Town of Barre

14317 West Barre Road
Albion, New York 14411

PRELIMINARY ENGINEERING REPORT

for the

TOWN OF BARRE
WATER DISTRICT NO. 10

August 3, 2023

MRB Group Project No. 0203.18003.000

Prepared by:

MRB group

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PRELIMINARY ENGINEERING REPORT
FOR THE
TOWN OF BARRE WATER DISTRICT No. 10
ORLEANS COUNTY, NEW YORK
August 3, 2023

I. GENERAL

The purpose of this project is to provide a safe and reliable potable water supply and fire protection for residents of the proposed Town of Barre Water District No. 10 **(hereinafter referred to as the "Project, Project Area or Water District")**.

The Town of Barre is located in Orleans County, as shown in **Figure 1**.

The proposed improvements consist of the installation of approximately 23,350 linear feet (LF) of 8" water main, valves, hydrants, and appurtenances along various roads in the Town of Barre.

The proposed Water District will connect to existing water mains in the Town of Barre Water District No. 3 near the intersection of Oak Orchard Road and Angevine Road as well as Water District No. 4 near the intersection of East Barre Road and Angevine Road.

The Boundary Map and Description for the Project is provided in **Appendix A**.

II. PROJECT PLANNING AREA

A. Project Location

The Project Area is located along the following roads within the Town of Barre:

- **Angevine Road** between Oak Orchard Road and East Barre Road.
- **McNamar Road** between Angevine Road and Transit Road.
- **Transit Road** between McNamar Road and Mansfield Road.

Refer to **Figure 2** for a Map of the Proposed Project Location. Photographs of the Project Area are included in **Appendix B**.

B. Environmental Resources Present

The area of the proposed project is generally farmland and residential areas. There are stream crossings along each road within the project area.

There are several areas within the project that are within the buffer area of the New York State and Federal (**Appendix C**) designated wetlands and streams that will need to be crossed, again within the highway right-of-way, in areas already disturbed by the highway and existing utilities. Measures will be incorporated into the design to mitigate adverse impacts. The related permits and environmental protection measures will be incorporated into the project.

The project is partially located within Orleans County's Agricultural District 2 as shown in **Appendix D**. However, the majority of work will be located within the highway right-of-way and will have no adverse impact on the agricultural properties.

As part of the project planning process, a complete environmental review *has taken* place including the State Environmental Quality Review (SEQR) Act and the National Environmental Policy Act (NEPA).

C. Population Trends and Parcel Information

The Town Assessor has prepared the list of parcels to be included in the Project and is included in **Appendix E**. The Project including the following:

- Total Number of Parcels in the District = 57
- Total Number of Residences to be served (Hook-ups) = 30
- Total Chargeable Units (EDU's) = 37
- Estimated Existing Population (Based upon 2.5 people/home) = 75
- Estimated Future Population (Assume 10% growth/20 years) = 83

The estimated growth is based upon previous water projects completed within the Town. Although this may not be supported by census information, the addition of 3 additional homes would be expected given this small service area.

D. Community Engagement

The Town of Barre has been approached by numerous residents in the Project Area over the past several years. There have been informal petitions circulated by the residents to request the Town evaluate the feasibility of providing public water to their area. *A formal petition has been prepared and filed with the Town.*

The Town of Barre will be scheduling a Public Information Meeting and Legal Public Hearing for creation of the Water District.

III. EXISTING FACILITIES

A. General and Location Map of Existing Facilities

There are no existing facilities in the Project Area.

The Town of Barre owns and operates a booster pump station, storage tank, and distribution mains in seven existing water districts. The Project will receive water supply from the Village of Albion. The Village of Albion owns and operates a 2.4 MGD Water Treatment Facility on the shores of Lake Ontario, with sufficient capacity to serve this Project.

The Existing Facilities within the Town of Barre are shown on **Figure 3.**

B. History

The Town of Barre constructed the booster pump station located at the Village of Albion 3.0 MG Water Storage Tank and constructed the 150,000-gallon Barre Water Storage Tank as part of the Town of Barre Water District No. 1 in 1993. Also, as part of that project, the main transmission/distribution line was installed along NYS Route 98 to supply the Barre WST and the residents in Barre Water District No. 1. Barre Water Districts 2, 3 and 4 were constructed in the mid 1990's and Barre Water District No. 5 was constructed in 2012. Water District No. 6 was constructed in 2015, Water District No. 7 was constructed in 2016 and Water District No. 8 was constructed in 2018. Water District No. 9 is currently slated for construction in the *summer/fall* of 2019.

The Town of Barre 150,000-gallon Water Storage Tank interior was painted in August 2008. We anticipate that the tank exterior will need to be painted within the next 3-5 years.

C. Condition of Existing Facilities

The existing distribution system in the Town of Barre was constructed within the last twenty-five years. All of the water main in the existing districts in the Town of Barre is DR-18 PVC and is in excellent condition. The Town of Barre owns and maintains the booster pump station and the 150,000-gallon Water Storage Tank.

The booster pump station and water storage tank are in excellent condition and can easily meet the needs of the Project Area. Future repairs and maintenance associated with those items are to be shared by all Barre Water Districts. In addition, the Town of Barre has an inter-municipal agreement to share in the operation and maintenance costs associated with those items with the Town of Albion.

D. Financial Status of Existing Facilities

The financial status of the existing facilities does not relate specifically to the creation of this Water District.

The cost for routine operation and maintenance associated with the booster pump station and the water storage tank are included in the normal water rate. Future improvements such as rehabilitation/replacement will be shared by all users of the system (Barre and Albion Water Districts who benefit from those items).

