users and their demands are listed in Table 8.

Table 8: Top System Users

User	Location	Average Day Demand (gpm)
Eastern Michigan University	City	233
Marsh Plating	City	77
Forest Knoll	City	33
River Drive Apartments	City	19
Peninsular Place Apartments	City	15
Hewitt Land	City	10
Ypsilanti Housing	City	6
Ypsilanti Schools	City	7
Ford Motor	Township	51
Sun Communities	Township	39
Lake in the Woods	Township	79
St. Joseph Mercy Hospital	Township	112
Superior	Wholesale	320
Augusta	Wholesale	330
Pittsfield	Wholesale	2,430

D. FUTURE WATER DEMANDS

Projections of 5-year and 20-year water demands were made based on per capita flow and population projections within the City and Township. The existing average day demand is about 89 gallons per capita per day (gpcd) in the City and about 75 gpcd in the Township. The demands for the whole system include the contract customer communities which are expected to grow at a rate similar to that of the Township. The resulting 5-year and 20-year projected demands for the City, Township, and total system are shown in Tables 9, 10, and 11.

Table 9: City of Ypsilanti Projected Water Demand

Year	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Peak Hour Demand (MGD)
2018	1.70	2.92	3.71
5-Year	1.71	2.94	3.73
20-Year	1.78	3.06	3.88

Table 10: Ypsilanti Township Projected Water Demand

Year	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Peak Hour Demand (MGD)
2018	4.03	6.85	10.32
5-Year	4.10	6.97	10.50
20-Year	4.47	7.60	11.44

Table 11: Total System Projected Water Demand

Year	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Peak Hour Demand (MGD)
2018	9.90	16.83	22.36
5-Year	10.09	17.17	22.60
20-Year	10.91	18.47	23.81

E. FIRE PROTECTION

In addition to providing water at adequate pressure to the system users, a secondary purpose of a water system is to provide available water for fire protection. Although this is a secondary purpose of a water system, frequently the considerations for available fire protection can control the design of a water system. For this reason, it is important to define the fire protection that a system should achieve, and evaluate the ability of the system to provide the recommended available fire protection.

The required fire protection used for this study was determined based on our experience with other communities and the fire protection rating system used by the Insurance Services Office (ISO).

While it is important to provide adequate fire protection to protect the community and reduce home-owners insurance rates, a balance must be maintained between providing fire protection and not constructing oversized facilities to attain fire protection goals. There is an increase in cost to construct and maintain a water system with oversized facilities. A water system designed to provide high fire protection rates can cause long residence times in the system, which can contribute to deterioration in water quality. It is also important to note that providing fire protection is not a state or federal requirement of a water system. Therefore, the fire protection recommendations used in this study were selected to represent a balance between providing fire protection and not constructing oversized facilities to attain fire protection goals.

Based on the above discussion, the recommended fire protection used in this study ranges from 1,000 gpm for residential areas to 3,500 gpm for industrial areas based on training manuals published by the International Fire Service Training Association. Table 12 summarizes the recommended fire protection rates for each land use district. It should be noted that the recommended fire protection for various land use

districts is based on fire protection for structures without a sprinkler system for fire suppression. For structures with a sprinkler system the fire protection desired to extinguish a fire may be much lower.

Table 112: Recommended Fire Protection per Zoning District

Recommended Fire Protection (gpm)	Zoning District
1,000	Single Family Residential
1,500	Multi-Family Residential
2,500	Commercial
3,500	Industrial

III. ANALYSIS OF EXISTING CONDITIONS

A. STORAGE CAPACITY

The Authority has 16.25 million gallons (MG) of total storage in the system. The Township has four ground storage tanks which have a total capacity of 15 MG, and the City has two elevated storage tanks that hold a total of 1.25 MG. The Ten States Standards recommends that a system have a minimum storage capacity equal to the average daily consumption. Systems should also have additional storage to provide the largest desired fire demand for three hours.

As shown in Tables 9 and 10, the combined average day demand of the City and Township is about 5.73 MG. With a desired fire protection of 3,500 gpm for industrial areas, a total of 630,000 gallons are required to meet the largest fire demand for three hours. The average day demands combined with the three hours of fire protection equals 6.36 MG. The Authority's current storage volume of 16.25 MG is sufficient to meet the system's average day and fire demands. The current storage capacity will be sufficient for at least the next 20 years.

B. PUMP STATIONS

The Authority operates and maintains six booster pumping stations throughout the service area. Table 13, below, provides detailed information on each of these stations. Firm capacity refers to the maximum capacity available when the largest pump is out of service. The presence of a variable frequency drive (VFD) is noted under Pump Horsepower (hp). Available pump curves are provided in Appendix K.

Table 123: Pump Station Details

Name	Location	Jurisdiction	Firm Capacity (MGD)	Pump Horsepower	Year Constructed
Holmes Road	2615 Holmes Rd.	Township	4	2 @ 100 hp	1966
Bridge Road	2365 Bridge Rd.	Township	23	2 @ 150 hp, 4 @ 300 hp (1 w/ VFD)	1991
Ellsworth Road	2960 Ellsworth Rd.	Township	3	2 @ 75 hp w/ VFD	1970
Textile Road	7527 Textile Rd.	Township	5	1 @ 30 hp, 1 @ 75 hp, 1 @ 100 hp	1961
Merritt Road	6929 Merritt Rd.	Township	11	3 @ 150 hp, 1 @ 200 hp	1986
Clark Road	2445 Huron River Dr.	Township	1	1 @ 30 hp, 1 @ 50 hp	1975

C. WATER QUALITY

YCUA receives its water from the GLWA. This water is treated at the Southwest Water Treatment Plant in Allen Park and the Springwells Treatment Plant in Dearborn. The Authority's drinking water is safe for consumption and meets federal and state requirements. A copy of the 2016 Drinking Water Quality Report is included in Appendix C.

D. POTENTIAL WATER SOURCES

The GLWA connections serving the City (YT-02) and Township (YT-01) are redundant in that either connection can feed the entire system in the event of an emergency. Should one connection fail, the other connection can serve the system by opening appropriate valves.

E. BACKUP POWER

The Merritt Road pump station has a 1,800 RPM generator rated at 500 kW with a system voltage of 480 volts.

IV. ANALYSIS OF UNACCOUNTED WATER

The annual volume of water purchased by the City and Township was compared to the annual volume of water billed to customers from 2007 to 2017 to quantify unaccounted water. The maximum acceptable water loss threshold is typically considered to be 10-15%. The combined water loss for the City and Township is below this threshold.

Unaccounted water can be attributed to any of the following:

- Water loss from the system
- Hydrant flushing
- Water used for fighting fires
- Water used for construction
- Water used for maintenance
- Other unmetered uses

Table 14 summarizes the unaccounted for water in the Authority's service area.

Table 134: Unaccounted for Water Summary

Year	Purchased (MG)	Billed to Customers (MG)	Percent Loss
2007	4,819	4,649	3.53%
2008	4,646	4,433	4.60%
2009	4,216	4,144	1.70%
2010	4,110	3,852	6.28%
2011	3,831	3,801	0.78%
2012	4,077	4,011	1.63%
2013	3,801	3,677	3.26%
2014	3,808	3,596	5.57%
2015	3,530	3,484	1.33%
2016	4,015	3,766	6.20%
2017	3,898	3,591	7.89%

V. WATER SHORTAGE RESPONSE

The Authority has an existing Emergency Response Plan, reviewed and approved by the MDEQ, that provides guidance for staff to respond during events that disrupt service in the water supply system. Due to the sensitive nature of portions of the Emergency Response Plan, it is not public record. Inquiries regarding the Emergency Response Plan should be directed to the Authority Director.

VI. HYDRAULIC ANALYSIS

A hydraulic model was prepared to evaluate the ability of the water system to provide adequate pressures and fire protection for existing, 5-year, and 20-year conditions. The model was also used to identify and recommend improvements for hydraulic deficiencies, if any. The model results indicate which areas have pressure and fire protection values less than desired.

A. COMPUTER MODEL

The computer program used by OHM Advisors for the creation and analysis of the water system is InfoWater/MSX Suite 8.6 developed by Innovyze. This program is widely used in the study of municipal water systems and capable of performing analysis of fluid flow in a pipe network under steady state and extended period conditions.

The InfoWater program utilizes an enhanced version of the EPANet analysis engine as developed and distributed by the U.S. Environmental Protection Agency. The program uses the conservation of water volume equation for the junctions and energy loss equations for the pipes to form a non-linear set of equations that mathematically represent the system. For a given set of boundary conditions, these equations can be solved to determine flow rate and pressure at any point within the system. This step is called "hydraulic balancing" of the network, and is accomplished by using an iterative technique to solve the non-linear equation set involved. The iterations end when the relative change in flow rates between two successive iterates is less than the specified accuracy (tolerance), and a steady state network solution is reached.

The water supply system is represented in the model by pipes and junctions. Junctions represent where pipes are connected and can be used to represent the water demand within the system. The information necessary for the analysis includes pipe length, diameter, and roughness coefficient. Additionally, each junction is given a demand and elevation above sea level. The system pumps, check valves, storage tanks, and pressure reducing valves (PRVs) are represented in the model and operational settings are input in the model. The program simulates the water flows through the system to determine the flow rates and pressures throughout the system.

The Authority's water system model includes the storage tanks, pumps, PRVs, transmission, and distribution mains (Appendix A, Figure A-1). A GIS layer of distribution and transmission mains was provided by the Authority and imported into the InfoWater program. Junction elevations were determined using Washtenaw County GIS contour data. Pump information was provided by the Authority and is available in Appendix K.

The Hazen-Williams friction formula was used to calculate energy losses associated with pipe wall friction. The use of this equation is standard practice to compute pressure losses in a water distribution network. The boundary conditions utilized for the simulations consist of minimum hydro-pneumatic tank operational hydraulic grades, minimum storage tank operational levels, pump curves associated with well pumps and high service pumps, and ground water levels of aquifers during pumping. Additionally, flow control valves were used on the hydro-pneumatic tank discharge lines to ensure that the model did not allow more water to flow from the hydro-pneumatic tanks than their respective well or high service pumps were capable of pumping into the tank.

B. DEMAND DISTRIBUTION

The total system demands shown in Tables 6 and 7 were compiled from the Authority's SCADA data. The top ten users in each the City and Township were determined from billing data, and specific demands were assigned to each of these top users. The remaining flow not assigned to the top users was allocated evenly across the rest of the system junctions, for each the City and Township respectively. Contractual demand limits for Pittsfield Township of 4,550 gpm are reflected in the maximum day and peak hour scenarios.

C. CALIBRATION

The model was calibrated using hydrant flow tests performed in November of 2017. These tests measured the static pressure under existing conditions and the residual pressure with a flowing hydrant at each test location. The flow rates coming out of the hydrants were also measured and calculations were made of what the flow rate would be with a residual pressure of 20 psi.

The model was run with average day demand, and static test pressures were compared to modeled pressures at the given test locations. A fire protection analysis was also performed with the model which calculated the available fire protection at every model junction with a 20-psi residual pressure remaining. The modeled available fire protection rates were compared to rates calculated from the field test data. Much of the data is within the desired tolerance (10% for static pressures, 15% for residual pressures, and 25% for fire protection). Where the modeled and field calculated fire protection rates were not within the desired tolerance, an additional comparison was done. At these locations, the measured test flow was put into the model and a comparison was made between the residual pressure measured in the field and the residual pressure predicted by the model. This additional comparison was also done for field tests that had less than a 10-psi pressure drop from static pressure to residual pressure as a low pressure drop makes accurate calculations of available fire protection at 20 psi more difficult. All but two of these comparisons were within the desired tolerance of 25%. Table 15 shows the hydrant test results.

Table 15: Model Calibration

Location	Pressure (psi)			Flow Rate (gpm)	Flow Rate @ 20 psi (gpm)				Percent Change		
	Static	Residual	Drop			Model Static Pressure (psi)	Model Residual Pressure (psi)	Model Fire Protection @ 20 psi (gpm)	Static Pressure	Residual Pressure	Fire
Southlawn at Bergen	76	68	8	1074	3073	72	52	1800	-5.3%	-23.5%	-41.4%
Greenside	70	62	8	1222	3286	68	61	3576	-3.6%	-1.6%	8.8%
Kingwood @ Oxford	58	56	2	1150	5641	59	56	4596	1.7%	0.0%	-18.5%
Woods Dr.	49	46	3	1087	3702	49	45	3169	0.0%	-2.2%	-14.4%
Sweet Rd.	64	46	18	1021	1654	68	52	1847	6.3%	13.0%	11.7%
Oak Ct	56	55	1	1198	8298	59	57	5959	5.4%	3.6%	-28.2%
Brooktree Ct	82	64	18	1256	2449	87	73	2924	6.1%	14.1%	19.4%
Levona St	75	74	1	375	3266	80	78	2355	6.7%	5.4%	-27.9%
Faircrest @ Applewood	64	57	7	1163	3137	76	66	2947	18.8%	15.8%	-6.0%
Trillium and Lilly	81	69	12	1300	3127	88	77	3476	8.6%	11.6%	11.1%
Lochmoor & Andrews	80	74	6	1353	4691	79	74	5129	-1.3%	0.0%	9.3%
Rolling Hills Park	78	54	24	1186	1911	75	41	1538	-3.8%	-24.1%	-19.5%

D. EXISTING PRESSURES AND FIRE PROTECTION

Existing System Modeling

The existing pressure scenarios that were performed are for average day, maximum day, and peak hour. The existing pressure scenarios are based on the following assumptions:

1. Existing demands from Tables 6 and 7 of the report.
2. Existing system hydraulics including improvements constructed as of January 2018, but not including any proposed improvements.
3. PRV settings from Table 1 of the report.
4. GLWA supply pressures as shown in Table 16 below.

Table 146: Existing Model Boundary HGL Settings

YT-01 Connection		
YT-01 Supply Pressure	126	psi
PRV Setting	85	psi
HGL	924	ft
YT-02 Connection		
YT-02 Supply Pressure	130	psi
PRV Setting at Tyler Rd.	76	psi
HGL	903	ft

Figures E-1 through E-3 in Appendix E show existing pressures for the average day, maximum day, and peak hour demand scenarios.

Existing Pressure Results

Under normal demand conditions (average day, maximum day and peak hour), water systems are required to provide a minimum of 35 psi throughout their distribution system. For emergency conditions, the minimum pressure requirement is 20 psi. The range of modeled pressures for the existing system exceed regulatory minimums and are shown in Table 17.

Table 17: Range of Operating Pressures in the Existing System Model

Location	Average Day	Maximum Day	Peak Hour
City	37 – 94 psi	37 – 93 psi	37 – 93 psi
Township	48 – 130 psi	47 – 130 psi	47 – 130 psi

The average day results have pressures ranging from 37 psi to 94 psi within the City (see Figure E-1). Similarly, the maximum day and peak hour results have pressures ranging from 37 psi to 93 psi in the City's water system (see Figures E-2 and E-3). In the Township, pressures range from 48 psi to 130 psi during average day demands, and between 47 psi and 130 psi during maximum day and peak hour demands. These pressures are within normal operating conditions for both the City and Township. The boundary conditions

are controlled by pressure reducing valves and pump stations; therefore, there is little variance in pressure. The lowest pressures are seen in the City near the intersection of Washtenaw and N. Hewitt Rd.

Existing Fire Protection Modeling

The existing fire protection analysis was performed based on the following assumptions:

1. Existing maximum day demands from Tables 6 and 7 of the report.
2. Existing system hydraulics, but not including any proposed improvements.
3. PRV settings from Table 1 of the report.
4. GLWA supply pressures as shown in Table 15.
5. Residual pressure of 20 psi at each node individually.

Each node in the system was assigned a desired fire protection value based on existing zoning of the parcels at the location of that given node. The desired fire protection for the different zoning classifications are shown in Table 12 of this report. A fire flow analysis was run for the system hydrant nodes to determine the available fire protection at each hydrant without dropping system pressures below 20 psi.

Percent of desired fire protection was taken by dividing available fire protection at each hydrant node by that node's determined desired fire protection. Figure E-4 shows the results of the fire protection analysis of the existing water system.

Existing Fire Protection Results

The system was found to have adequate fire protection for the most part. Nearly all areas meet or exceed the desired fire protection rates. There are some small areas scattered throughout the City that have less than 50% of the desired fire protection due to being located on 4-inch dead end mains. Although some individual hydrants have less than desired fire flow, hydrants within the City are located in fairly close proximity to each other which will aid in fire protection.

There is also an area in the Northeast part of the Township that has less than desired fire protection. This area is located on the Green Oaks Golf Course, and the small, 4-inch mains in this area are used for irrigation of the course.

E. ANALYSIS OF FUTURE CONDITIONS

Future Proposed System Analysis

In order to determine available pressure for the future conditions, 5-year and 20-year pressure analyses were performed. The 5-year and 20-year models were created from the existing model, with the following modifications adopted:

- Demands increased to 5-year and 20-year for average day, maximum day, and peak hour scenarios according to the projections in Tables 9, 10, and 11 of the report.
- Demand distribution was kept the same in the model by scaling demands up linearly according to increased population.
- Demands for the Pittsfield meters were not increased past the maximum day demands due to contractual limitations.
- System PRVs and booster station settings remained the same.
- Pipe replacements and upgrades were not included in the future model analyses, as they would have negligible impact on the system's pressures and fire protection.

Future Pressure Results

Figures F-1 through F-3 show 5-year pressures for the average day, maximum day, and peak hour scenarios. Ranges of modeled pressure results for the 5-year system are shown in Table 18. Figures G-1 through G-3 show 20-year pressures for the average day, maximum day, and peak hour scenarios. Ranges of modeled pressure results for the 20-year system are shown in Table 19.

Table 18: Range of Operating Pressures in the 5-Year System Model

Location	Average Day	Maximum Day	Peak Hour
City	37 – 94 psi	37 – 93 psi	37 – 93 psi
Township	48 – 130 psi	47 – 130 psi	47 – 130 psi

Table 159: Range of Operating Pressures in the 20-Year System Model

Location	Average Day	Maximum Day	Peak Hour
City	37 – 94 psi	37 – 93 psi	36 – 93 psi
Township	48 – 130 psi	47 – 130 psi	47 – 130 psi

The average and maximum day results for the 5-year and 20-year model scenarios do not show any areas with pressures below 35 psi. The peak hour results also do not show any areas with pressure beneath the required 35 psi. The lowest pressures are seen in the City near the intersection of Washtenaw and N. Hewitt Rd., which is at the highest elevation.

Future Proposed Fire Protection Modeling

In order to determine available fire protection in the future, 5-year and 20-year fire protection analyses were performed using the previously discussed 5-year and 20-year models.

The same desired fire protection values assigned to each node for the existing fire protection analysis were used for the future fire protection analyses. Figures F-4 and G-4 show the results of the 5-year and 20-year fire protection analyses, respectively.

VII. ASSET MANAGEMENT PLAN

A. OVERVIEW AND MISSION STATEMENT

The intent of this Asset Management Plan (AMP) is for the Authority to address high-priority asset needs that are critical to their infrastructure's performance, identify costs of operating the infrastructure, and plan for future capital improvements.

To assist with the MDEQ review of the AMP portion of this report, we have prepared a completed Water AMP checklist for consideraiton. The checklist is provided in Appendix L. This AMP is considered a living document that the Authority will review and update on a routine basis.

The purpose of the Authority's AMP is summarized by the following mission statement:

> ***YCUA is committed to enhancing the safety, health, and quality of life for the people serviced by the water system through effective management and maintenance of its infrastructure. YCUA's overall goal is to have appropriate capital reserves to ensure service to all of their customers.***

B. ASSET INVENTORY

An asset inventory is a list of the Authority's assets and their attributes. The Authority maintains digital records of their water distribution system using GIS. The Authority also uses a software program called Lucity to manage and maintain its assets as well as to coordinate maintenance and work order management. The current GIS data includes water main age, material, length, and size. For the AMP, assets were grouped based on type or function; the groupings include horizontal (water main, hydrants, and valves) and vertical assets (storage tank, storage tank components, booster stations, valve vaults, etc).

Table 20: Horizontal Asset Inventory Example

Asset ID	Asset Type	Install Year	Diameter (in)*	Material*	Condition	Remaining Useful Life
Example1	Distribution Main	1952	6	DI	3	50%
*if applicable						

C. LIST OF MAJOR ASSETS

The major assets are simplified in the text below:

- Approximately 330 miles of distribution main (16-inch diameter and smaller) and 24 miles of transmission main (larger than 16-inch diameter)
- 6,157 system valves
- 3,146 hydrants
- Four pressure reducing valve (PRV) vaults
- Four ground storage tanks and two elevated storage tanks
- Six booster pumping stations - A comprehensive inventory of the assets within the booster pumping stations is provided in Appendix I.

D. CONDITION ASSESSMENT

Through a methodical analysis procedure, the Probability of Failure (PoF) or condition of assets in the Authority's water distribution system has been assessed. The remaining useful life of the Authority's horizontal water main assets (mains, hydrants, and valves) was estimated based on the asset's install year and estimated design life. The estimated design life for various asset classes were determined from sources published by the Environmental Protection Agency and the American Society of Civil Engineers and are presented in Table 21.

Table 21: Estimated Water Main Design Life

Water System Asset Component	Estimated Design Life (years)
Water Main - Asbestos Cement (AC)	80
Water Main – Concrete (Conc)	100
Water Main - Ductile Iron (DI)	100
Water Main - High Density Polyethylene (HDPE)	100
Water Main – Cast Iron	100
Water Main – Galvanized Iron (GI)	80
Water Main – Polyvinyl Chloride (PVC)	100
Water Main - Copper	70
Water Main – Steel	80
Hydrants	60
Valves	40

A condition assessment was completed on the Authority's horizontal and vertical assets. The PoF of the Authority's assets is based on a condition scoring system, which uses a scale of one (1) to five (5), with one (1) meaning the asset is new or in excellent condition and five (5) meaning the asset has reached the end of its useful life. Horizontal assets were assigned a condition score, based on the asset's estimated remaining useful life and known break history, the as shown in Table 22. If water main age or material was unknown and could not be assumed, the associated pipe segment was assigned the average condition rating identified for pipe segments where all data was known. Vertical assets within the pumping stations were physically inspected by experienced process design engineers with input from Authority operators. Each vertical asset was assigned an expected failure year and PoF. Appendix H and Appendix I provide reference to the Authority's condition scores for horizontal assets and vertical assets, respectively. The condition scores are also maintained digitally in GIS and Lucity.

Table 22: Water Main Condition Score Generator

Condition Score	Condition Description	Estimated Remaining Useful Life (%)
1	New or Excellent Condition	100% - 80%
2	Minor Deterioration	80% - 60%
3	Moderate Deterioration	60% - 40%
4	Significant Deterioration	40% - 20%
5	Unserviceable	20% - 0%

The following understanding was generated based on the condition analysis:

- The horizontal assets have an average condition score of 2.5, meaning the majority of the system is expected to have minor to moderate deterioration.
- Over 71% of the vertical assets (estimated based on asset replacement cost) have a score of 3 or less, which means the majority of the system components are in moderate or better condition.
- The infrastructure will continue to degrade over time, for example, even though the average condition of the horizontal infrastructure suggests that the system is in moderate condition, a small percent of the infrastructure has a score of 4 (17%) and 5 (14%); this percentage will grow over time. The same holds true for the vertical assets.

E. CRITICALITY AND RISK

The investigation leading to the identification of critical water distribution infrastructure involved the development of a Business Risk Exposure (BRE) score, which is defined as the product of the probability of the infrastructure failing and the consequence of its failure. While the likelihood of failure is related to the physical condition of an asset described in the previous section, the Consequence of Failure (CoF) focuses on the economic losses and impacts to society due to an asset's failure.

The CoF for the Authority's water distribution assets is based on a ranking system, which uses a scale of one (1) to five (5), with 1 meaning the asset would have insignificant disruption if it were to fail and 5 meaning the asset would have catastrophic disruption if it were to fail. See Table 23 for the Authority's CoF ranking system. The CoF for vertical assets were assigned based on the criticality of an individual asset to system operation and incorporated redundancy.

Table 23: Consequence of Failure

Consequence of Failure Score	Description
1	Insignificant Disruption
2	Minor Disruption
3	Moderate Disruption
4	Major Disruption
5	Catastrophic Disruption

The following factors were combined to determine the Authority's CoF for horizontal assets:

- Diameter/Size – the relative size of the asset with respect to the rest of the system.
- Huron River Crossings
- Within the Right-of-Way of major roads – M-12, M-23, 1-94, Wiard Road (Between M-12 and I-94), and Washtenaw Avenue
- Dead Ends
- Top Water Users
- Critical Water Users

The results of a system level analysis indicate that the Authority's horizontal assets have an average CoF score of 2.5.

BRE is reported on a one to twenty-five (1 – 25) rating scale. BRE incorporates both condition and criticality to provide a means of prioritizing future system expenditures. Figure 1 summarizes the information used to calculate the risk for each of the Authority's horizontal and vertical assets, as applicable.

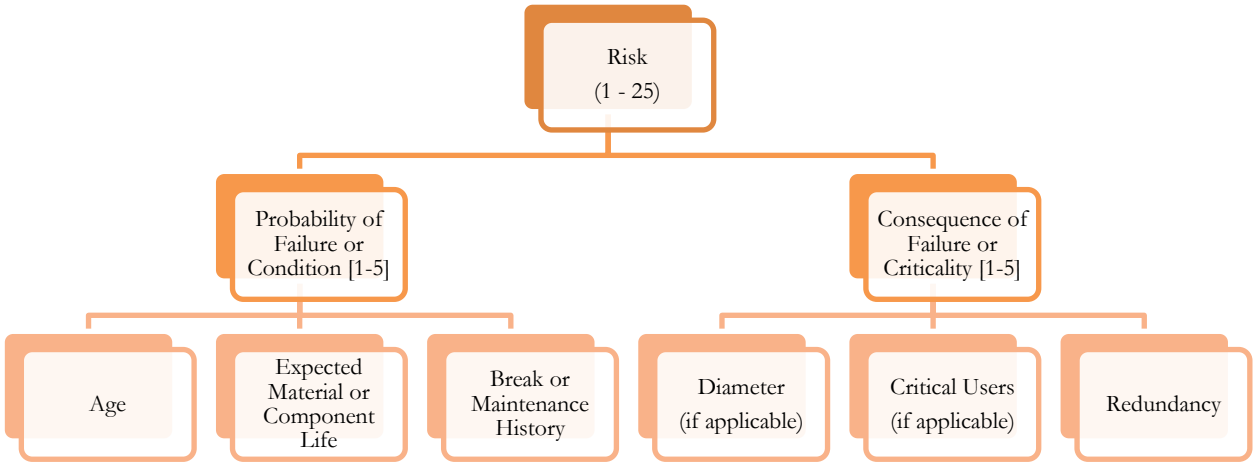

Figure 1: Risk/BRE Calculation

While most of the Authority's assets are categorized as low or medium risk assets as shown in Figures 2 and 3, these assets will continue to degrade over time and their condition will worsen, if no preservation measures are taken, which in turn will shift the distribution of the risk categories.

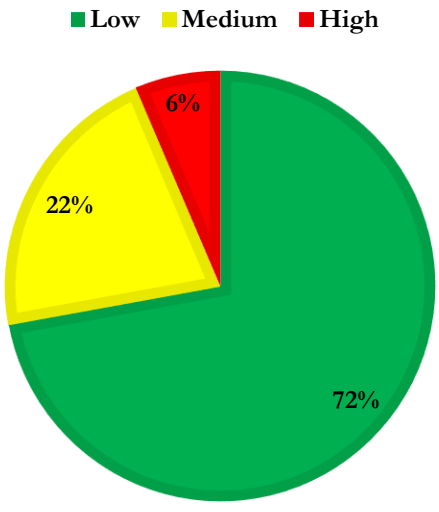

Figure 2: Horizontal Risk Distribution

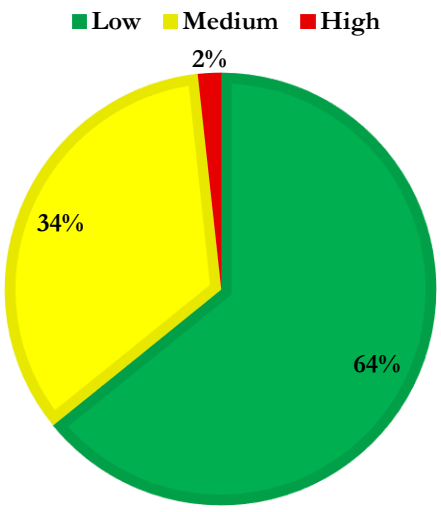

Figure 3: Vertical Risk Distribution

F. LEVEL OF SERVICE

The Authority, in line with its mission statement outlined earlier, adopted level of service criteria, which it plans to use as a guideline to manage the water system. These level of service criteria are summarized in Table 24.

Table 24: Level of Service Criteria

Key Service Criteria	Target Level of Service
Regulatory Compliance	On-going compliance with all state and federal water quality regulations
Customer Rates	Rates will be reviewed on an annual basis and raised as needed.
Valve Maintenance	Continue advancements in valve exercising program
Hydrant Maintenance	Continue advancements in existing hydrant flushing program

Tracking and assessing of the level of service criteria will be completed as part of routine AMP reviews, and updated as necessary. As new level of service criteria are created, they will be incorporated into future versions of the AMP. With this document serving as the Authority's first iteration in the AMP process, targets and tracking are expected to develop as the Authority implements new digital tracking tools through GIS and Lucity.

VIII. REVENUE STRUCTURE

The Authority reviews and updates its financial position annually. The Authority's Board (Board) of Commissioners approves the annual budget and rate increases. The budget and rate increase for fiscal year 2018-2019 were approved at the Board meeting on August 23, 2017. The meeting minutes indicating the Board's approval of the budget and 3.2% increase to water rate are included in Appendix J. Also included in Appendix J is the Authority's proposed budget, which indicates that annual revenue will cover expenditures with no gap in funding. The basis for water rates in the City and Township including allowed usage and surcharges are also available.

Please note that the revenue structure elements provided will be updated on an annual basis. The elements provided in Appendix J are based on Fiscal Year 2017-2018 budget and revenue considerations. This AMP's 5-year and 20-year CIP cost considerations will be reviewed and incorporated, as appropriate, in future budgets. Funding gaps that may exist will be addressed at that time. A rate study will be recommended on a routine basis or when significant gaps in funding are realized.

IX. CAPITAL IMPROVEMENT PLAN

A capital improvement plan (CIP) is a core component of this study and an essential planning tool that allows the Authority to properly plan for high cost, non-recurring projects. A CIP should detail capital needs related to future and upcoming regulations, major asset replacements, system expansions, system consolidation or regionalization and improved technology.

The CIP, which is outlined below, aides the Authority in identifying, prioritizing, and implementing water distribution system capital projects over a five (5) year and twenty (20) year planning period. Where applicable, this CIP pulls forward the 2005 Water Master Plan Recommendations and the 2014 Drinking Water Revolving Fund application projects. Based on the findings of this study and consultation with the Authority, the following improvements are recommended for the Authority's water system. Maps showing these projects and details are included in Appendix D.

The five and 20-year CIP recommendations are summarized below and are based on 2018 dollars.

A. PUMPING STATION IMPROVEMENTS

The pump station inspections identified remaining useful life, anticipated replacement year, and anticipated replacement years for all assets. Table 25 summarizes the expected asset replacement costs for each station.

Table 25: Pumping Station Asset Replacement Costs

Pumping Station	5-Year (2018-2022)	20-Year (2023-2037)
Bridge Road	$34,800	$1,162,300
Clark Road	$186,700	$66,900
Ellsworth	$28,400	$191,300
Holmes Road	$33,000	$343,000
Merritt Road	$198,300	$751,500
Textile Road	$204,900	$155,700
Total	**$686,100**	**$2,670,700**

Due to the large number of asset replacements needed at the Clark and Textile Road Stations, larger capital projects to replace or upgrade those stations are listed below. More detailed cost estimates for those projects are available in Appendix I. Additional larger improvements to the Merritt and Bridge Road Stations are also included below.

Several pumping station upgrades are included in the 5-year planning horizon.

- Clark Road Pumping Station Replacement – $672,000
- Textile Road Pumping Station Upgrade – $1,070,000
- Merritt Road Pumping Station Improvements – $376,000
    - Addition of 1 VFD ($108,000)
        - This cost assumes the existing motor is constant speed and needs to be re-wound to accept the new VFD with a NEMA4X enclosure.
    - Replacement of 3 VFDs ($36,000 each)
        - This cost assumes the existing motors are constant speed and need to be re-wound to accept the new VFDs. The existing enclosures can be used to house the replacement VFDs.
    - Replacement of Generator ($160,000)
- Bridge Road Pumping Station Improvements – $430,000
    - Addition of 4 VFDs ($107,500 each)
    - This cost assumes the existing motors are constant speed and need to be re-wound to accept the new VFDs with a NEMA4X enclosure. If VFDs are installed as separate projects, costs will increase 10-15% or approximately $120,000 per VFD due to increased mobilization costs.

Due to the known volatility in the skilled trade labor market and recognizing the Davis-Bacon Act regarding prevailing wages, these prices should be validated prior to commencing design phase efforts. Please note these figures do not account for costs of sewer repair.

B. WATER MAIN IMPROVEMENTS

For this analysis, a majority of the horizontal asset recommendations are made due to water main breaks. For budgetary purposes, replacement piping is assumed to be ductile iron PC 350 (e.g., open cut construction). Pipe costs are based on construction costs of $160/foot for 8-inch, $185/foot for 12-inch, and $215/foot for 16-inch, plus 10% for contingency and 25% for professional services which includes restoration and associated appurtenances. Due to the known volatility of the construction labor, material marketplace, and specific conflicts that may exist within corridors, these prices should be validated prior to commencing design phase efforts. Pipe replacement costs may be increased or decreased if pipe replacement techniques such as directional drilling or pipe bursting are employed. Projects will be prioritized based on anticipated road projects and coordination with the City of Ypsilanti, Ypsilanti Township, and the Washtenaw County Road Commission. A map of the 2017 PASER ratings is available in Appendix D. Table 26 below provides the estimated costs for each of the proposed CIP projects. The first 5 projects listed are in the 5-year planning period, while the remaining projects are in the 20-year planning period. A map of the proposed CIP locations is shown in Appendix D.

Table 26: CIP Projects

CIP Project	Total Estimated Cost
Fairway Hills	$ 993,600
Washtenaw, Cornell, N Huron River Dr.	$ 3,824,700
North of Washtenaw Golf Club	$ 5,359,500
S Clubview Dr.	$ 414,800
West Willow Neighborhood (North)	$ 1,447,200
5-Year Total =	**$ 12,039,800**
Apple Ridge Park, Bud and Blossom Park neighborhoods	$ 2,207,600
West Willow Neighborhood (West)	$ 1,226,900
Gault Village	$ 9,777,400
S Grove St.	$ 4,946,400
West Willow Neighborhood (South)	$ 2,198,900
E Cross St.	$ 1,634,400
Taft and Jones	$ 423,400
Faithway Baptist Church	$ 1,939,700
West of S Ford Rd.	$ 4,130,500
East of S Ford Rd.	$ 2,652,500
E Michigan Ave	$ 697,700
E Clark Rd.	$ 3,590,600
N Prospect Rd	$ 885,300
20-Year Total =	**$ 36,311,300**

APPENDIX C – PROPOSED SUBPROJECT DETAILS

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City of Ypsilanti Lead Service Line Replacement

In accordance with the 2018 revisions to the Lead and Copper Rule (LCR) established by the State of Michigan, YCUA prepared a preliminary distribution system materials inventory (DSMI) by January 1, 2020. Since then, YCUA staff have worked diligently to continuously update the DSMI so that the list will be complete on or before the current October 16, 2024, deadline. In the process, YCUA has identified just over 150 water services in the City of Ypsilanti that are either lead or galvanized previously connected to lead.

1. Design Parameters
   a. Due to the 2018 revisions to the LCR, YCUA is required to complete full replacement of water services where the existing pipe contains any lead, is galvanized from the water main to the meter, or is galvanized pipe previously connected to lead on the property owner's side of the curb stop box. Prior to the 2018 revisions, YCUA was only required to replace the portion of the water service between the water main and the curb stop box.
   b. Full replacement of water services is the responsibility of YCUA at YCUA's expense, regardless of ownership and whether the pipe is located on public or private property.
   c. Of the water services identified for replacement in the City of Ypsilanti, 16 have been determined to be lead within the public right-of-way but copper from the property line into the building. Consequently, only the portion of those water services located in the public right-of-way requires replacement. These pipes will be replaced during fiscal year 2024-2025.
   d. Almost all other water services identified for replacement in the City of Ypsilanti will require full replacement from the water main all the way to the meter in the building. These pipes will be replaced incrementally during fiscal years 2025-2026, 2026-2027, and 2027-2028.

2. Controlling Factors
   a. Replacement of the services identified is required by the LCR.
   b. YCUA and/or its consultant will follow notification and sampling procedures as required by the LCR and as utilized on similar service replacements completed during the past few years.

The opinion of probable project cost is $124,000.00 during fiscal year 2024-2024, $212,000.00 during fiscal year 2025-2026, $219,000.00 during fiscal year 2026-2027, and $239,000.00 during fiscal year 2027-2028.

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City of Ypsilanti Water Main Looping – West Warner

The proposed work will consist of installing 8” diameter water main in the City of Ypsilanti to provide redundant source of supply. The location for fiscal year 2024-2025 is West Warner Avenue in section 8.

1. Design Parameters
   a. The existing dead-end water main serves approximately 20 customers along West Warner Avenue.
   b. Although the water main is relatively new (less than 25 years old) and has not experienced any problems, the lack of redundancy would result in many, if not all, customers losing service in the event of a failure.
   c. The redundant source of supply will improve water quality in along West Warner Avenue.

2. Controlling Factors
   a. The proposed water supply system improvements are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. The preliminary alignment of the water main extension is located in either public right-of-way or land controlled by public agencies. Consequently, it is not anticipated that easement acquisition will be problematic and should be completed in advance of any loan-related activities.
   c. Open-cut construction is the anticipated method for installation of the proposed water main extension.

3. Maps and Sketches
   a. Project Location

The opinion of probable project cost is $180,000.00.

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Water Meter Upgrades

YCUA currently operates and maintains more than 23,000 devices to meter usage within the water distribution system in the City of Ypsilanti and Charter Township of Ypsilanti. The meters range in size from ⅝" to 12" diameter. Four different types of devices are currently utilized, with all metering devices being located inside buildings with a corresponding transmitter or reader. The transmitter may also be located inside the building.

1. Design Parameters
   a. YCUA is currently developing an advanced metering infrastructure (AMI) system and replacing or retrofitting all meters 4" in diameter and larger. AMI allows for two-way communication where the metering device can not only transmit data to YCUA but will also enable YCUA to transmit data to the meter and, by extension, the customer. Data transmitted from YCUA to the customer could include notifications of suspected leaks due to higher than normal consumption registered by the metering device. This second phase of meter replacement will include all meters 3" in diameter and smaller, the majority of which are residential customers.
   b. Radio frequency network equipment will be installed as part of the AMI system to transmit the two-way communications between the metering devices and YCUA.
   c. YCUA intends to directly engage a contractor to fully manage and implement all aspects of the replacement plan with the contractor completing the meter upgrades over a 3-year period.

2. Controlling Factors
   a. The existing metering devices consist of the following approximate quantities: 7,000 meter transceiver units (MXUs), 15,000 meter transmission units (MTUs), 500 electronic communications registers (ECRs), and 500 outside registers (OSRs). Approximately 5,000 of the existing metering devices are located within the City of Ypsilanti with approximately 18,000 located within the Charter Township of Ypsilanti.
   b. The methods of retrieving usage data from the metering devices varies: MTUs send a radio signal from the metering site to YCUA facilities. Data from MXUs is retrieved using a reading device from a vehicle driven on a specific route past the metering device. Data from ECRs is retrieved by touching the reading device to the metering device. OSRs only provide a display of the water used with the data manually entered by YCUA staff into the current billing software program.
   c. All four current technologies only allow for one-way communication, from the metering device to YCUA.
   d. Staff time currently utilized to collect data from the various metering devices will be redirected to other tasks associated with operation and maintenance of the water supply system.