E. Water/Energy Audits

Not applicable to this report.

IV. NEED FOR PROJECT

A. Health and Safety

The residents in the Project Area typically experience the following problems:

1. **Insufficient quantity** of water is available for the residential wells. Some residents must conserve water by: alternating shower days, alternating laundry days or not washing clothes in their residences at all.

2. **Poor water quality** is predominant in the existing well supplies. The water quality requires some residents to either boil water for consumption or purchase bottled water for cooking and consumption. Water samples have been collected and analyzed by the Orleans County Health Department. The Orleans County Health Department is in support of the construction of the public water supply for this Project Area due to the condition of the existing private well supplies.

3. **High cost** to operate and maintain existing well supplies. Several residents must purchase chemicals for softening and treatment systems and must frequently replace their plumbing systems due to corrosion of their fixtures. Several residents currently pay over $500 per year to operate and maintain their water system, which provides them with poor quality water and insufficient quantities at times.

4. **Fire Protection.** Currently, there is no water system to provide fire protection in the proposed water district. Likewise, there are no significant bodies of water in the vicinity that provide an adequate supply of water for fire protection.

The completion of the proposed project would address all of these issues for the residents of the proposed Water District.

B. System Operation and Maintenance

Dead end water mains and rural water mains require periodic flushing and chlorine residual testing, which are typical of a rural water districts because of low population density and low water usage. Currently, the Town of Barre manually flushes their dead end and rural water mains to maintain chlorine residual throughout the water system. The proposed water district will create an interconnection between the water mains on Oak Orchard Road and East Barre Road and will create a dead-end water main on Transit Road. There is a potential in the future for an interconnection with the Town of Clarendon Water System in the vicinity of Transit Road and Brown Schoolhouse Road. This potential interconnection would not only provide an emergency connection but would also reduce the need for flushing.

C. Reasonable Growth

The ability to serve a growing population in the region has been addressed as part of the selection of water main size. The water mains for the Project Area have been sized to meet fire flows, which far exceed residential demand.

Insurance Services Office (ISO) requires a minimum fire flow of 500 gpm at 20 psi residual pressure for this area. Fire flows in the Project Area will exceed the ISO and NYS Department of Health requirements in all areas. As shown on **Table 1**, fire flows will be in excess of 677 gpm @ 20 psi in all locations.

Future residential growth within the District will not be limited as a result of available fire flows. In addition, this project is utilizing 8” diameter water mains which is generally the minimum size water mains used for rural areas providing fire flow. This Project supports the necessary fire flow, and the current and future

demands, without putting an undue burden on the property owners within the Water District.

V. ALTERNATIVES CONSIDERED

The only alternative to address the problems of the residents of the Project Area is to install a Public Water System. No other alternatives were considered.

A. Water Supply Alternatives

There are no feasible water supply alternatives to consider such as construction of wells, water treatment plant, etc. Construction of a water treatment plant to supply the needs of the Town of Barre solely would not be feasible from a financial standpoint.

Elimination of the Town of Barre water usage from the Village of Albion Water System (water supplier to the Town of Barre) would have a devastating effect on that system and would likely make the Village of Albion Water System non-viable as a supplier. It should be noted that the Village of Albion Water System provides potable water to several other Town Water Districts within Orleans County, many of which have funding from USDA RD for their water districts. Furthermore, the Town of Barre does not have any operational staff that would be licensed to operate a water treatment plant and would have to likely hire from the outside for operation staff or train existing staff. In addition, they would have to increase their town payroll and benefits to treat their own water. Therefore, no further investigation or consideration of a surface water supply is warranted at this time.

It is likely that a well supply would not be feasible since the majority of the private wells within the Town of Barre have experienced quality and quantity problems which have led to public water being installed. Therefore, no further investigation or consideration of well supply is warranted at this time.

B. Pipe Material Alternatives

The pipe material alternatives to consider include PVC pipe, ductile iron pipe (DIP) and high-density polyethylene pipe (HDPE). The Town of Barre has constructed their previous water main extensions utilizing PVC pipe. The operation and maintenance staff are most familiar with using PVC pipe and have tools for operating and maintaining PVC Pipe. Ductile iron pipe will be more-costly to purchase and install, and the town would have to purchase additional equipment for tapping the DIP water main in the future for water services. Using HDPE for water distribution systems is a feasible alternative for crossing highways, creeks and other obstacles that require horizontal directional drilling (HDD). We recommend using a combination of PVC and HDPE pipe for the water distribution system.

At the time of preparation of this PER, the cost of 8” DIP water main (Class 51) was $36.00/LF, the cost of 8” PVC water main (DR 18) was $27.00/LF, and the cost of 8” HDPE (DR 11) was $18.00/LF. For this application, we anticipate the life span and operation and maintenance costs of the PVC pipe will be similar to DIP. With a cost of DIP more than that of PVC pipe, and the extremely limited budget, we recommend the use of PVC pipe for the majority of the areas.

C. Additional Areas of Service Alternatives

As part of our preliminary investigation for water main installation, we evaluated additional potential areas of service, however, they were ruled out due to cost limitations. As this is a rural area, there are no other feasible layouts available for consideration.

D. Sustainability Consideration Alternatives

The water main size will be based upon the needed fire flow and anticipated domestic water supply needs, therefore no alternative pipe size would be appropriate to consider. No other Sustainability measures are applicable to this Project.