The project will be separated by City and Township divisions. The opinion of probable project cost totals $10,116,800.00, with $2,266,800.00 attributed to the City of Ypsilanti and $7,850,000.00 to the Charter Township of Ypsilanti.

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Harriet Street Water Main Replacement

The proposed work will consist of replacing existing 4” diameter water main with new 8" diameter water main along Harriet Street between South Hamilton Street and First Avenue in section 9 of the City of Ypsilanti to improve water quantity and pressure. The water main in the project area was originally installed in the early 1930s and has failed on at least 16 occasions during the past 2 decades. The existing water main is undersized, unlined cast iron pipe and evidence of solid material build up inside the mains was noted during the main repairs. The material buildup reduces the effective size of the pipe and adversely affects the water distribution.

1. Design Parameters
   a. The existing water within the project area serves approximately 40 customers.
   b. Since the existing water main has experienced excessive failures and has exceeded its design life, it needs to be replaced.
   c. The proposed improvements will minimize future water main breaks in the area, avoid costly repairs incurred, and minimize potential contamination of the system that could occur as a result from such failures.
   d. The proposed improvements to the water supply system will maintain a double source of water supply.
   e. Hydraulic Modeling Results- Existing and Improved Conditions:

Street/Intersection	Existing Pipe Diameter	Proposed Pipe Diameter	Existing Flow (gpm)	Proposed Flow (gpm)
Harriet Street	4”	8”	1,300	1,600

2. Controlling Factors
   a. The proposed water supply system improvements are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. Harriet Street will be completely reconstructed by the City of Ypsilanti in two phases – from First Avenue to Hawkins Street during fiscal year 2024-2025 and from Hawkins Street to South Hamilton Street during fiscal year 2025-2026. The existing water main is located under the pavement, consequently, replacement of the old, undersized and failure-prone pipe in conjunction with the road improvements is warranted.

3. Maps and Sketches
   a. Project Location

The opinion of probable project cost is $458,000.00 during fiscal year 2024-2025 and $419,000 during fiscal year 2025-2026.

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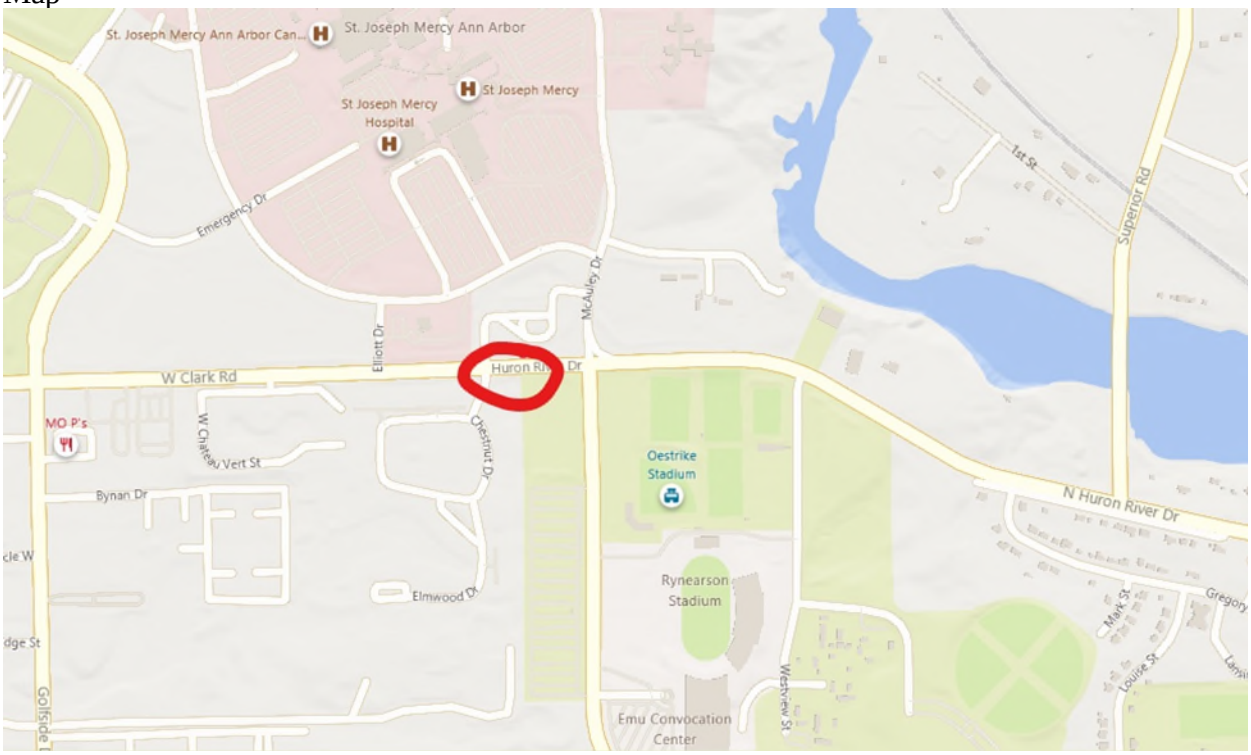
Clark Road Water Booster Pump Station Improvements

The Clark Road Water Booster Pump Station, located in section 5 of the Charter Township of Ypsilanti, was originally constructed during the mid-1970s.

1. Design Parameters
   a. The existing direct drive pumps will be replaced with new pumps equipped with energy-efficient variable frequency drives.
   b. The existing pumps are equipped with 30 horsepower and 50 horsepower motors. The replacement pumps will both be equipped with 50 horsepower motors.
   c. The obsolete electrical and controls equipment will be upgraded to modern standards.
   d. A permanent backup power source will be provided to add redundancy to the pump station.

2. Controlling Factors
   a. The pump station building is in poor condition and warrants demolition and replacement.
   b. The pump station is located in a permanent easement on a parcel not owned by YCUA. Additional easement area is being obtained by YCUA for the new building. The additional easement area is being procured independent of the Drinking Water Revolving Fund loan program.

3. Maps and Plans
   a. Map

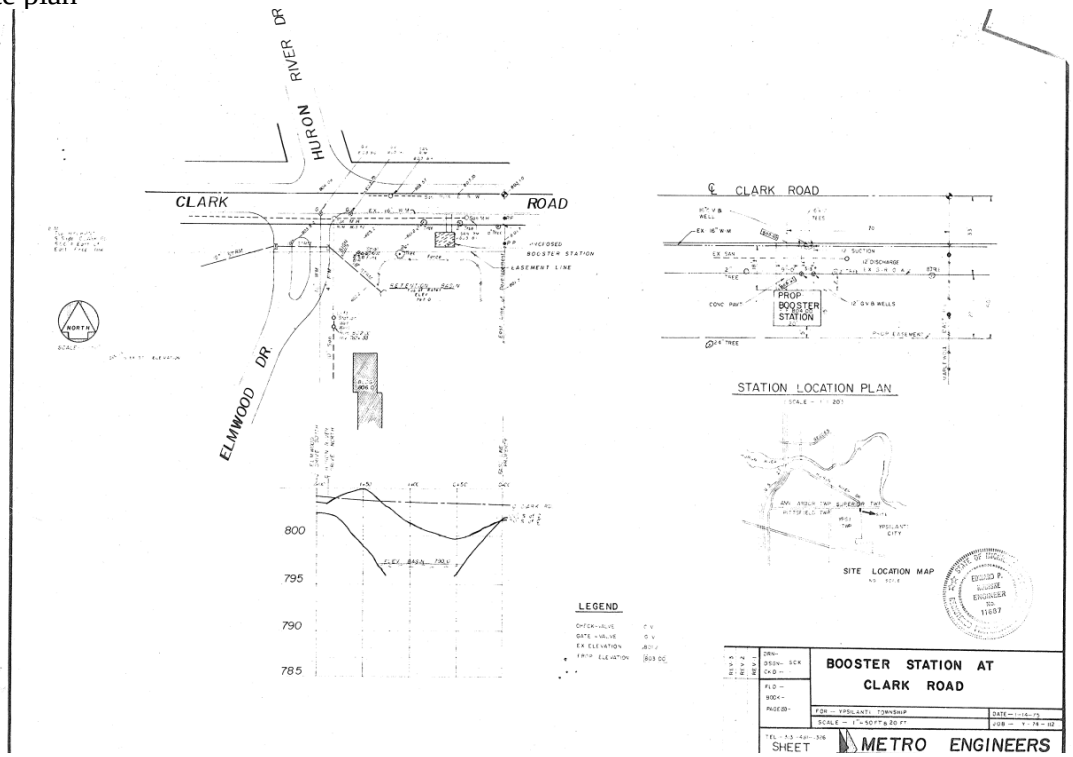


b. Aerial Photograph

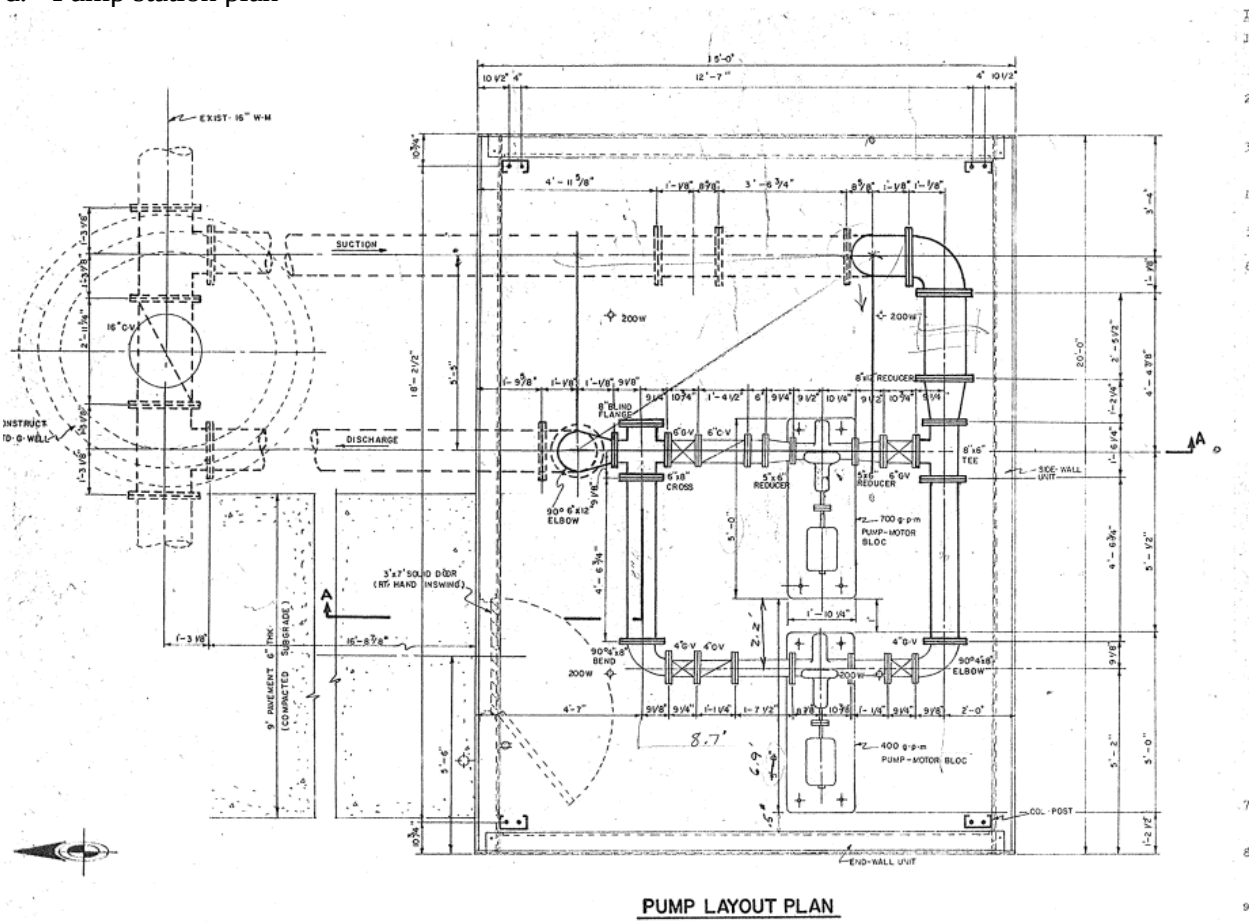
c. Building

d. Building interior

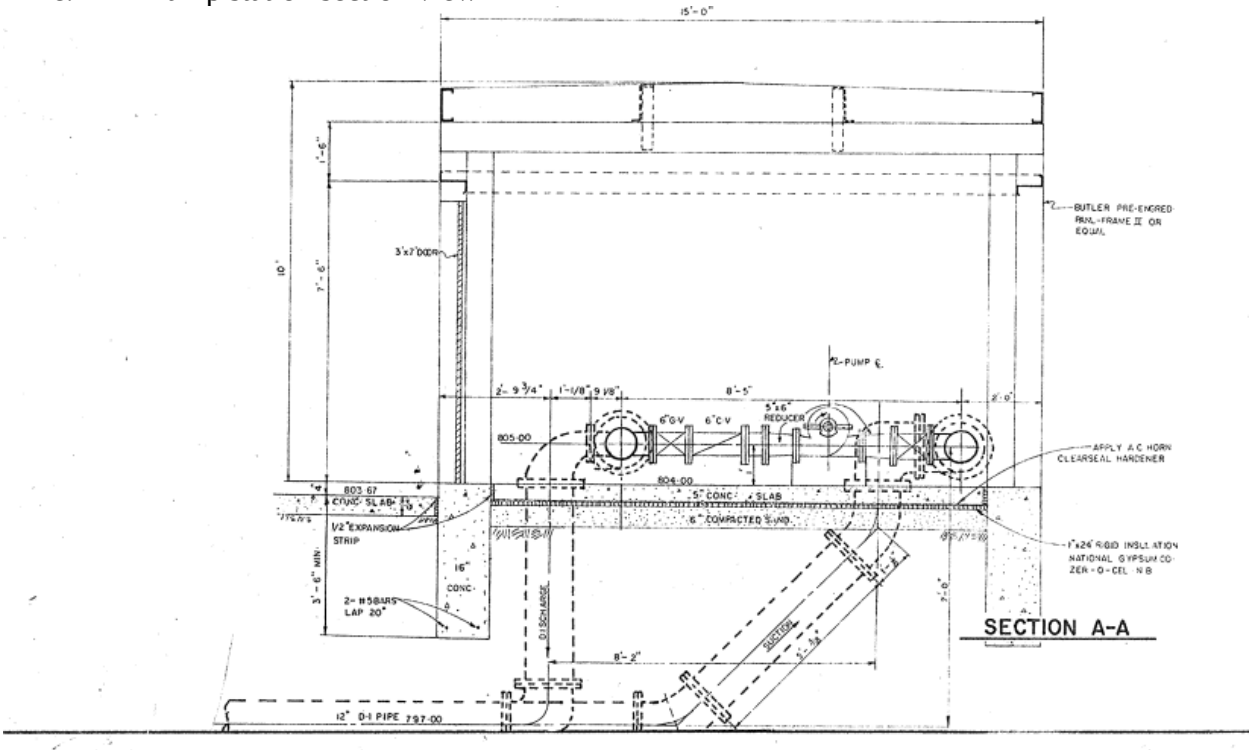
c. Site plan



d. Pump station plan



e. Pump station section view



The opinion of probable project cost is $1,300,000.00.

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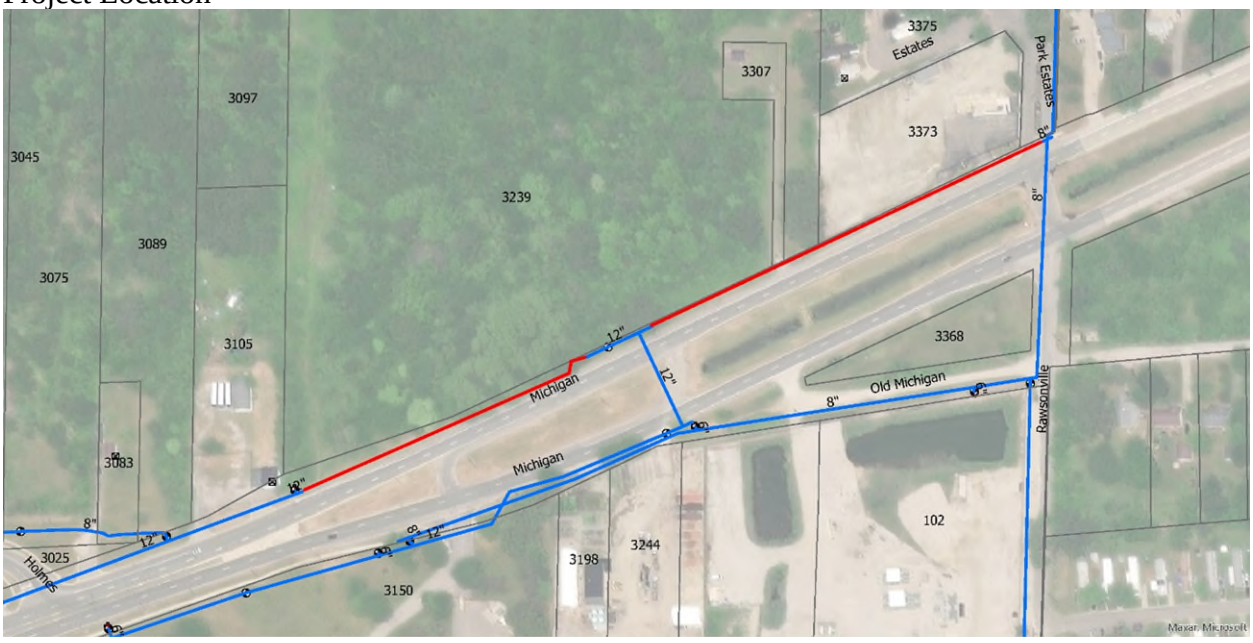
Michigan Avenue Water Main Loop

The proposed work will consist of installing 12” diameter water main between Holmes Road and the east boundary of the Charter Township of Ypsilanti in section 1 to provide a redundant source of supply to the area. The proposed water main will connect four existing dead ends to provide much needed redundancy to the northeast corner of the Township.

1. Design Parameters
   a. The existing single feed to the area services approximately 315 customers.
   b. Although the water main has not experienced any significant problems, the lack of redundancy would potentially result in loss of service to most, if not all, customers in the area in the event of a failure.
   c. The redundant source of supply will improve water quality in the area

2. Controlling Factors
   a. The proposed water supply system improvement is in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. The north side of Michigan Avenue between Holmes Road and the east boundary of the Charter Township of Ypsilanti is lightly populated. Consequently, installation of proposed new water main by open-cut trench method is the most effective method of installation. The proposed new water main will be installed by open-cut trench method.

3. Maps and Sketches
   a. Project Location



The opinion of probable project cost is $541,000.00.

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Charter Township of Ypsilanti Lead Service Line Replacement

In accordance with the 2018 revisions to the Lead and Copper Rule (LCR) established by the State of Michigan, YCUA prepared a preliminary distribution system materials inventory (DSMI) by January 1, 2020. Since then, YCUA staff have worked diligently to continuously update the DSMI so that the list will be complete on or before the current October 16, 2024, deadline. In the process, YCUA has identified approximately 70 water services in the Charter Township of Ypsilanti that are either lead or galvanized previously connected to lead.

1. Design Parameters
    a. Due to the 2018 revisions to the LCR, YCUA is required to complete full replacement of water services where the existing pipe contains any lead, is galvanized from the water main to the meter, or is galvanized pipe previously connected to lead on the property owner's side of the curb stop box. Prior to the 2018 revisions, YCUA was only required to replace the portion of the water service between the water main and the curb stop box.
    b. Full replacement of water services is the responsibility of YCUA at YCUA's expense, regardless of ownership and whether the pipe is located on public or private property.
    c. Of the water services identified for replacement in the Charter Township of Ypsilanti, all of them are located on private property with copper piping located in the public right-of-way. Each fiscal year for the next 4 years YCUA will replace 16 or 17 services located on private property that have been identified as galvanized previously connected to lead.

2. Controlling Factors
    a. Replacement of the services identified is required by the LCR.
    b. YCUA and/or its consultant will follow notification and sampling procedures as required by the LCR and as utilized on similar service replacements completed during the past few years.

The opinion of probable project cost is $165,000.00 during fiscal year 2024-2024, $170,000.00 during fiscal year 2025-2026, $175,000.00 during fiscal year 2026-2027, and $180,000.00 during fiscal year 2027-2028.

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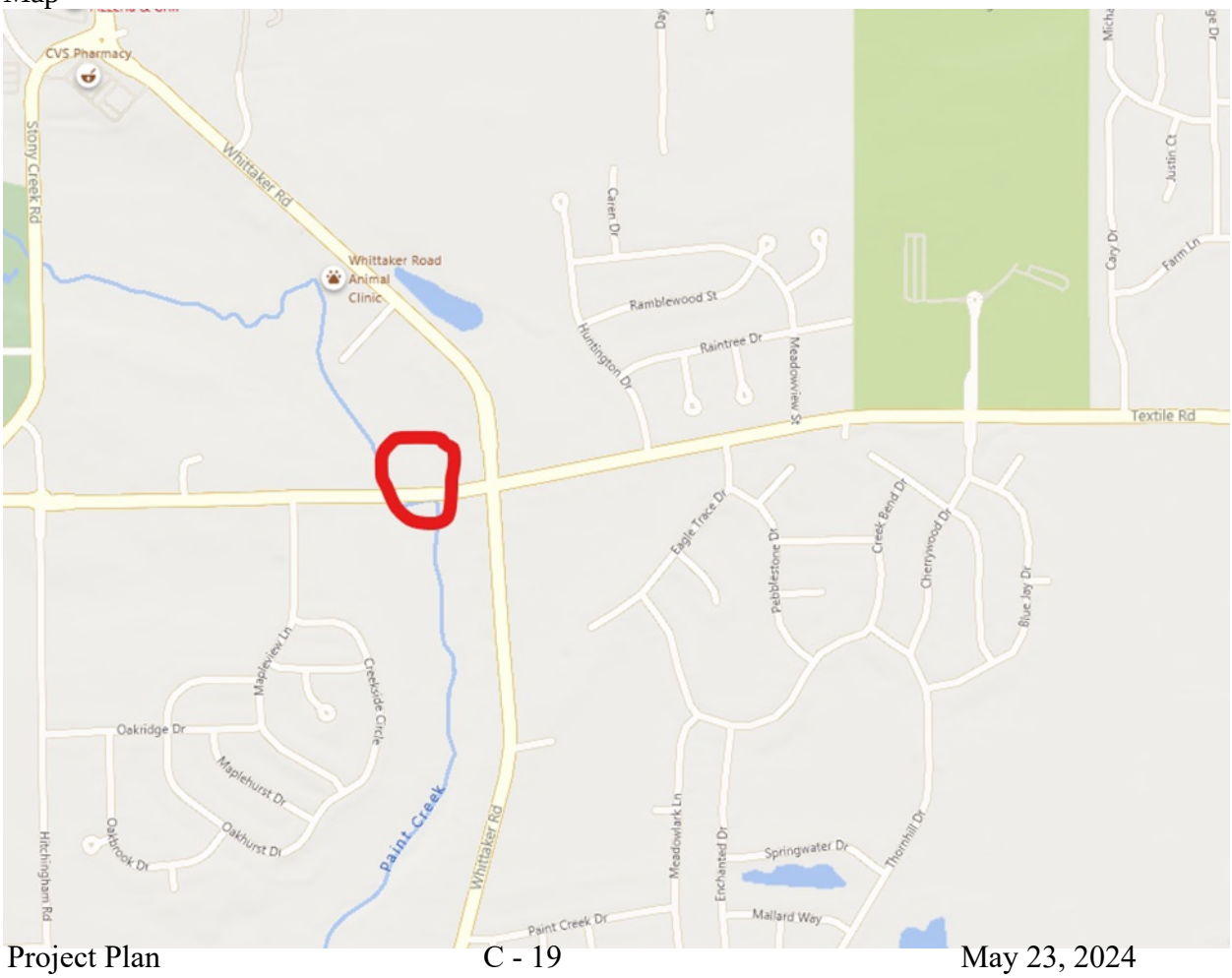
Textile Road Water Booster Pump Station Improvements

The Textile Road Water Booster Pump Station was originally constructed during the early 1960s with some equipment added and upgraded during the mid-1970s.

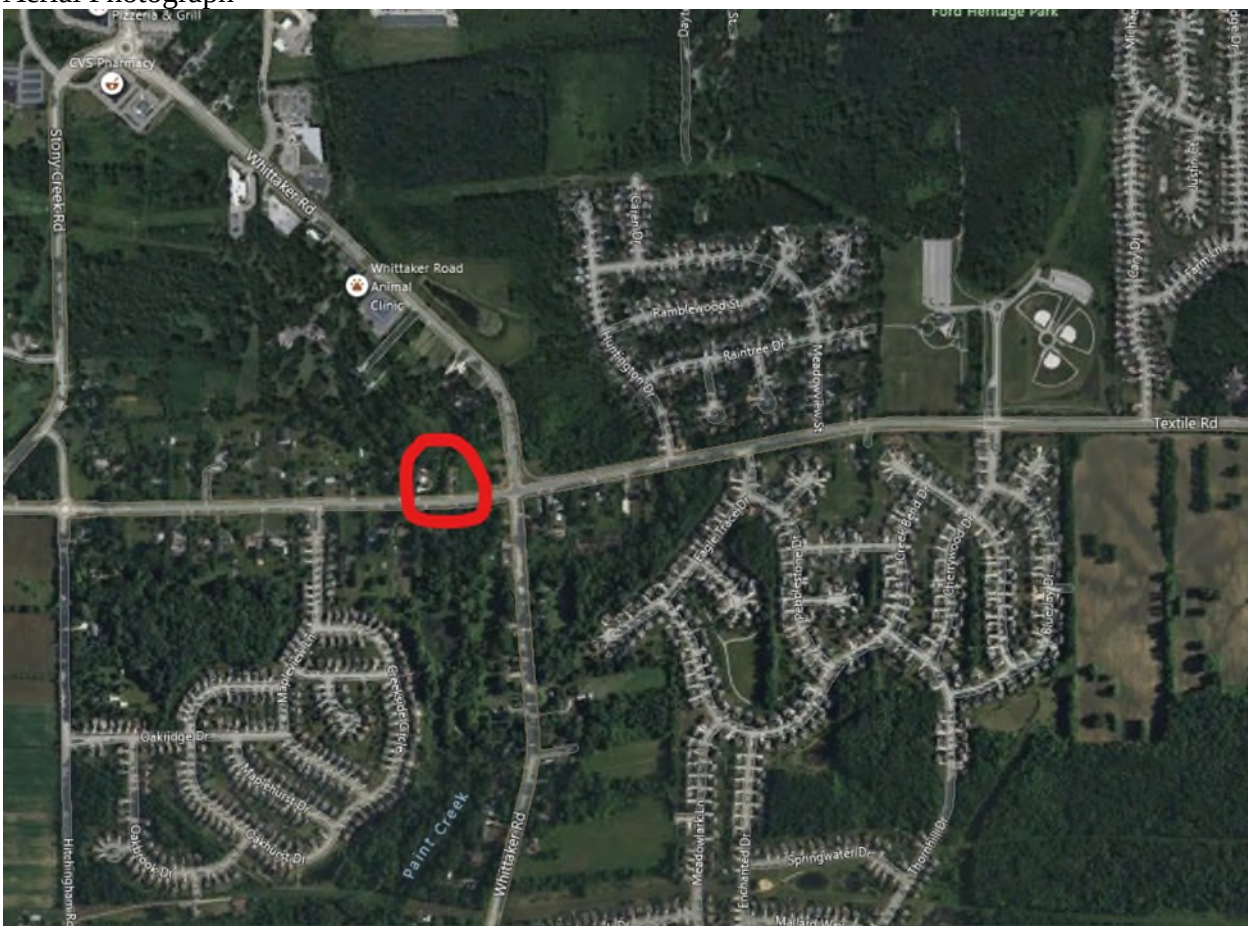
1. Design Parameters
   a. The existing direct drive pumps will be replaced with new pumps equipped with energy-efficient variable frequency drives.
   b. The obsolete electrical and controls equipment will be upgraded to modern standards.
   c. A permanent backup power source will be provided to add redundancy to the pump station.
   d. Isolation valves and an interconnecting pipe between the existing suction and discharge lines will be added in the yard outside the pump station to allow for greater operational flexibility of the facility.

2. Controlling Factors
   a. The pump station building is in good condition and does not warrant demolition and reconstruction.
   b. The pump station is located on a parcel already owned by YCUA. Although the property might appear to have adequate space to allow for construction of a new building, there are existing sanitary sewers as well as the foundation of a previously abandoned wastewater pump station that limit the feasibility of constructing a new facility.

3. Maps and Plans
   a. Map



b. Aerial Photograph

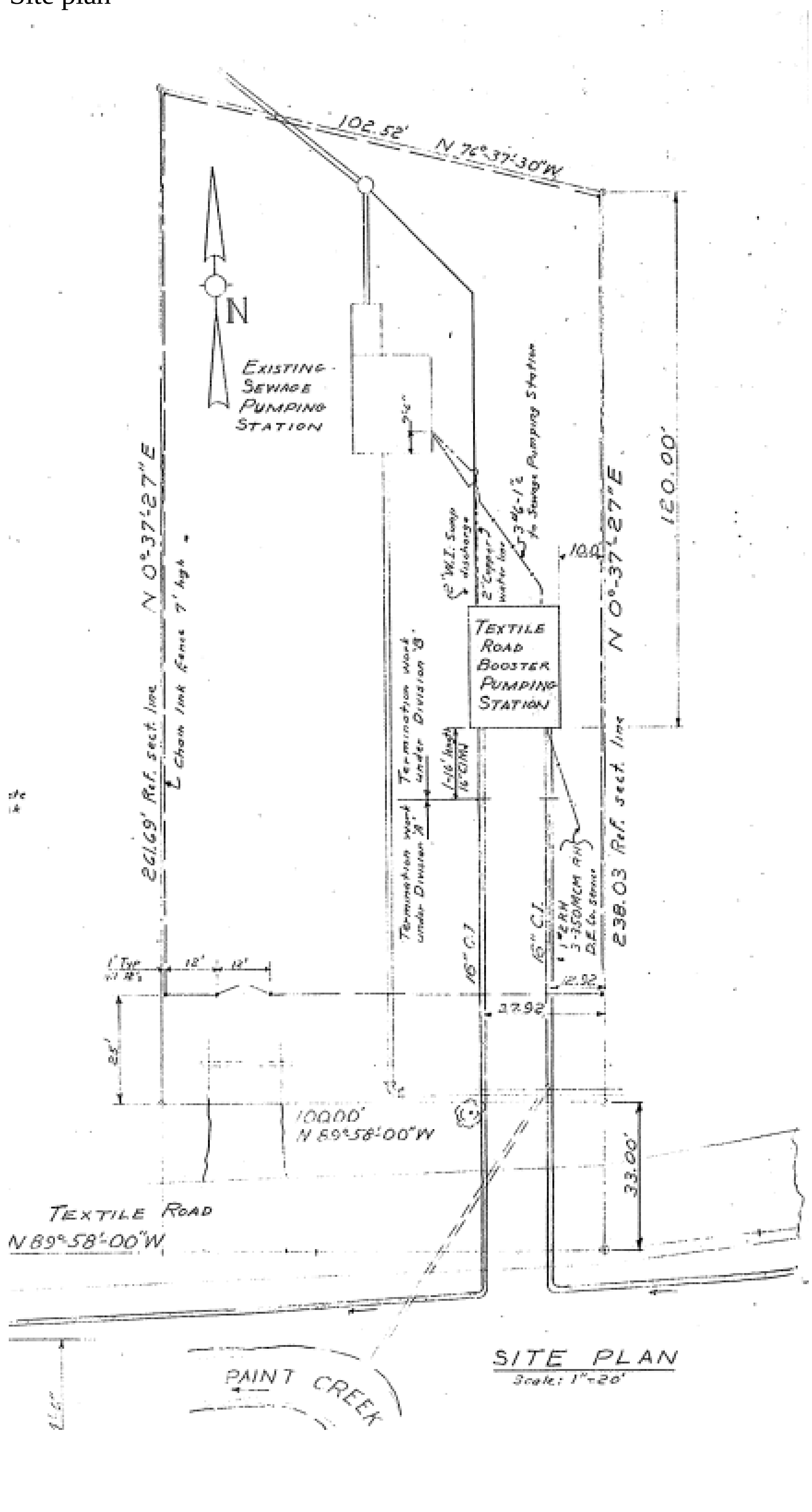


c. Building

d. Building interior ground floor

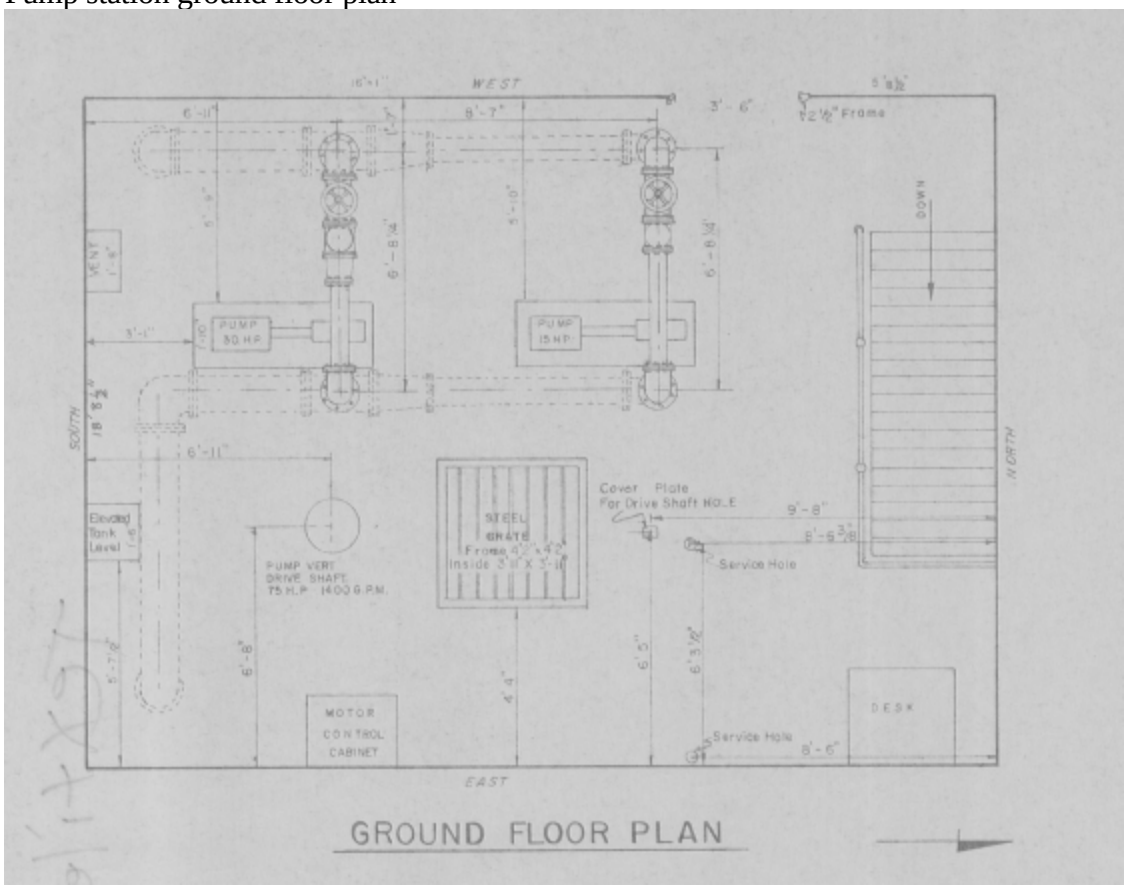
e. Building interior basement

c. Site plan

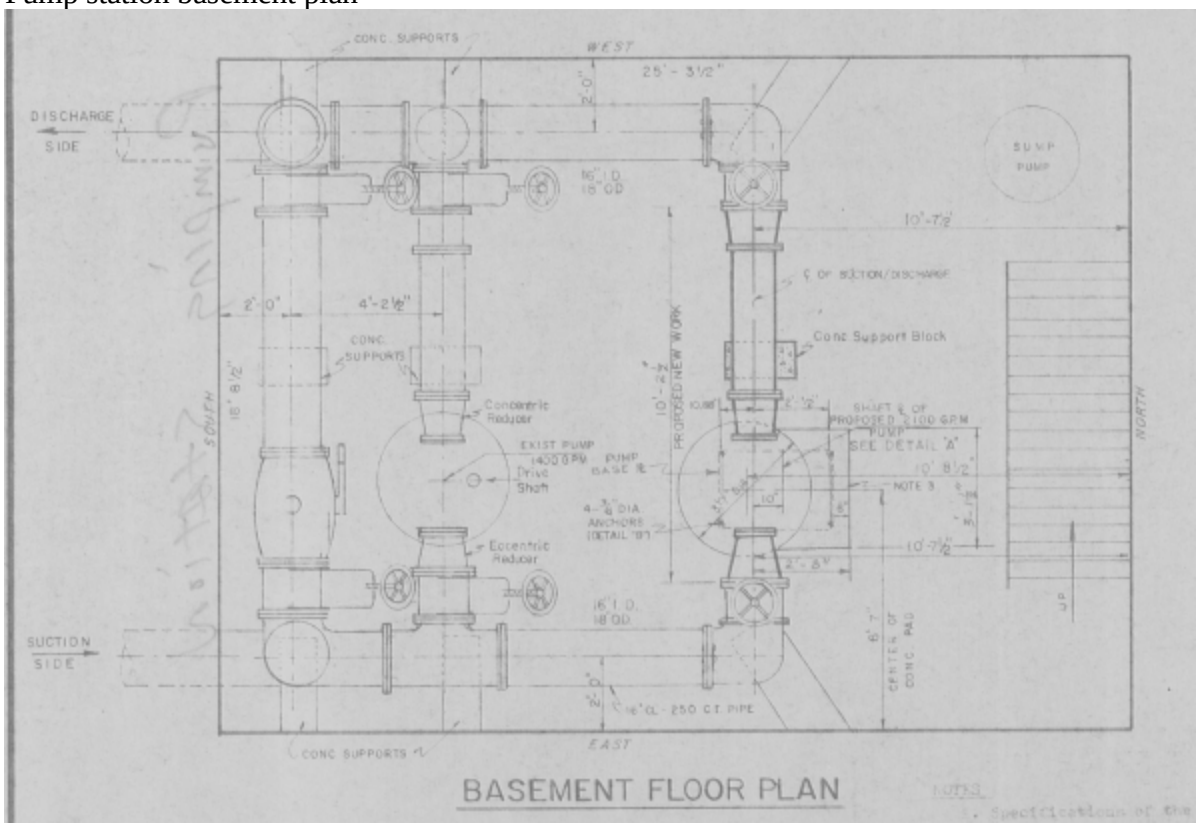


102.52' N 76°-37'-30"W
N
EXISTING SEWAGE PUMPING STATION
TEXTILE ROAD BOOSTER PUMPING STATION
N 0°-37'-27"E
120.00'
261.69' Ref. sect. line
238.03 Ref. sect. line
Termination work under Division 'B'
16" C.I.
27.92'
12.92'
25'
33.00'
100.00' N 89°-58'-00"W
TEXTILE ROAD
N 89°-58'-00"W
PAINT CREEK
SITE PLAN

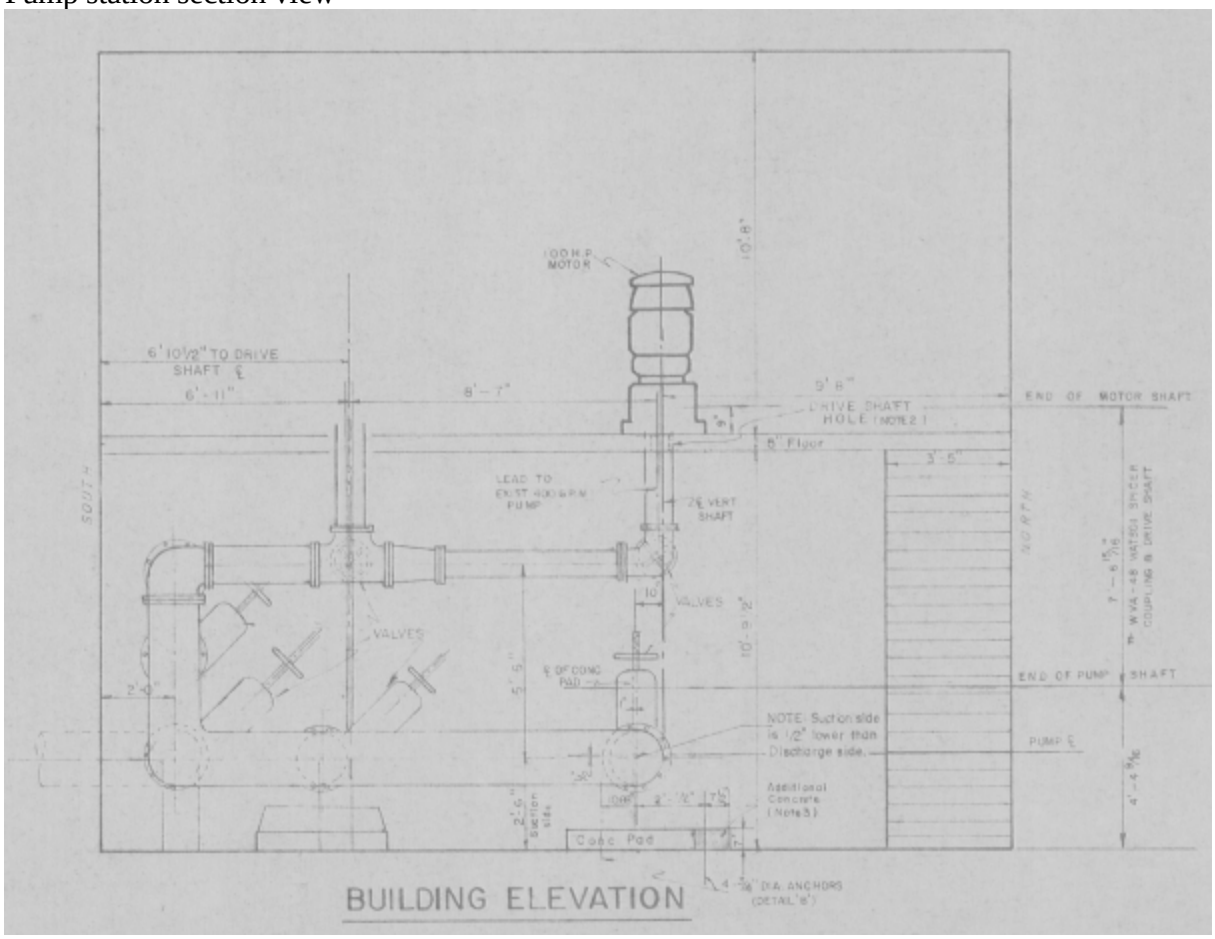
d. Pump station ground floor plan



e. Pump station basement plan



f. Pump station section view



The opinion of probable project cost is $1,450,000.00.