VI. PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

A. Preliminary Project Design

1. Water Supply

The Town of Barre receives its water from the Village of Albion Water Treatment Plant located on Wilson Road in the Town of Carlton. The source of water for the Village of Albion Water Treatment Plant is Lake Ontario.

The estimated water usage for the Project is 4,932 gallons per day (3.43 gpm), assuming an average usage of 60,000 gallons per year per house. The future usage could reach 5,425 gallons per day (3.77 gpm) assuming a 10% growth over the next 20 years.

The Village of Albion Water Treatment Plant has excess capacity to meet the needs of Project.

The Town of Barre also has an inter-municipal agreement with the Town of Clarendon to obtain water from their system on an emergency basis. The Town of Clarendon receives their water supply from Monroe County Water Authority (MCWA) which also has an ample supply of water.

2. Treatment

The Village of Albion owns and operates the Water Treatment Facility, which will treat the water supplied to the Project. The Village of Albion Water Treatment Facility is a 2.4 MGD Rapid Sand Filter Treatment Plant. The Water Treatment Facility currently produces approximately 1.8 MGD of potable water and has excess capacity.

3. Storage

The Project Area will be directly supplied by the Town of Barre 150,000-gallon Water Storage Tank that is located on NYS Route 98 in Barre Center, behind the Barre Fire Hall.

The Village of Albion owns a 1.0-million-gallon Water Storage Tank located in the Town of Gaines near 5 Corners and a 3.0-million-gallon Water

Storage Tank located in the Town of Barre near the intersection of NYS Route's 98 and 31A.

In addition, the Town of Clarendon owns and operates a 150,000-gallon Water Storage Tank, which can provide water to the Town of Barre Water System in the event of an emergency.

4A. Pumping Stations

No additional pumping is needed to serve the proposed project.

4B. Individual Pressure Boosters

None required.

5. Distribution Layout

The proposed areas of service include:

- **Angevine Road**

The proposed improvements along Angevine Road consist of installing approximately 14,500 linear feet of 8" water main, valves, hydrants, services and appurtenances between Oak Orchard Road and East Barre Road

The proposed water main is anticipated to be located on the east side of Angevine Road, generally within the Highway right-of-way.

- **McNamar Road**

The proposed improvements along McNamar Road consist of installing approximately 5,250 linear feet of 8" water main, valves, hydrants, services and appurtenances between Angevine Road and Transit Road.

The proposed water main is anticipated to be located on the north side of McNamar Road, generally within the Highway right-of-way.

- **Transit Road**

The proposed improvements along Transit Road consist of installing approximately 3,600 linear feet of 8" water main, valves, hydrants, services and appurtenances between McNamar Road and Mansfield Road.
The proposed water main is anticipated to be located on the west side of **Transit Road**, generally within the Highway right-of-way.

- **Master Meter Pit**

The proposed master meter pit will be located near the intersection of Transit Road and Brick Schoolhouse Road. This meter pit will serve as an emergency supply of water between the Towns of Barre and Clarendon. This interconnection is dependent upon an inter-municipal agreement and approval by the water purveyors.

6. Hydraulic Calculations

A computer model was used to estimate the hydraulic conditions in the proposed Water District. The detailed Hydraulic Calculations are included in **Appendix F**. **Table 1** Proposed Hydraulic Conditions summarizes the estimated static and residual pressures and fire flow conditions throughout the proposed water district.

TABLE 1

Proposed Hydraulic Conditions

Location	Junction	Static Pres.(psi)	Fire Flow (GPM)	Residual Pres. (psi)
Angevine Road @ McNamar Road	J-73	69	1,161	32
McNamar Road @ Brick Schoolhouse Road	J-76	56	737	20
Transit Road @ Mansfield Road	J-77	61	677	20

7. Easements

The water main will generally be located within the highway right-of-way. On rare occasions, the water main, fire hydrants or appurtenances may need to be installed on private easements. In those cases, the Town Engineer will prepare a permanent easement map and work with the Town Attorney who will prepare the easement and description for execution by the property owner. In addition, temporary easements may be necessary for installation of the improvements.

B. Project Schedule

The anticipated Project Schedule will be determined once the financing package has been received by the Town of Barre. The general steps to be taken include:

- Submit the PFE Application to USDA RD for their consideration
- Receive PFE from USDA RD
- Prepare the USDA RD Full Application for funding
- Receive Letter of Conditions from USDA RD
- Finalize Map, Plan and Report based upon USDA RD LOC
- TB Accepts Map, Plan and Report
- TB holds Legal Public Hearing
- Submission to the NYS Comptroller if necessary
- Approval by NYS Comptroller
- Design Phase of Improvements
- Submission to agencies for approvals & permits
- Bidding Phase
- Construction Phase and Final Restoration
- Completion and Project Closeout

C. Permits, Approvals and Easement Requirements

The Project will require permits and approvals from the following agencies:

- Orleans County Health Department Approval
- Orleans County Highway Department Approval
- US Army Corp of Engineers Nationwide Permit
- USDA Rural Development Approval
- NYS Department of Environmental Conservation
  - Water Supply Permit Application
  - Stormwater Pollution Prevention Plan (SWPPP)
  - Freshwater Wetlands
  - Water Quality Certification
  - Stream Disturbance

D. Sustainability Considerations

Residents are encouraged to conserve water by installing low flow plumbing devices. The Town of Barre has standardized various materials such as fire hydrants, valves, meters, etc. which limits the necessity for keeping a large inventory of various different manufacturers products.

The Town will collect sufficient funds on an annual basis from each property owner sharing in the Project to re-pay the debt service on the Project. In addition, the water cost is sufficient to cover the purchase of water and operation and maintenance.

E. Preliminary Cost Estimate (Engineers Opinion of Probable Costs)

The summary of estimated for the proposed project are as follows:

a.	Construction	$	1,585,000
b.	Contingency	$	158,500
c.	Engineering	$	180,000
d.	Legal and Administrative	$	201,500
	Total Project Costs	**$**	**2,125,000**
	Less Anticipated USDA RD Grant	$	(1,101,000)
	Net Local Share	**$**	**1,024,000**

Total Number of EDUs in Proposed WD 37.0

Annual debt service with Grant $ 39,969.80
(Based upon $500,000 @ 2.125% for 38 years
and $524,000 @ 2.25% for 38 years)

Annual debt service per parcel with Grant $ 1,080.26

Refer to **Table 2** at the end of this report for a detailed Cost Estimate of the Proposed Project.

Based upon our previous experience with similar type water projects, within this community and other surrounding communities, we feel that the contingency provided is sufficient for this Project. There are no construction concerns associated with this Project.

We have included mobilization/demobilization, lawn restoration, fittings, bonds, insurance, creek crossings and miscellaneous items in the cost estimate. These items are spread out in the respective line items. We have also provided an adequate contingency amount to cover anticipated cost increases as this project progresses through the funding and approval process.

Included in **Appendix E** is the list of properties included in the Project. The Project Budget (Form E) is included in **Appendix G.**

F. Annual Operating Budget

1. Income.

The Project will purchase water from the Village of Albion at a rate of $3.34 per 1,000 gallons. It is anticipated that the Town of Barre will charge residents of the Project Area $5.75 per 1,000 gallons to cover the cost of purchasing water and associated operation and maintenance of the system.

The Town of Barre will also charge the residents of the Project area $15.00 per quarter to cover future water storage tank painting.

2. Annual Operation and Maintenance (O & M) Cost

The Town of Barre will be responsible for the Operation and Maintenance (O&M) of the proposed water system improvements. The cost for O & M is included in the water storage tank painting fee and water rate charged to each user of the system. The Town of Barre currently provides the O & M for all other Water Districts within the Town. Dale Brooks is the NYS Department of Health Licensed Water System Operator for the Town of Barre.

The average household uses approximately 60,000 gallons of water per year.

The **Total Cost of Water per Year** is calculated as follows:

$ 5.75/1,000 Gallons x 60,000 Gallons/Year	= $ 345.00/Year
$15.00/Quarter x 4 Quarters/Year	= $ 60.00/Year
Total Estimated Cost of Water	**= $ 405.00/Year**

Included in **Appendix H** is the USDA Rural Development Form A-User Information Sheet which includes a breakdown of the Operation and Maintenance Costs associated with this Project.

3. Debt repayments

The debt service on initial project costs will be based on equivalent dwelling units (EDU's). The Town of Barre intends to apply for a grant and loan from the USDA Rural Development (USDA RD) agency to help decrease the project debt service costs.

For the purposes of calculating similar system costs for USDA Rural Development, the number of Equivalent Dwelling Units is summarized as follows:

Water District No. 10	**Numbers**	**EDU Count**
Agricultural Exempt Properties	9	0
Ag. Properties with Public Water	0	0
Residential Properties	30	30
Vacant Properties	14	7
Non-Residential (Commercial Properties)	0	0
Exempt Properties (Utility Line; Non-Buildable	4	0
Totals	**57**	**37 EDU's**

4. Short Lived Assets and Debt Service Reserves

There are no Short-Lived Assets associated with this Project. The cost of water to the residents includes normal operation and maintenance costs. The life of the assets associated with this project exceed the term of the bond for the Project.

There are no plans for Debt Service Reserves associated with this Project.

5. Estimated Costs for the Average Residential User

The estimated first year costs for the average residential user would be as follows:

1.	Installation of Water Service (100 lf x $12.00/lf)	= $1,200.00
2.	Internal Plumbing Changes	= $ 150.00
3.	Meter from Town	= $ 350.00
3.	Repayment of Long-Term Bonding	= $1,080.26
4.	Water Storage Tank Painting Fee	= $ 60.00
5.	Purchase of Water (60,000 gal./yr)	= $ 345.00
	Total First Year Costs for the Average Residential User	**= $ 3,185.26**

The estimated annual costs for the average residential user after the first year would be as follows:

1.	Repayment of Long-Term Bonding	= $ 1,080.26
2.	Water Storage Tank Painting Fee	= $ 60.00
3.	Purchase of Water (60,000 gal./yr)	= $ 345.00
	Total Second Year and beyond Costs for the Average Residential User	**= $1,485.26**

The property owner is responsible for paying the fee associated with purchase of the water meter. In addition, the property owner is responsible for installation of their own individual water service and connection to the new water service.

As part of this project, water services will be provided from the water main to the right-of-way in front of each building. A curb stop and box will be located at the right-of-way to shut off the water service if necessary.

Upon the completion of the proposed Project, should the budget permit, the Town should consider installing automatic flushing units, purchasing basic operation and maintenance tools, equipment and spare parts including, but not limited to: spare hydrants, spare valves, spare fittings, spare service materials.

Consideration should also be given to meter reading improvements, utility locating devices, and computer hardware/software upgrades in order to maximize the efficiency of the operation and maintenance of the proposed Project. Also, if the project budget allows, residential water meters, readers and other miscellaneous metering equipment should be provided to each residence. The Town should also seek reimbursement for water purchased during construction *and reimbursement for necessary repairs to the roadways damaged by construction,* if project funds are available.