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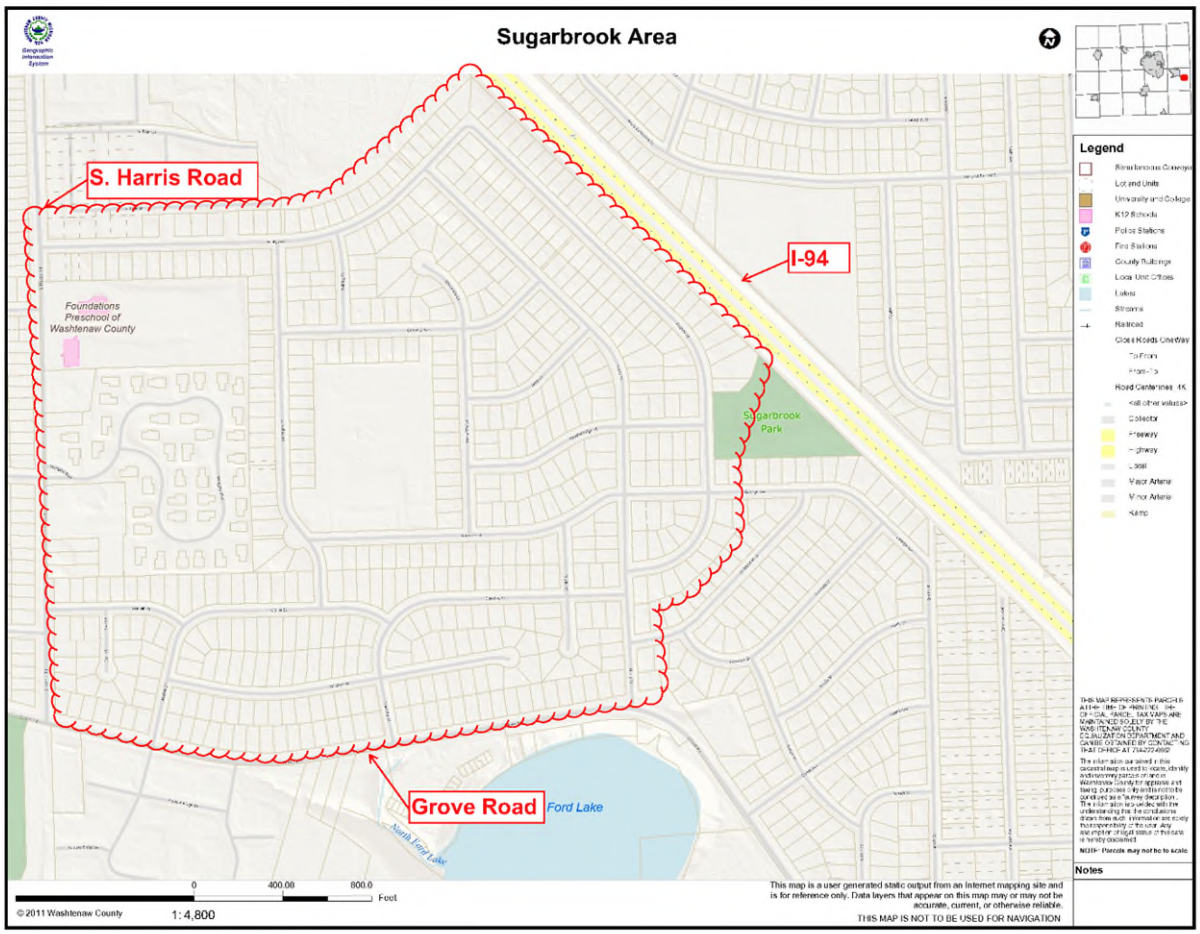
West Sugarbrook Area Water Main Replacement

The proposed work will consist of replacing existing 4” through 8” diameter water main with new 8" diameter water main and existing 12” diameter water main with new 12” diameter water main in the westerly portion of Sugarbrook neighborhood in section 14 of the Charter Township of Ypsilanti. The proposed work will improve water quantity and pressure. The water main in the project area was originally installed during the 1950s and has failed on numerous occasions during the past 2 decades. The existing water mains are undersized, unlined cast iron pipe and evidence of solid material build up inside the mains was noted during the main repairs. The material buildup reduces the effective size of the pipe and adversely affects the water distribution.

1. Design Parameters
    a. The existing water within the project area serves approximately 300 customers.
    b. Since the existing water main has experienced excessive failures and has exceeded its design life, it needs to be replaced.
    c. The proposed improvements will minimize future water main breaks in the area, avoid costly repairs incurred, and minimize potential contamination of the system that could occur as a result from such failures.
    d. The proposed improvements to the water supply system will maintain redundant sources of water supply.

2. Controlling Factors
    a. The proposed water supply system improvements are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
    b. Streets in the neighborhood will be completely reconstructed by the Washtenaw County Road Commission on behalf of the Charter Township of Ypsilanti. The existing water main is located under the pavement, consequently, replacement of the old, undersized and failure-prone pipe in conjunction with the road improvements is warranted.

3. Maps and Sketches
   a. Project Location



The opinion of probable project cost is $5,207,000.00.

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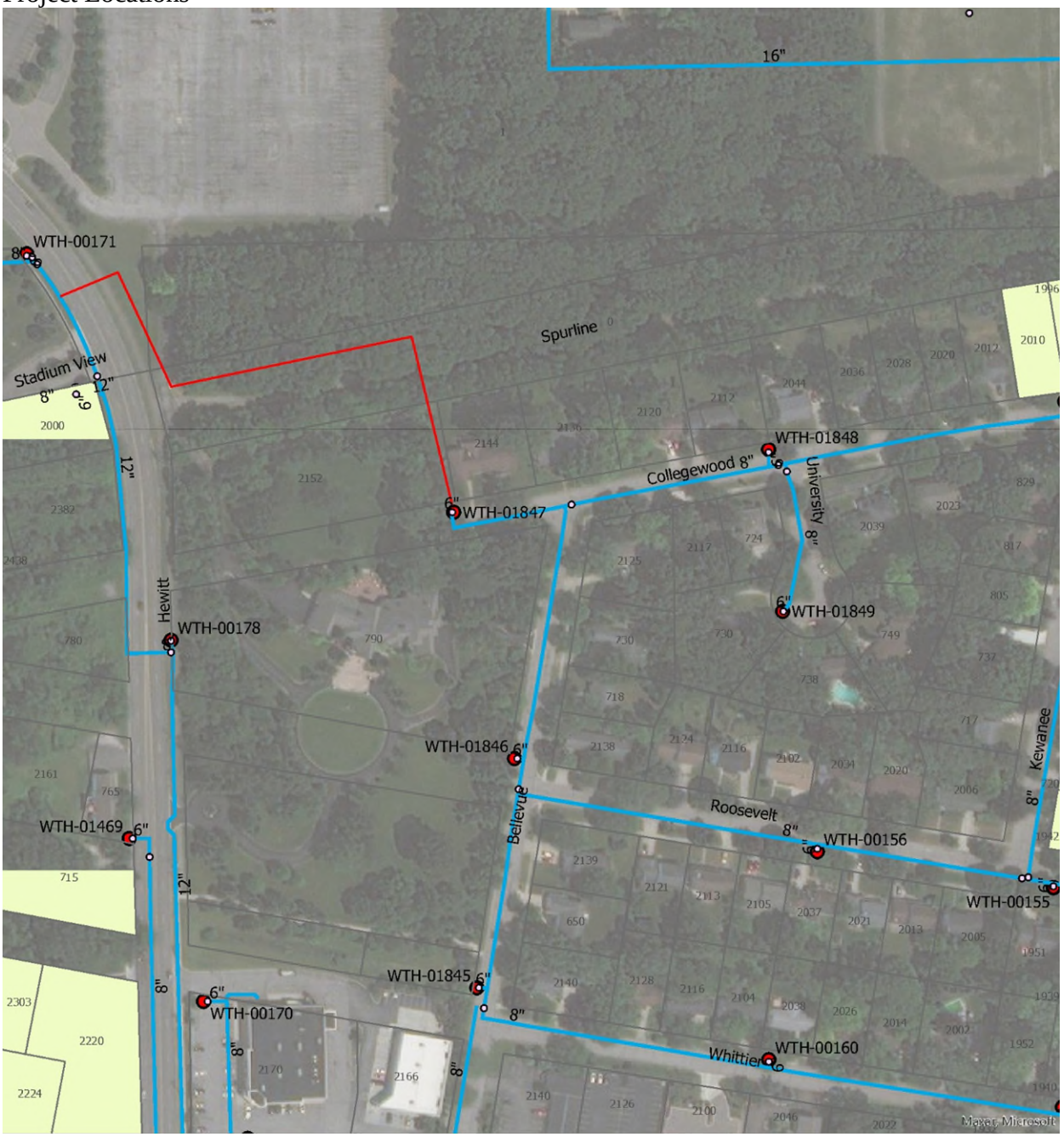
City of Ypsilanti Water Main Looping – Stadium Meadows Condominiums

The proposed work will consist of installing 8” diameter water main in the City of Ypsilanti to provide redundant source of supply to the Stadium Meadows Condominiums in section 6.

1. Design Parameters
   a. The existing dead-end water main serves approximately 128 customers in the Stadium Meadows Condominiums.
   b. Although the existing dead-end water main has not experienced any problems, the lack of redundancy would result in many, if not all, customers in the area losing service in the event of a failure.
   c. The redundant source of supply will improve water quality in the area.

2. Controlling Factors
   a. The proposed water supply system improvements are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. The preliminary alignments of both water main extensions are located in either public right-of-way or land controlled by public agencies. Consequently, it is not anticipated that easement acquisition will be problematic and should be completed in advance of any loan-related activities.
   c. Open-cut construction is the anticipated method for installation of the proposed water main extensions.

3. Maps and Sketches
   a. Project Locations



The opinion of probable project cost is $324,400.00.

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Gault Village East Area Water Main Replacement

The proposed work will consist of replacing existing 4” through 8” diameter water main with new 8" diameter water main and existing 12” diameter water main with new 12” diameter water main in the Sugarbrook neighborhood in section 15 of the Charter Township of Ypsilanti. The proposed work will improve water quantity and pressure. The water main in the project area was originally installed during the 1950s and has failed on numerous occasions during the past 2 decades. The existing water mains are undersized, unlined cast iron pipe and evidence of solid material build up inside the mains was noted during the main repairs. The material buildup reduces the effective size of the pipe and adversely affects the water distribution.

1. Design Parameters
    a. The existing water within the project area serves approximately 420 customers.
    b. Since the existing water main has experienced excessive failures and has exceeded its design life, it needs to be replaced.
    c. The proposed improvements will minimize future water main breaks in the area, avoid costly repairs incurred, and minimize potential contamination of the system that could occur as a result from such failures.
    d. The proposed improvements to the water supply system will maintain redundant sources of water supply.

2. Controlling Factors
    a. The proposed water supply system improvements are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
    b. Streets in the neighborhood will be completely reconstructed by the Washtenaw County Road Commission on behalf of the Charter Township of Ypsilanti. The existing water main is located under the pavement, consequently, replacement of the old, undersized and failure-prone pipe in conjunction with the road improvements is warranted.

3. Maps and Sketches
   a. Project Location

The opinion of probable project cost is $8,002,100.00.

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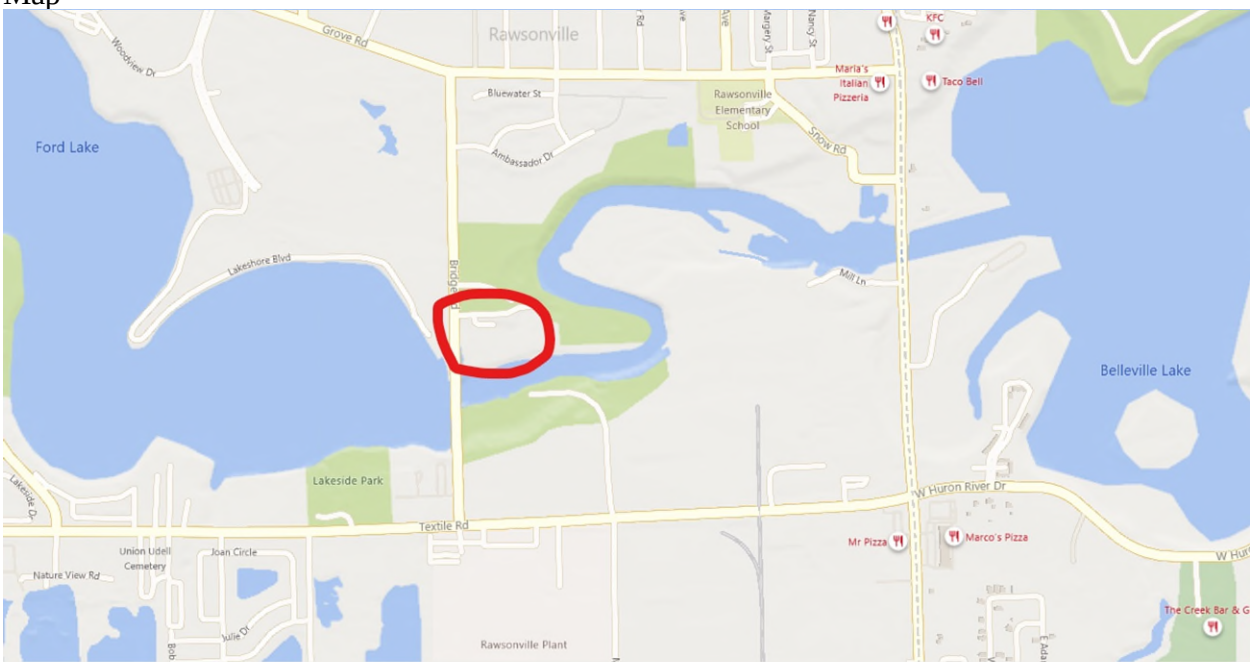
Bridge Road Water Booster Pump Station Improvements

The Bridge Road Water Booster Pump Station, located in section 24 of the Charter Township of Ypsilanti, was originally constructed during the early-1990s. The facility is one of the most critical in the YCUA water supply system, as it is primarily responsible for providing adequate flow and pressure from the east side of the YCUA service area to the facilities that further boost the flow and pressure to the extreme western portions of the system.

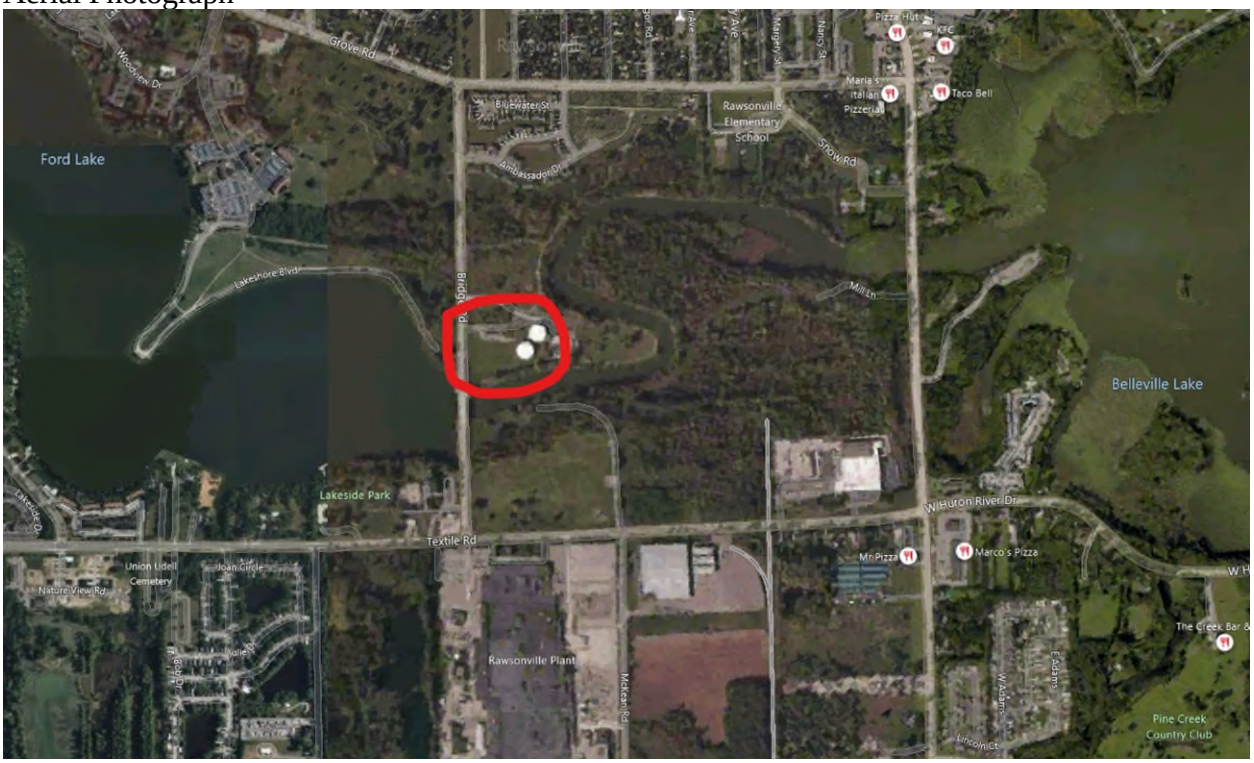
1. Design Parameters
   a. The facility was believed to have two independent supplies from the local electric utility. However, it was recently determined that the facility is supplied from a single-ended feed from the local electric utility.
   b. A permanent backup power source will be provided to add redundancy to the pump station and ensure that the flow and pressure demands from the western portions of the YCUA service area are continually satisfied.
   c. Four of the six pumps at the facility have been equipped with variable frequency drives (VFDs) to The preliminary alignment of the water main extension is on private properties. However, it is not anticipated that easement acquisition will be problematic and should be completed in advance of any loan-related activities. to offer more efficient pump control as well as allowing for greater operational flexibility of the pump station. Adding VFDs to the two remaining pumps will further enhance the operational flexibility of the pump station as well as extend the useful lives of all pumps by more evenly distributing the hours each pump is working.