VII. CONCLUSIONS AND RECOMMENDATIONS

This project will provide potable water to residents of the Proposed Water District, who are in dire need of the water for daily usage.

The Town of Barre should apply for grants and low interest loans to provide a badly needed, reliable water service and fire protection to the project area.

Report prepared for the
Town of Barre by,

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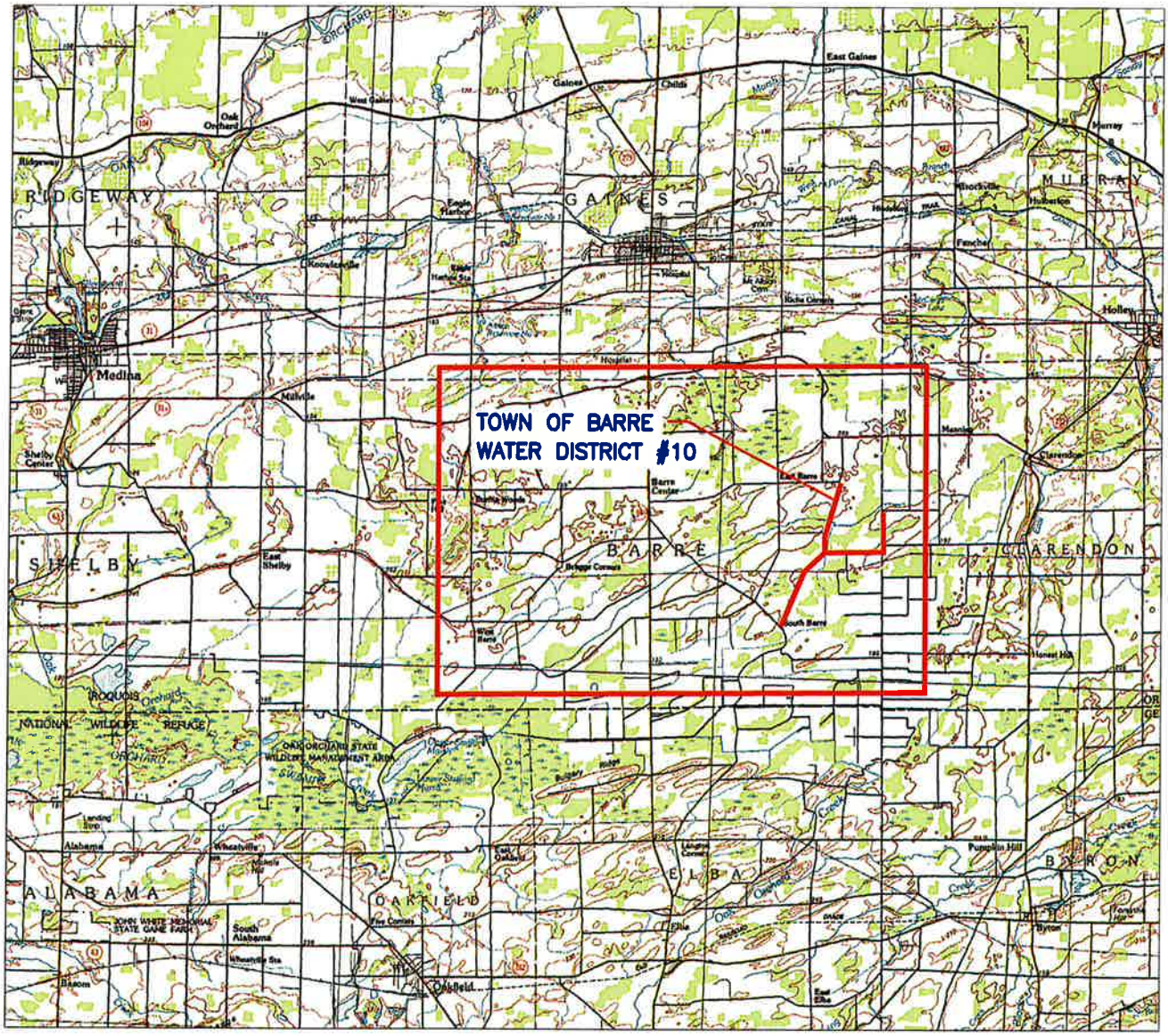
Paul.Chatfield@mrbgroup.com

FIGURE 1

GENERAL LOCATION MAP

NORTH



SCALE: N.T.S.	
DRAFTED BY: JBL	
CHECKED BY: SDM	
DATE: 5/18/18	
PROJ. NO.: 18-1291	

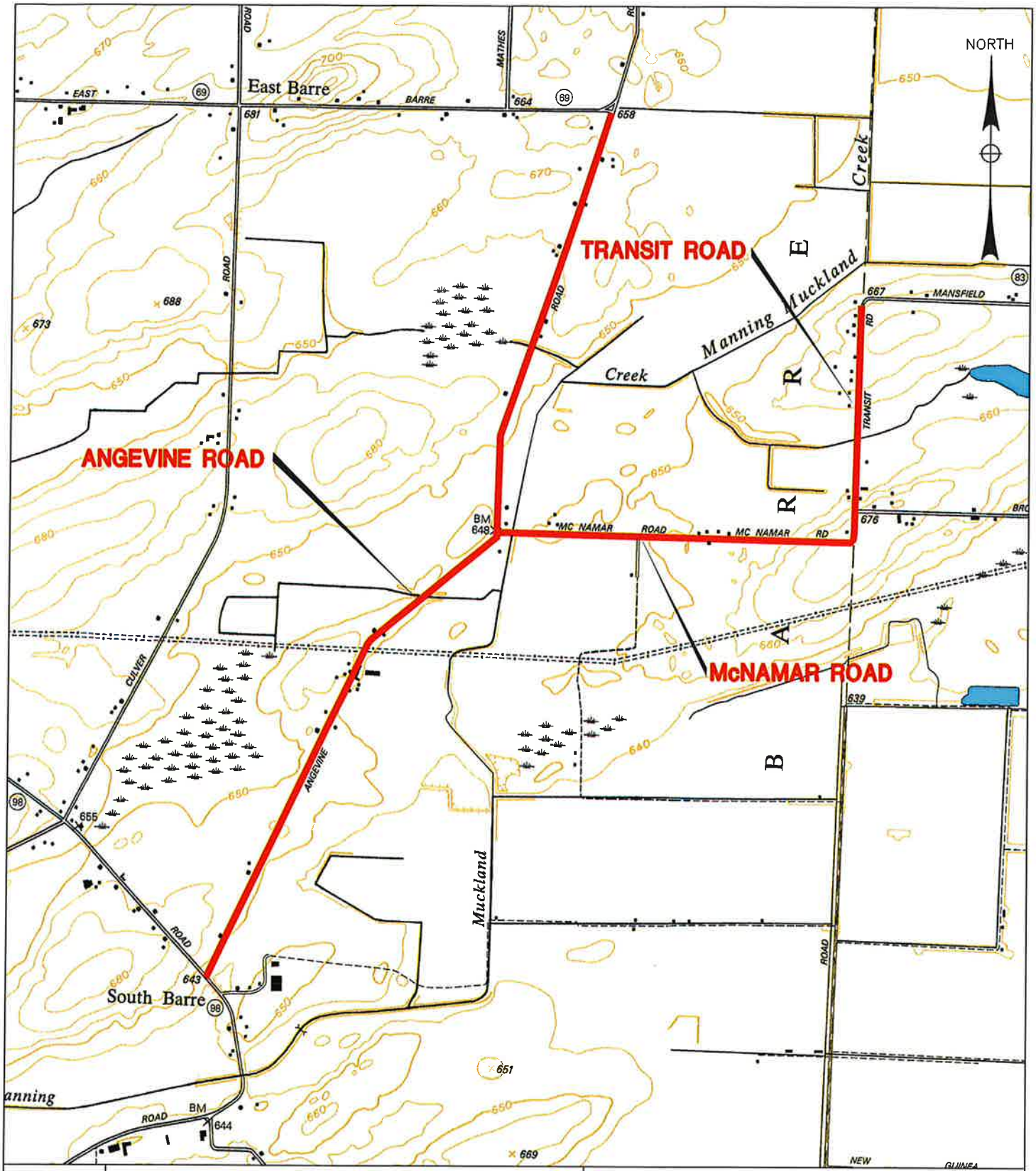
CHATFIELD ENGINEERS, P.C.
2800 Dewey Avenue
Rochester, New York 14616
(585) 227-6040 • Fax 227-4233