2. Controlling Factors
   a. The pump station building, pumps and associated equipment are in good condition.
   b. The pump station is located on a parcel owned by YCUA with adequate open space to allow for installation of permanent backup power supply.

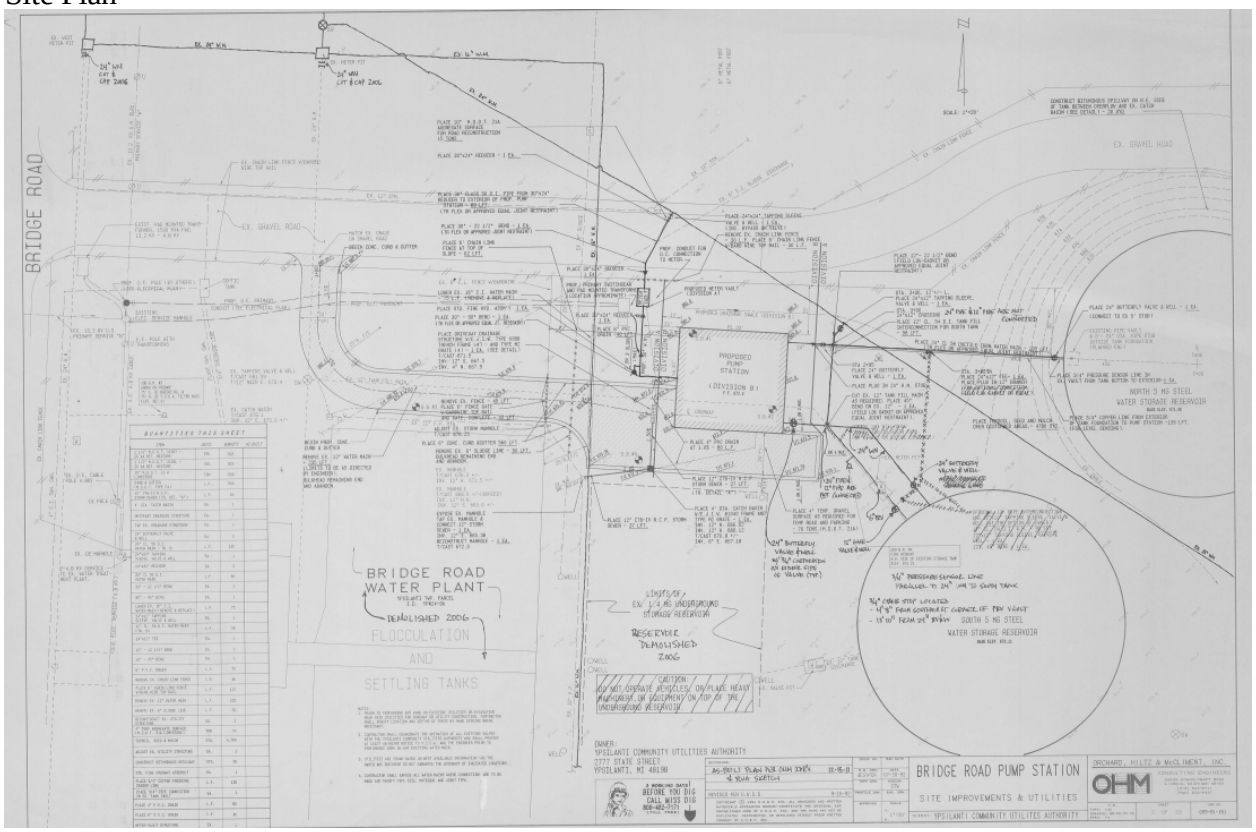
3. Maps and Plans
   a. Map



b. Aerial Photograph



c. Site Plan



The opinion of probable project cost is $700,000.00 for generator installation during fiscal year 2025-2026 and $275,000 for VFDs to be installed during fiscal year 2027-2028.

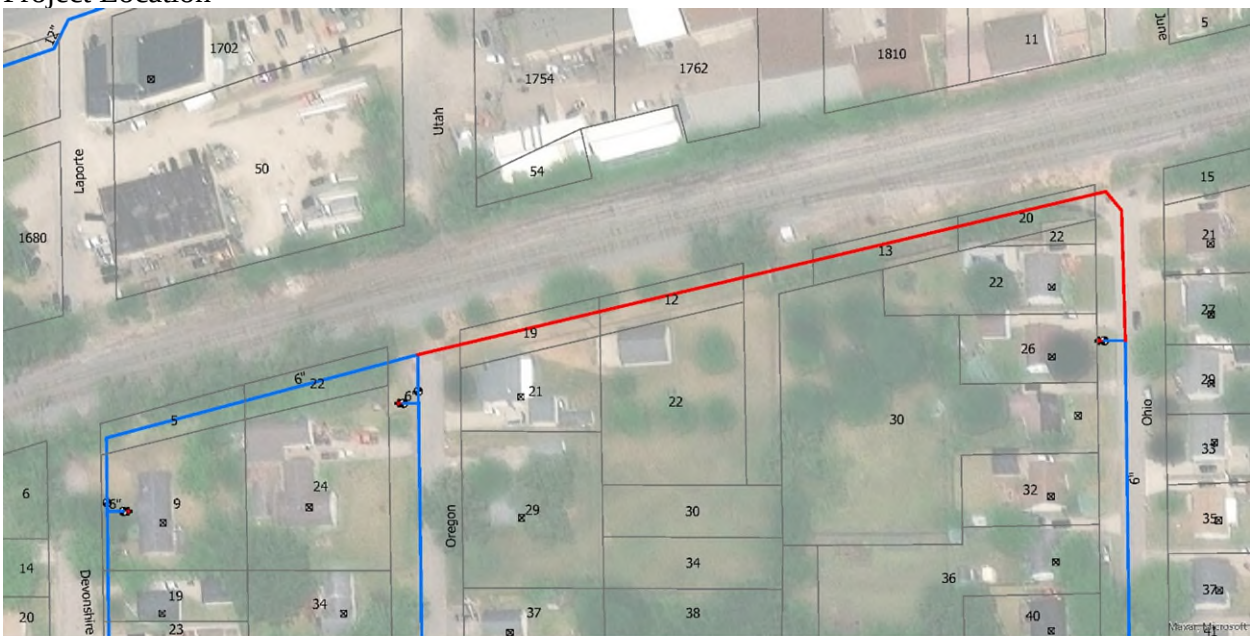
Ohio Street to Oregon Street Water Main Loop

The proposed work will consist of installing 8” diameter water main parallel to the Norfolk Southern railroad between Ohio Street and Oregon Street in section 11 of the Charter Township of Ypsilanti to provide a redundant source of supply to the area.

1. Design Parameters
   a. The existing dead end water main on Ohio Street services approximately 40 customers and the existing dead end water main on Oregon Street services approximately 30 customers.
   b. Although the water main has not experienced any significant problems, the lack of redundancy would potentially result in loss of service to most, if not all, customers along either Ohio Street or Oregon Street in the event of a failure.
   c. The redundant source of supply will improve water quality in the area.

2. Controlling Factors
   a. The proposed water supply system improvement is in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. The preliminary alignment of the water main extension is on unimproved public right-of-way immediately adjacent to the Norfolk Southern railroad. Consequently, it is not anticipated that easement acquisition will be required.
   c. Open-cut construction is the anticipated method for installation of the proposed water main extension.

3. Maps and Sketches
   a. Project Location



The opinion of probable project cost is $309,000.00.

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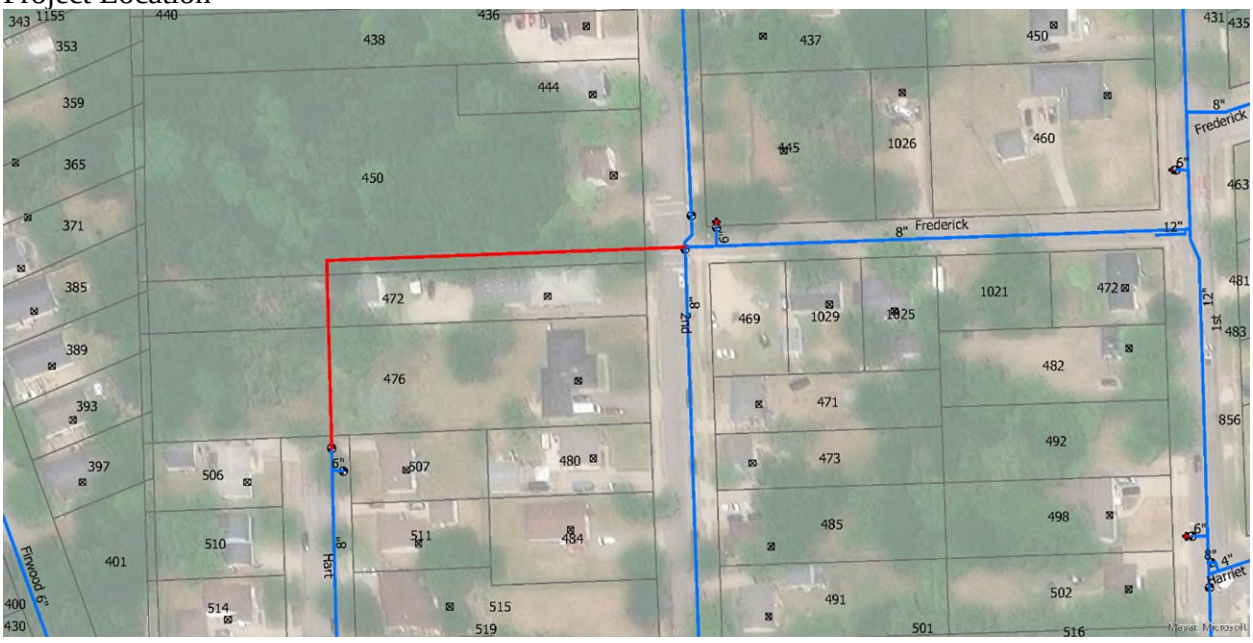
City of Ypsilanti Water Main Looping – West Warner

The proposed work will consist of installing 8” diameter water main in the City of Ypsilanti to provide redundant source of supply. The location for fiscal year 2027-2028 is Hart Place in section 8.

1. Design Parameters
   a. The existing dead-end water main serves approximately 20 customers along Hart Place.
   b. Although the water main is relatively new (less than 25 years old) and has not experienced any problems, the lack of redundancy would result in many, if not all, customers losing service in the event of a failure.
   c. The redundant source of supply will improve water quality along Hart Place.

2. Controlling Factors
   a. The proposed water supply system improvements are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. The preliminary alignment of the water main extension is on private properties. However, it is not anticipated that easement acquisition will be problematic and should be completed in advance of any loan-related activities.
   c. Open-cut construction is the anticipated method for installation of the proposed water main extension.

3. Maps and Sketches
   a. Project Location



The opinion of probable project cost is $204,510.00.

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Cornell Street Water Main Replacement

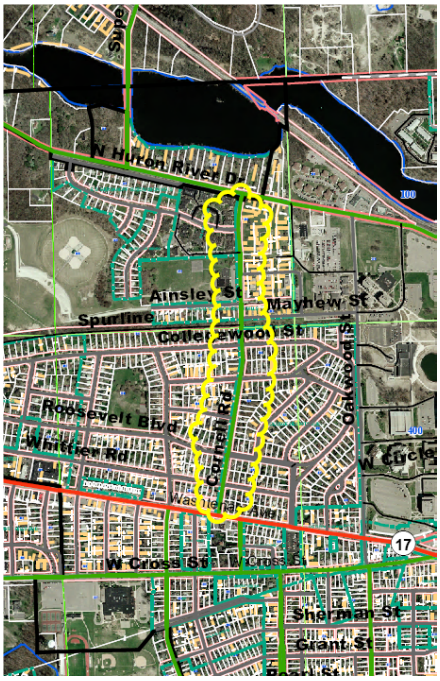
The proposed work will consist of replacing existing 6” and 8" diameter water mains with new 8" and 12” diameter water mains between Huron River Drive and Washtenaw Avenue to improve water quantity and pressure. The water mains in the project area were originally installed during the 1940s and have failed on numerous occasions during the past 3 decades. The existing mains are undersized, unlined cast iron pipe and evidence of solid material build up inside the mains was noted during the various repairs. The material buildup reduces the effective size of the pipe and adversely affects water distribution and quality.

1. Design Parameters
   a. The existing water main in the project area serves approximately 30 customers.
   b. Since the existing water main has experienced excessive failures and has exceeded its design life, it needs to be replaced.
   c. The proposed improvements will minimize future water main breaks in the area, avoid costly repairs incurred, and minimize potential contamination of the system that could occur as a result from such failures.
   d. The proposed improvements to the water supply system will maintain a double source of water supply.
   e. Hydraulic Modeling Results- Existing and Improved Conditions:

Street/Intersection	Existing Pipe Diameter	Proposed Pipe Diameter	Existing Flow (gpm)	Proposed Flow (gpm)
Cornell Street	6” and 8”	8” and 12”	4,900	6,300

2. Controlling Factors
   a. Water supply system improvements along Cornell Street between Huron River Drive and Washtenaw Avenue are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. The proposed new water mains will be installed in conjunction with pavement improvements by the City of Ypsilanti in the project limits. Consequently, the proposed new water mains will be installed by open-cut trench method. The coordination of water supply system improvements with pavement improvements by the City of Ypsilanti will allow for project cost sharing in planning, design and construction, thus minimizing overall project costs. The coordinated effort will also avoid any additional inconvenience to area residents related to restoration of pavement and landscape areas if the water system improvements were undertaken independent of pavement improvements by the City of Ypsilanti.

4. Maps and Sketches
   a. Project Location



The opinion of probable project cost is $1,373,000.00.

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Gault Village West Area Water Main Replacement

The proposed work will consist of replacing existing 4” through 8” diameter water main with new 8" diameter water main and existing 12” diameter water main with new 12” diameter water main in the Sugarbrook neighborhood in section 15 of the Charter Township of Ypsilanti. The proposed work will improve water quantity and pressure. The water main in the project area was originally installed during the 1950s and has failed on numerous occasions during the past 2 decades. The existing water mains are undersized, unlined cast iron pipe and evidence of solid material build up inside the mains was noted during the main repairs. The material buildup reduces the effective size of the pipe and adversely affects the water distribution.

1. Design Parameters
    a. The existing water within the project area serves approximately 435 customers.
    b. Since the existing water main has experienced excessive failures and has exceeded its design life, it needs to be replaced.
    c. The proposed improvements will minimize future water main breaks in the area, avoid costly repairs incurred, and minimize potential contamination of the system that could occur as a result from such failures.
    d. The proposed improvements to the water supply system will maintain redundant sources of water supply.

2. Controlling Factors
    a. The proposed water supply system improvements are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
    b. Streets in the neighborhood will be completely reconstructed by the Washtenaw County Road Commission on behalf of the Charter Township of Ypsilanti. The existing water main is located under the pavement, consequently, replacement of the old, undersized and failure-prone pipe in conjunction with the road improvements is warranted.

3. Maps and Sketches
   a. Project Location

The opinion of probable project cost is $5,744,000.00.

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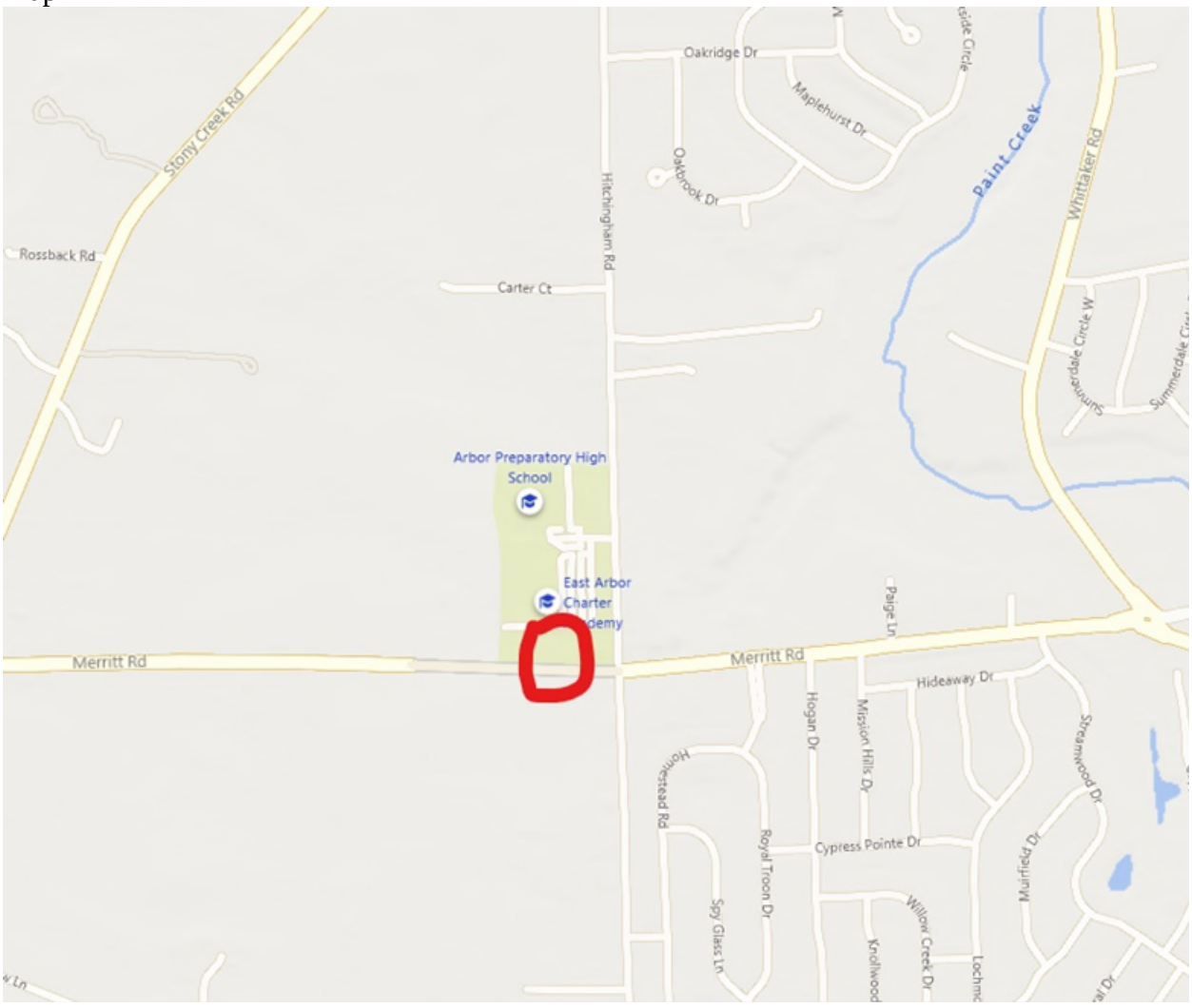
Merritt Road Water Booster Pump Station Improvements

The Merritt Road Water Booster Pump Station was originally constructed during the mid-1990s with some equipment added and upgraded during the early 2000s.