PROJECT:
TOWN OF BARRE
WATER DISTRICT NO. 10

TITLE:
FIGURE 1
GENERAL LOCATION MAP

FIGURE 2

PROJECT LOCATION MAP



SCALE:	1"=2,000'
DRAFTED BY:	EJM
CHECKED BY:	SDM
DATE:	6/11/18
PROJ. NO.:	18-1291

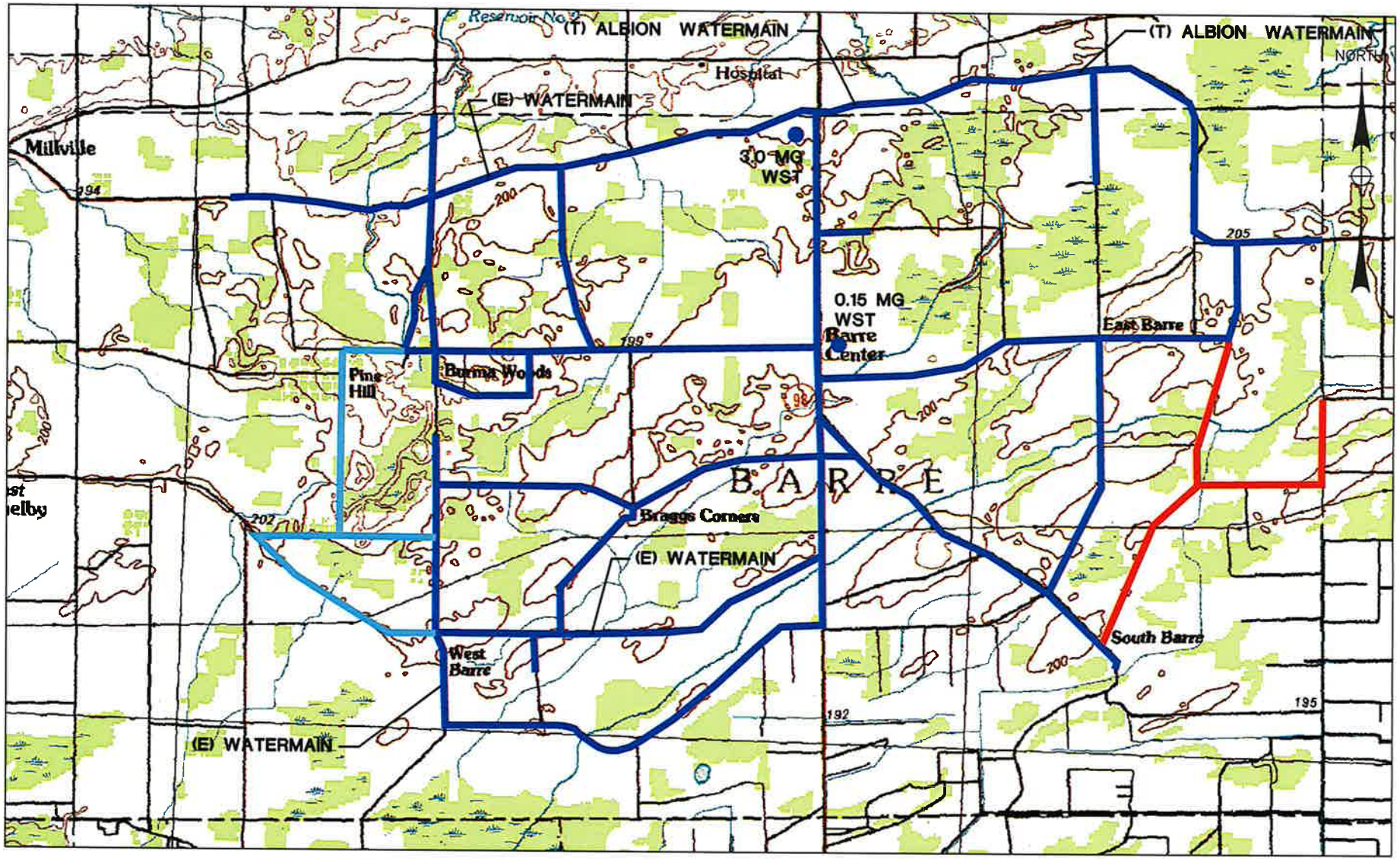
CHATFIELD ENGINEERS, P.C.
2800 Dewey Avenue
Rochester, New York 14616
(585) 227-6040 • Fax 227-4233

PROJECT:
TOWN OF BARRE
WATER DISTRICT NO. 10

TITLE:
FIGURE 2
PROJECT LOCATION MAP

FIGURE 3

EXISTING FACILITIES MAP



LEGEND

- EXISTING WATER MAIN
- WATER MAIN IN CONSTRUCTION
- PROPOSED WATER MAIN

SCALE: 1-6000	DATE: 6/11/18
DRAFTED BY: EJM	PROJ. NO.: 18-1291
CHECKED BY: SDM	

CHATFIELD ENGINEERS, P.C.
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Rochester, New York 14616
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PROJECT:
TOWN OF BARRE
WATER DISTRICT NO. 10