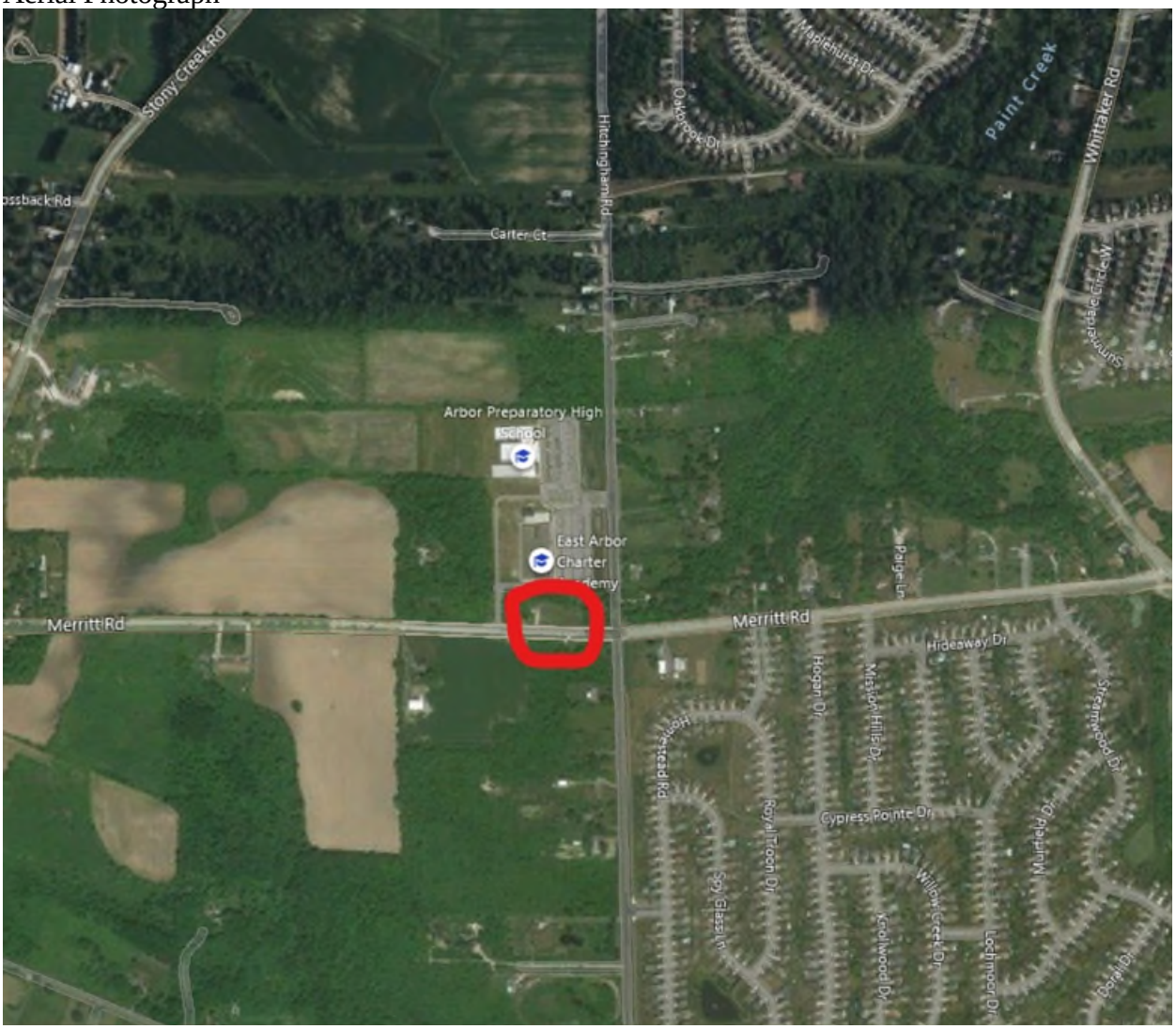
1. Design Parameters
   a. Three existing variable frequency drives (VFDs) that are becoming obsolete will be replaced with new variable frequency drives.
   b. A VFD will be added to the fourth existing pump that currently runs at constant speed to provide more operational flexibility to the facility.
   c. The existing permanent backup power generator and fuel tank, both of which have exceeded their design lives, will be replaced.

2. Controlling Factors
   a. The pump station building is in good condition and does not warrant demolition and reconstruction.
   b. The pump station is located on a parcel already owned by YCUA.

3. Maps and Plans
   a. Map



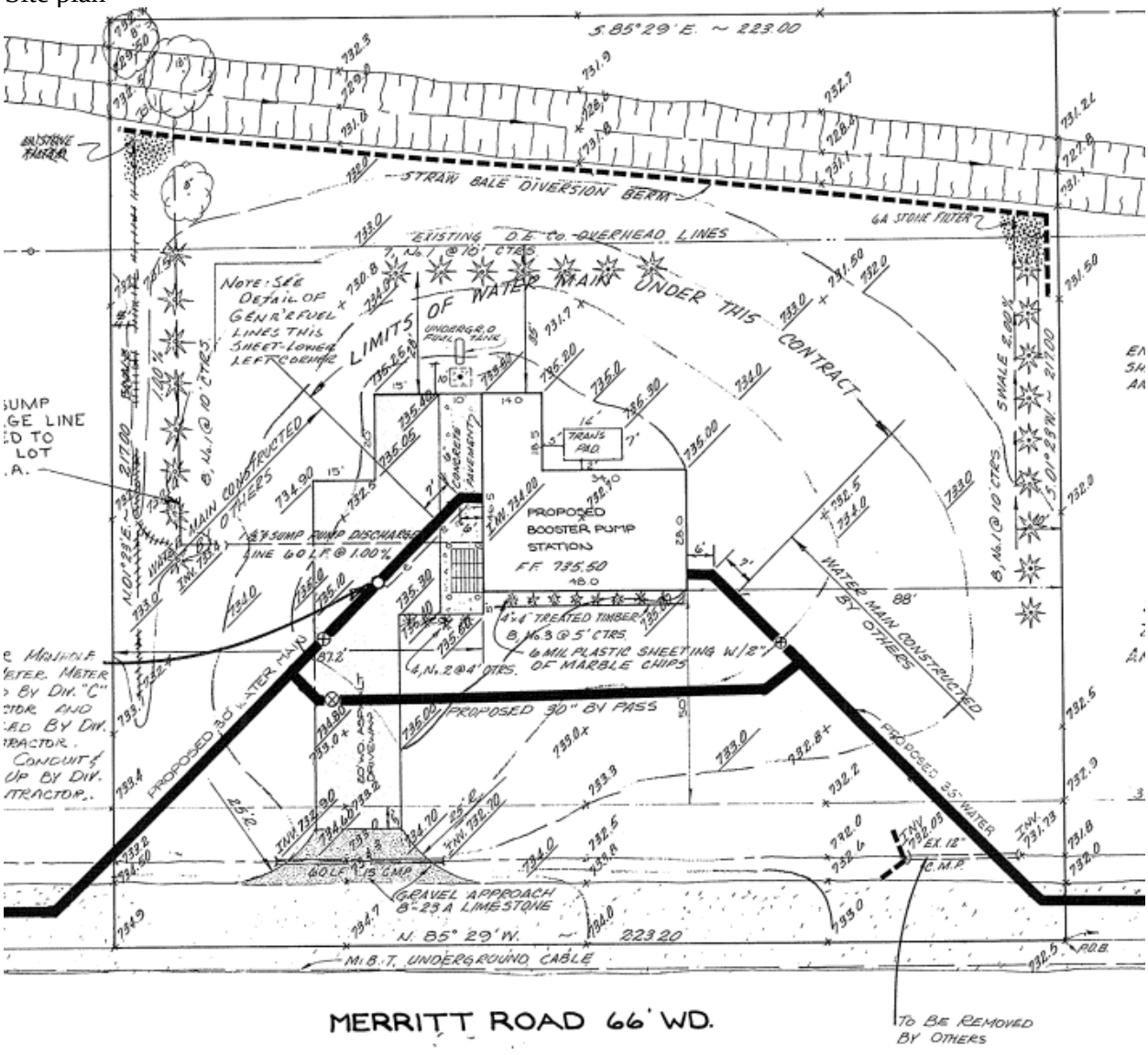
b. Aerial Photograph



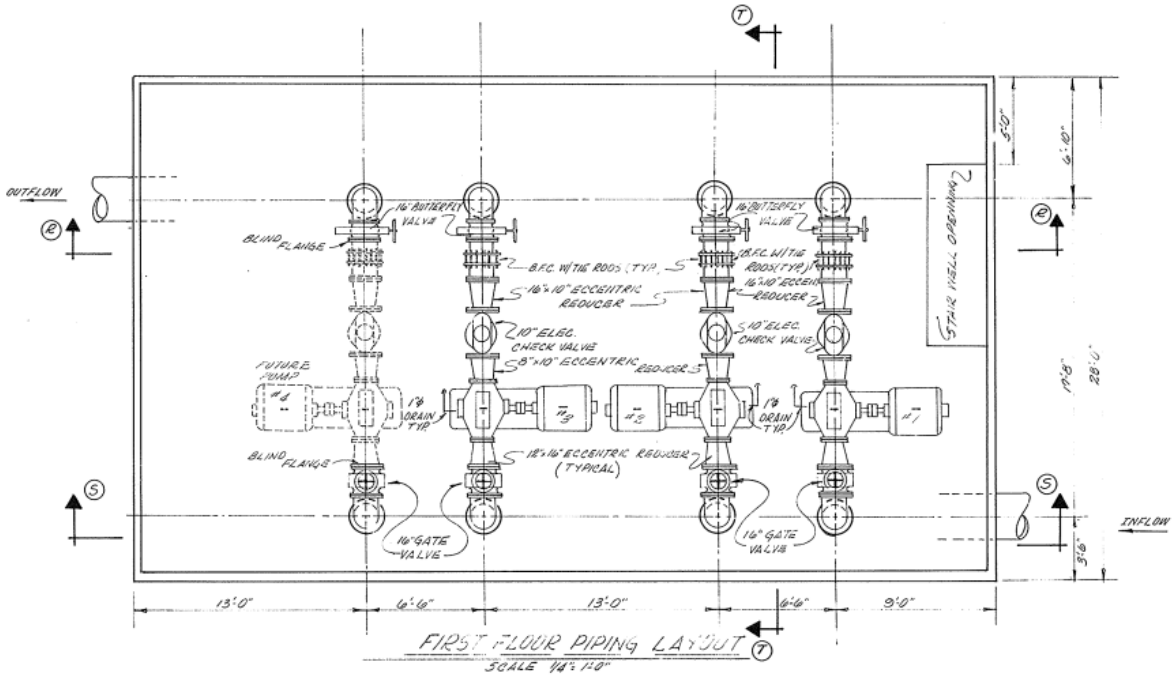
c. Building exterior from the southeast

d. Building interior ground floor

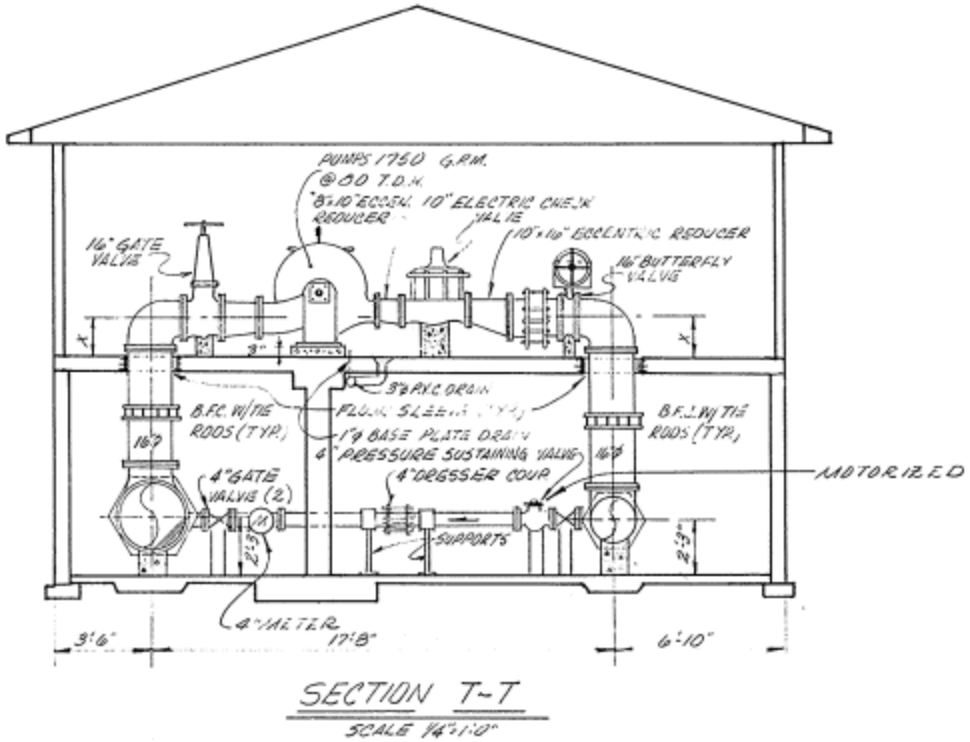
c. Site plan



d. Pump station plan



e. Pump station section view



The opinion of probable project cost is $750,000.00.

Clark Road Water Main Replacement

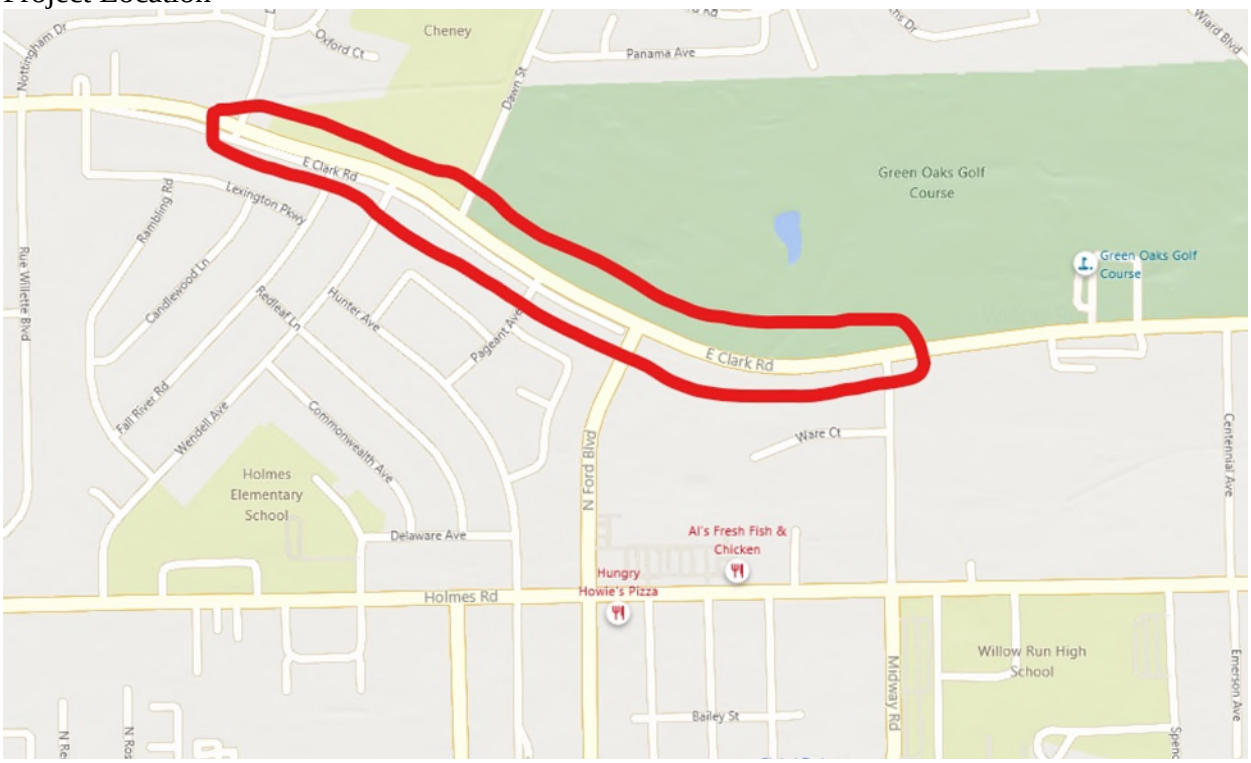
The proposed work will consist of replacing existing 12” diameter water main with new 12" diameter water main between Midway Boulevard and Devon Street in sections 2 and 3 of the Charter Township of Ypsilanti to improve water quantity and pressure. The water supply system in the project area was originally installed in the early 1940s and has failed on at least 16 occasions during the past 2 decades. The existing water main is unlined cast iron pipe and evidence of solid material build up inside the mains was noted during the main repairs. The material buildup reduces the effective size of the pipe and adversely affects the water distribution.

1. Design Parameters
   a. The existing water distribution system along Clark Road between Midway Boulevard and Devon Street serves approximately 40 customers and includes 1 of 3 connections from the Authority to Superior Township.
   b. Since the existing water main has experienced excessive failures and has exceeded its design life, it needs to be replaced.
   c. The proposed improvements will minimize future water main breaks in the area, avoid costly repairs incurred, and minimize potential contamination of the system that could occur as a result from such failures.
   d. The proposed improvements to the water supply system along Clark Road between Midway Boulevard and Devon Street will maintain a double source of water supply.
   e. Hydraulic Modeling Results- Existing and Improved Conditions:

Street/Intersection	Existing Pipe Diameter	Proposed Pipe Diameter	Existing Flow (gpm)	Proposed Flow (gpm)
Clark Road	12”	12”	1,300	1,600

2. Controlling Factors
   a. Water supply system improvements along Clark Road between Ridge Road and Devon Street is in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. Clark Road between Ridge Road and Devon Street is sparsely populated and generally experiences low traffic volume. Consequently, installation of proposed new water main by open-cut trench method is the most effective method of installation. The proposed new water main will be installed by open-cut trench method.

3. Maps and Sketches
   a. Project Location



The opinion of probable project cost is $1,516,900.00.

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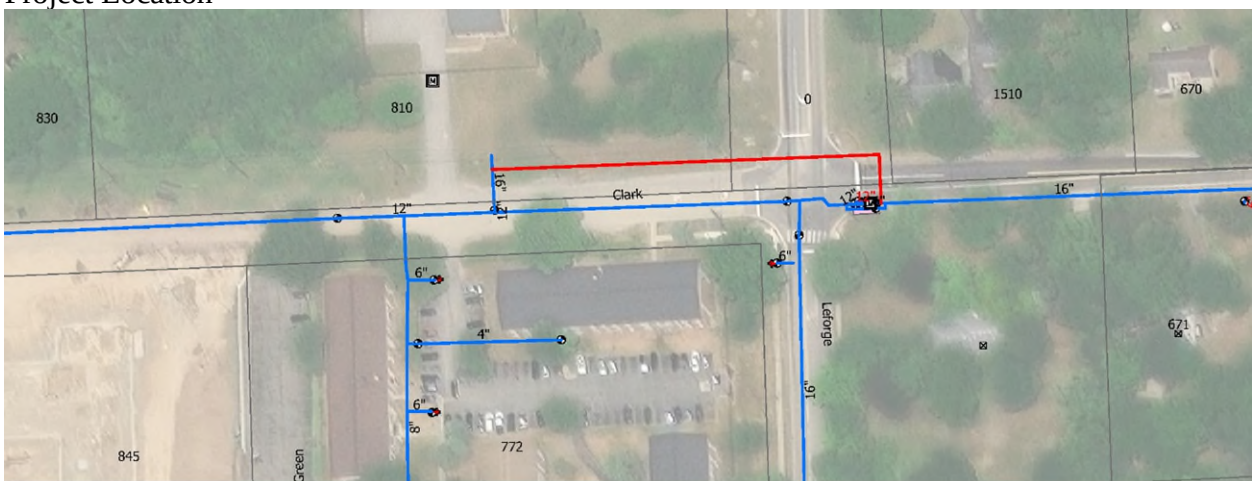
Leforge Road Water Main Improvements

The proposed work will consist of installing 16” diameter water mains from east of the intersection of Leforge Road and West Clark Road approximately 350’ west to provide a parallel feed to the Superior Township connection and restore redundant source of supply to City of Ypsilanti customers located southwest of the intersection.

1. Design Parameters
   a. The existing water mains in the project area serve several apartment complexes with hundreds of City of Ypsilanti residents.
   b. Both City of Ypsilanti and Charter Township of Ypsilanti water mains interconnect at Leforge Road and West Clark Road. To provide the most reliable source of supply to YCUA wholesale customer Superior Township, the City system has been isolated at Leforge with the Township pressure district feeding the Superior Township system.
   c. The proposed water main will allow the City system to return to a double source of water supply for the customers southwest of the intersection.

2. Controlling Factors
   a. The proposed water supply system improvements along are in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. The proposed new water mains will be installed in conjunction with pavement improvements by the City of Ypsilanti in the project limits. Consequently, the proposed new water mains will be installed by open-cut trench method. The coordination of water supply system improvements with pavement improvements by the City of Ypsilanti will allow for project cost sharing in planning, design and construction, thus minimizing overall project costs. The coordinated effort will also avoid any additional inconvenience to area residents related to restoration of pavement and landscape areas if the water system improvements were undertaken independent of pavement improvements by the City of Ypsilanti.

3. Maps and Sketches
   a. Project Location



The opinion of probable project cost is $198,000.00.

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Wilson Street to South Congress Street Water Main Loop

The proposed work will consist of installing 8” diameter water main from the northerly terminus of Wilson Street to South Congress Street in section 8 of the Charter Township of Ypsilanti to provide a redundant source of supply to the area.

1. Design Parameters
   a. The existing dead end water main on Wilson Street services approximately 20 customers.
   b. Although the water main has not experienced any significant problems, the lack of redundancy would potentially result in loss of service to most, if not all, customers along Wilson Street in the event of a failure.
   c. The redundant source of supply will improve water quality in the area.

2. Controlling Factors
   a. The proposed water supply system improvement is in accordance with the recommendations included in the YCUA Water System Master Plan and the YCUA Engineering Design Specifications.
   b. The preliminary alignment of the water main extension is on private properties. However, it is not anticipated that easement acquisition will be problematic and should be completed in advance of any loan-related activities.
   c. Open-cut construction is the anticipated method for installation of the proposed water main extension.

3. Maps and Sketches
   a. Project Location

The opinion of probable project cost is $504,800.00.

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APPENDIX D - CORRESPONDENCE WITH OTHER AGENCIES

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Dedicated to Providing Top Quality, Cost Effective, and
Environmentally Safe Water and Wastewater Services to Our Customers

YPSILANTI COMMUNITY UTILITIES AUTHORITY

2777 STATE ROAD
YPSILANTI, MICHIGAN 48198-9112
TELEPHONE: 734-484-4600
WEBSITE: www.ycua.org

May 1, 2024

VIA ELECTRONIC MAIL

Mr. Lance Wood, Project Manager
Water Infrastructure Funding and Financing Section
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
Kalamazoo District Office
7953 Adobe Road
Kalamazoo, MI 49009-5025

Re: Drinking Water Revolving Fund
Draft Project Plan
City of Ypsilanti and Charter Township of Ypsilanti

Dear Mr. Wood:

Enclosed please find the Ypsilanti Community Utilities Authority (YCUA) Drinking Water Revolving Fund Draft Project Plan for improvements to the water supply system that serves both the City of Ypsilanti and the Charter Township of Ypsilanti as well as YCUA's contract customers. The public hearing will be conducted in person at 7:00 p.m. local time on May 14, 2024. Notice of the public hearing was issued May 1, 2024.

Copies of pertinent sections of the draft Project Plan will be provided to the required agencies and tribal historic preservation offices. YCUA member communities and all contract customers will be notified that the draft Project Plan is available on the YCUA website. Copies of all correspondence to and from those parties will be directed to your attention and included in the final version of the Project Plan. Based on responses from the various agencies and any comments received at the public hearing, YCUA will revise the document and publish a final version of the Project Plan by May 29, 2024.

Please contact me with any questions or comments generated during your review of the draft Project Plan. We appreciate your assistance and look forward to working with you on the final version of the Project Plan and subsequent implementation of the proposed improvements.

Sincerely,

SCOTT D. WESTOVER, P.E., Engineering Manager
Ypsilanti Community Utilities Authority

Enclosure

cc.: Mr. Luke Blackburn, File, YCUA
Mr. Sean Brown, EGLE Jackson District Office (w/ copy of draft plan update)

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APPENDIX E – PUBLIC HEARING INFORMATION

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Public Notice

May 1, 2024

PLEASE BE ADVISED THAT THE YPSILANTI COMMUNITY UTILITIES AUTHORITY (YCUA) HAS BEEN SCHEDULED A PUBLIC HEARING FOR TUESDAY, MAY 14, 2024, AT 7:00 P.M. LOCAL TIME TO DISCUSS PROPOSED WATER SUPPLY IMPROVEMENTS IN BOTH THE CITY OF YPSILANTI AND THE CHARTER TOWNSHIP OF YPSILANTI. THE MEETING WILL BE HELD IN THE BOARD ROOM AT THE YCUA ADMINISTRATION BUILDING, 2777 STATE ROAD, YPSILANTI.

The improvements are proposed to increase the reliability of the YCUA water supply system within the City of Ypsilanti and the Charter Township of Ypsilanti. YCUA proposes to fund these improvements by using Drinking Water Revolving Fund (DWRF) loans. Copies of the preliminary DWRF Project Plan will be available for public inspection starting May 3, 2024, at the YCUA Engineering Department, located in the Eldon P. Ahles Administration Building, 2777 State Road, Ypsilanti, Michigan and on the YCUA website at www.ycua.org. Written comments received through May 14, 2024, will be entered into the public hearing record and should be directed to Scott Westover, Director of Engineering, at 2777 State Road, Ypsilanti, Michigan, 48198-9112 or via electronic mail at swestover@ycua.org.

YCUA will provide necessary reasonable auxiliary aids and services, such as signers for the hearing impaired and audio tapes of printed materials being considered at the meeting, to individuals with disabilities at the meeting upon seven (7) days notice to YCUA. Individuals with disabilities requiring auxiliary aids or services should contact YCUA by calling Luther Blackburn, Jr., Executive Director, at (734) 484-4600.

This notice is posted in compliance with Michigan Public Acts 228 and 254 of 2020 and the Americans with Disabilities Act (ADA).

Dedicated to Providing Top Quality, Cost Effective, and
Environmentally Safe Water and Wastewater Services to Our Customers

YPSILANTI COMMUNITY UTILITIES AUTHORITY

2777 STATE ROAD
YPSILANTI, MICHIGAN 48198-9112
TELEPHONE: 734-484-4600
WEBSITE: www.ycua.org

DRINKING WATER REVOLVING FUND
PROJECT PLAN

Public Hearing
May 14, 2024
7:00 p.m. local time
Board Room, Eldon Ahles Administration Building

Name	Address/Representing
Scott Westover	YCUA

Ypsilanti Community Utilities Authority
Drinking Water Revolving Fund Project Plan
Public Hearing Transcript

Eldon P. Ahles Administration Building
May 14, 2024
7:00 p.m.

Proceedings recorded by mechanical stenography and electronic sound recording, transcript prepared from stenographic notes and verified by review of electronic sound recording. All comments during public hearing by Scott Westover, Director of Engineering for the Ypsilanti Community Utilities Authority.

Good evening, welcome to YCUA. This is the public hearing for our 2024 Drinking Water Revolving Fund Project Plan. My name is Scott Westover. I am the Director of Engineering for YCUA. We have an attendance sheet and request that you sign-in so that we may have an accurate record of the public participation at this meeting. With that said, the public hearing is opened at 700 p.m. Seeing no public in attendance, the public hearing is closed at 7:01 p.m.

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APPENDIX F – YCUA BOARD OF COMMISSIONERS RESOLUTION

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YCUA RESOLUTION 24-05
(A RESOLUTION TO ADOPT THE
YCUA DRINKING WATER REVOLVING FUND PROJECT PLAN UPDATE
DATED MAY 22, 2024

WHEREAS, the Ypsilanti Community Utilities Authority recognizes the need to make improvements to its existing water transmission and distribution system; and

WHEREAS, the Ypsilanti Community Utilities Authority prepared Drinking Water Revolving Fund Project Plan for the City of Ypsilanti and Charter Township of Ypsilanti. The Project Plan recommends the implementation of twenty-seven separate improvements during the next four years; and

WHEREAS, said Project Plan was presented at a Public Hearing conducted May 14, 2024, and all public comments have been considered and addressed;

NOW THEREFORE BE IT RESOLVED, that the Ypsilanti Community Utilities Authority formally adopts said Project Plan and agrees to implement the alternatives stated in the Project Plan.

BE IT FURTHER RESOLVED, that the Executive Director of the Ypsilanti Community Utilities Authority, a position currently held by Luther Blackburn, Jr., is designated as the authorized representative for all activities associated with the improvement projects referenced above, including the submittal of said Project Plan as the first step in applying to the State of Michigan for revolving fund loans to assist in the implementation of the selected alternatives.

Offered by: Jon Ichesco
Supported by: David Ostrowski
Ayes: Jon Ichesco, Gloria Peterson, David Ostrowski, and Michael Bodary
Nays: None
Absent: Larry Doe

I certify that the above Resolution was adopted by Ypsilanti Community Utilities Authority Board of Commissioners on May 22, 2024.

BY: Michael Bodary, Chairperson
Name and Title *(please print or type)*

Michael Bodary
Signature

May 22, 2024
Date

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MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Finance Division

DRINKING WATER STATE REVOLVING FUND (DWSRF)
PROJECT PLANNING DOCUMENT SUBMITTAL FORM

Part 54, Safe Drinking Water Assistance, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Project Name: YCUA 2024 DWRF Project Plan

Project Description: Various water supply system improvements, FY24-25 to FY27-28

Legal Name of Applicant: Ypsilanti Community Utilities Authority
(Name of the applicant municipality bonding for the project. Ex. A county bonding on behalf of a village or township)

Applicant Address: 2777 State Road

City: Ypsilanti Zip Code: 48198 County: Washtenaw

Applicant's Federal Employer Identification Number (EIN): 38-2052446

Congressional District: 15 State Senate District: 18 State House District: 54

Population served by Water Supply: 151,101 Water Supply Serial Number (WSSN): 7260

Estimated Total Project Cost: $ 40,569,710 Target Construction Start Date: 5/1/2025

Applicant Authorized Representative Name: Luther Blackburn, Jr.

Title: Executive Director Phone: (734) 484-4600 ext. 216 Email: lblackburn@ycua.org

Authorized Representative Address. If same as applicant address above, check here ☑

Address: _____ City: _____ Zip Code: _____

_____
Signature of Authorized Representative Date

State approval of the water supplier's Source Water Protection Plan including a Surface Water Intake Protection Program or Wellhead Protection Program (if applicable).

☐ Attached ☑ N/A

Completed DWSRF Priority Ranking Worksheet. Questions should be directed to the assigned DWEHD district engineer or Brandon Onan at OnanB@Michigan.gov or 616-307-6736.

☑ Attached Excel file.

Joint Resolution of Project Planning Document Adoption/Authorized Representative Designation.

☑ Attached

A final project planning document, prepared and adopted in accordance with EGLE's DWSRF Project Planning Document Preparation Guidance, must be submitted by the annual deadline as indicated on EGLE's DWSRF website for a proposed project to be considered for placement on Michigan's Project Priority List (PPL) for the upcoming fiscal year.

Please email your final project planning document and attachments with this form to your EGLE Water Infrastructure Funding and Financing Section Project Manager.

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

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

DRINKING WATER STATE REVOLVING FUND (DWSRF)
PRIORITY RANKING WORKSHEET

Supply Name: Ypsilanti Community Utilities Authority
DWSRF Project No.: 1031-4002 (City of Ypsilanti only)
Date: 23-May-24
WSSN: 7260
Scorer's Name: Scott Westover
Population Served by the Project: 22,926

Category	Points Available	Points Awarded	Comments
I. Drinking Water Regulatory Compliance			
A. Facility Upgrades to Maintain Compliance Improve or maintain compliance with current or future regulations	15	15	
B. Regionalization efforts to support improved TMF Capacity Managerial or Financial Capacity Resource sharing to increase compliance	5	5	
C. Consolidation _____CWS - 5 points each _____Other PWS - 3 points each	up to 10 up to 10		
D. Project addresses enforcement order (CWS or NCWS)	5		
E. Source Water Protection Efforts	5		
Category I Totals	**25 Max Points**	**20**	
II. Public Health Protection			
A. Lead Service Line Replacements LSL, Galvanized previously served by lead	15	15	
B. Acute violations of standards or TTs Project addresses acute MCLs or TTs (Nitrate, E-Coli, SWTR)	20		
C. Non-acute violations of standards Project addresses non-acute MCLs, HALs, or TTs (Arsenic, PFAS, VOCs, ALEs, Radium, Manganese, etc.)	10		
D. History of Proactive Public Health Protection Water Supply has a history of no HB violations in past 5 years	5	5	
Category II Totals	**20 Max Points**	**20**	
III. Drinking Water Quality Standards			
A. Looping to eliminate dead-end watermains/ Install Storage Tank Mixing or equivalent	5 5	5	
B. Change to more protective/higher quality source water	5		
C. Active Source Water Protection Program	10	10	
D. Treatment upgrades to address water quality	5		
Category III Totals	**15 Max Points**	**15**	
IV. Improving Infrastructure			
A. Asset management implementation Project addresses needs in Capital Improvements Plan/Reliability Study	10	10	
B. Project includes infrastructure assets for multiple systems. Technical Capacity resource sharing (tanks, wells, intakes, etc.)	5		
C. Project includes multiple asset classes or financing sources USDA RD, CWSRF, Grants, Loans, other matching sources, etc.	5	5	
Category IV Totals	**15 Max Points**	**15**	
V. Affordability/Disadvantaged Applicants			
A. Overburdened Communities	20	20	
B. Significantly overburdened communities	25		
Category V Totals	**25 Max Points**	**20**	
WORKSHEET POINT TOTALS	**100 Max Points**	**90**	
TOTAL $ AMOUNT OF PROJECT:	**$3,028,800**	**COST/ CAPITA:**	**$132.11**

If you need this information in an alternate format, call 800-662-9278 or contact EGLE-Accessibility@Michigan.gov.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

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

DRINKING WATER STATE REVOLVING FUND (DWSRF)
PRIORITY RANKING WORKSHEET

Supply Name: Ypsilanti Community Utilities Authority
DWSRF Project No.: 1031- 5229 (Township and contract customers
Date: 23-May-24
WSSN: 7260
Scorer's Name: Scott Westover
Population Served by the Project: 128,175

Category	Points Available	Points Awarded	Comments
I. Drinking Water Regulatory Compliance			
A. Facility Upgrades to Maintain Compliance Improve or maintain compliance with current or future regulations	15	15	
B. Regionalization efforts to support improved TMF Capacity Managerial or Financial Capacity Resource sharing to increase compliance	5	5	
C. Consolidation _____CWS - 5 points each _____Other PWS - 3 points each	up to 10 up to 10		
D. Project addresses enforcement order (CWS or NCWS)	5		
E. Source Water Protection Efforts	5		
Category I Totals	**25 Max Points**	**20**	
II. Public Health Protection			
A. Lead Service Line Replacements LSL, Galvanized previously served by lead	15	15	
B. Acute violations of standards or TTs Project addresses acute MCLs or TTs (Nitrate, E-Coli, SWTR)	20		
C. Non-acute violations of standards Project addresses non-acute MCLs, HALs, or TTs (Arsenic, PFAS, VOCs, ALEs, Radium, Manganese, etc.)	10		
D. History of Proactive Public Health Protection Water Supply has a history of no HB violations in past 5 years	5	5	
Category II Totals	**20 Max Points**	**20**	
III. Drinking Water Quality Standards			
A. Looping to eliminate dead-end watermains/ Install Storage Tank Mixing or equivalent	5 5	5	
B. Change to more protective/higher quality source water	5		
C. Active Source Water Protection Program	10	10	
D. Treatment upgrades to address water quality	5		
Category III Totals	**15 Max Points**	**15**	
IV. Improving Infrastructure			
A. Asset management implementation Project addresses needs in Capital Improvements Plan/Reliability Study	10	10	
B. Project includes infrastructure assets for multiple systems. Technical Capacity resource sharing (tanks, wells, intakes, etc.)	5		
C. Project includes multiple asset classes or financing sources USDA RD, CWSRF, Grants, Loans, other matching sources, etc.	5	5	
Category IV Totals	**15 Max Points**	**15**	
V. Affordability/Disadvantaged Applicants			
A. Overburdened Communities	20		
B. Significantly overburdened communities	25		
Category V Totals	**25 Max Points**	**0**	
WORKSHEET POINT TOTALS	**100 Max Points**	**70**	
TOTAL $ AMOUNT OF PROJECT:	**$16,513,300**	**COST/ CAPITA:**	**$128.83**

If you need this information in an alternate format, call 800-662-9278 or contact EGLE-Accessibility@Michigan.gov.

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From: Luke Blackburn <LBlackburn@ycua.org>
Sent: Wednesday, September 27, 2023 12:30 PM
To: Scott Westover <SWestover@ycua.org>
Subject: FW: YCUA DWSRF Scoring

FYI

From: Thurston, Brian (EGLE) <THURSTONB@michigan.gov>
Sent: Wednesday, September 27, 2023 8:37 AM
To: Luke Blackburn <LBlackburn@ycua.org>
Cc: Oswald, Eric (EGLE) <OswaldE1@michigan.gov>; Beauchamp, Dan (EGLE) <BEAUCHAMPD@michigan.gov>; Argiroff, Phil (EGLE) <ARGIROFFP@michigan.gov>
Subject: RE: YCUA DWSRF Scoring

Good morning, Luke,

Thank you for your note and conversation on Monday evening. I have reviewed the below email chain along with DWEHD scoring for the proposed work in FY24. I have reached out to Water Infrastructure Finance and Funding Section (WIFFS) to discuss your community's particular circumstances. Amending the project plan to alter the project plan schedule is not possible at this time in the review process. However, we would be happy to work with you and/or your engineer on some amendments to the project plan that would put the city in a better position for funding in FY25.

We discussed looking at coordinating multiple asset classes (water and sewer) to receive coordination points or to identify work the city would be funding using other funding sources that would offset the funding request from DWSRF. We also discussed evaluating if the city has any businesses that may still be on their own water supply that should be connected to the city water system, and these could be consolidated as part of project plan update.

Starting in FY23, project plans were broken down to score only those portions of projects that are to be financed in the current loan period. We agree that historically we scored entire project, and we identified this gap in the areas of inequity and fairness. We must score projects based on the work to be financed in that year to ensure the most critical infrastructure projects can be funded with the limited dollars available. Due to the extensive need requesting funding we had to amend our scoring processes to equalize the scoring since many communities started submitting very complex multi-phase project plans to increase their score in every funding cycle which exacerbated this fairness gap. According to WIFFS, this scoring clarification was explicitly discussed at the project plan development meetings held earlier this year and all communities with ITAs or project plans were invited to these meetings.

It appears that the documentation provided to clarify the city project plan schedule showed the city had chosen not to move forward with many of the needed infrastructure projects identified in the project plan during FY24 funding cycle and had chosen to only move forward with a meter replacement project. In fairness, we cannot score other

projects that the city is not moving forward with in FY24, and we have to use the information received by June 1st for the scoring. It is unfortunate that DWEHD staff had incorrectly scored the project early in this process. All communities will have many additional future projects that will be completed in the future or with other funding sources. I hope you can understand why we can only score the projects to be financed in the current funding cycle when evaluating project scoring.

The scoring sheet submitted did not represent the project work in FY24.

EGLE awarded 5 additional points in Section IB for the regionalization efforts to support TMF Capacity.
EGLE awarded 10 additional points in Section IIIC for GLWA's active Source Water Protection Program

EGLE removed the 15 points for Lead Service Line (LSL) replacement since no proposed FY24 project work supports LSL.
EGLE removed the 5 points for water main looping since no proposed FY24 project work is looping water mains.
EGLE removed 10 points for the FY24 project work being included in the city's Asset Management Plan (AMP) or Capital Improvements plan that was previously submitted to EGLE. Please be sure to amend your AMP to include all project work.

The city is also doing a CWSRF project that could give additional points however none of the proposed work in the project plan is linked to the DWSRF project work so those points cannot be awarded.

Please provide documentation that the water meter replacement project is included in the city's Asset Management Plan. With proper documentation these points may be able to added to the city's project score.

Sincerely,
Brian E. Thurston, P.E.
Assistant Director
Drinking Water and Environmental Health Division
Michigan Department of Environment, Great Lakes, and Energy
231-590-3430 | thurstonb@michigan.gov
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