TITLE:
FIGURE 3
EXISTING FACILITIES

TABLE 2

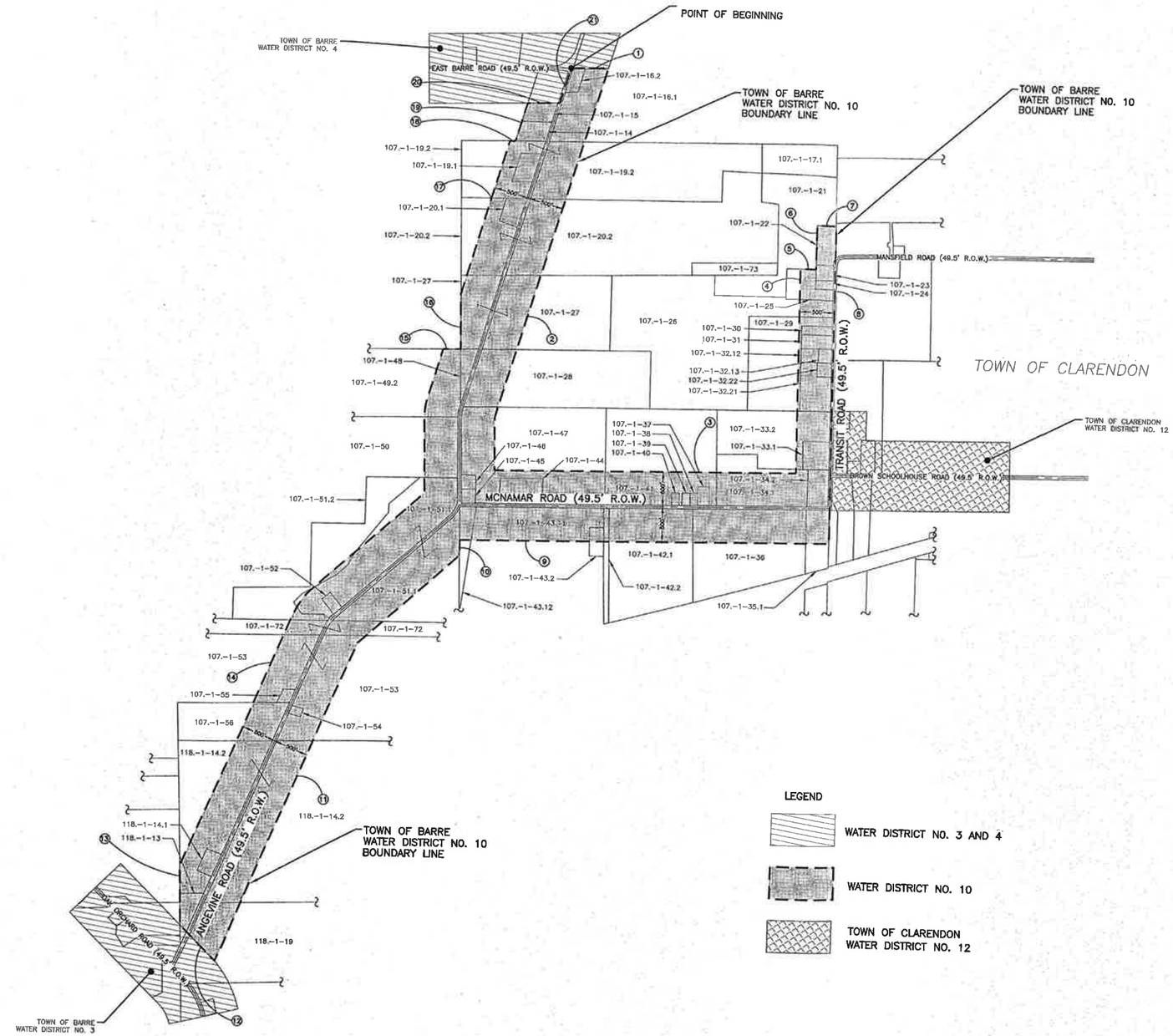
PRELIMINARY COST ESTIMATE

Table 2
Town of Barre Water District No. 10
Updated Project Budget
August 3, 2023

Total Construction Amount =	$1,585,000
Plus Contingency =	$158,500
Plus Technical Services =	$180,000
Plus Legal and Administration =	$201,500
Total Capital Cost =	**$2,125,000**
Less USDA RD Grant (Anticipated) =	-$1,101,000
Town of Barre Water District No. 10 Net Local Share =	**$1,024,000**
Original Loan Amount (LOC Issued 8/5/2019) =	$500,000
Additional Loan Amount (LOC issued 6/22/2023) =	$524,000
Total Number of EDU's in Water District No. 10 =	37
Yearly Debt Service on Original Loan Amount of $500,000 (2.125% for 38 Years) =	$19,309.77
Yearly Debt Service on Additional Loan Amount of $524,000 (2.25% for 38 Years) =	$20,660.02
Total Annual Debt Service =	**$39,969.80**
Yearly Debt Service/Parcel with Grant =	**$1,080.26**
Plus annual cost of water (Based upon 60,000 gpy/house) =	$345.00
Plus Water Storage Tank Painting Reserve =	$60.00
Total Estimated Cost per year =	**$1,485.26**

APPENDIX A

BOUNDARY MAP AND DESCRIPTION



NORTH

BOUNDARY DESCRIPTION
FOR THE
TOWN OF BARRE
WATER DISTRICT No. 10
ORLEANS COUNTY, NEW YORK
JUNE 1, 2018

The Town of Barre Water District No. 10 shall have an exterior boundary described as follows:

Beginning at a point, said point being the intersection of the centerline of East Barre Road (49.5' ROW) with the centerline of Angevine Road (49.5' ROW); thence

1. Easterly, 500 feet more or less, along a southerly boundary line of The Town of Barre Water District No. 4, also being the northerly property line for Tax Account No. 107.-1-16.2 & 107.-1-16.1 to a point, said point being 500 feet easterly of the centerline of Angevine Road; thence

2. Southerly, 5,985 feet more or less, along a line parallel to and 500 feet easterly of the centerline of Angevine Road to a point, said point being 500 feet northerly of the centerline of Mcnamar Road (49.5' ROW); thence

3. Easterly, 4,270 feet more or less, along a line parallel to and 500 feet northerly of the centerline of Mcnamar Road to a point, said point being 500 feet westerly of the centerline of Transit Road (49.5' ROW); thence

4. Northerly, 2,914 feet more or less, along a line parallel to and 500 feet westerly of the centerline of Transit Road to a point, said point being located on northerly property line of Tax Account No. 107.-1-25; thence

5. Easterly, 225 feet more or less, along northerly property line of Tax Account No. 107.-1-25 a point, said point being a northeasterly property corner of Tax Account No. 107.-1-25; thence

6. Northerly, 629 feet more or less, along a westerly property line of Tax Account No. 107.-1-23 & 107.-1-22 to a point, said point being the northwesterly property corner of Tax Account No. 107.-1-22; thence

7. Easterly, 271 feet more or less, along the northerly property line of Tax Account No. 107.-1-22 to a point, said point being the northeasterly property corner of Tax Account 107.-1-22; thence

8. Southerly, 4,340 feet more or less, along the centerline of Transit Road to a point, said point being located 500' southerly of the centerline of Mcnamar Road along the easterly property line of Tax Account No. 107.-1-35.1; thence

9. Westerly, 5,242 feet more or less, along a line parallel to and 500 feet southerly of the centerline of Mcnamar Road to a point, said point being located on the westerly property line of Tax Account No. 107.-1-43.12; thence

10. Southerly, 219 feet more or less, along the westerly property line of Tax account No. 107.-1-43.12 to a point; thence

11. Southwesterly, 6,845 feet more or less, along a line parallel to and located 500 feet southeasterly of the centerline of Angevine Road to a point, said point being a northerly boundary of the Town of Barre Water District No. 3; thence

12. Northwesterly, 704 feet more or less, along a line parallel to and located 500 feet northeasterly of the centerline of Oak Orchard Road (49.5' ROW) to a point, said point being located on the westerly property line of Tax Account No. 118.-1-13; thence

13. Northerly, 856 feet more or less, along the westerly property line of Tax Account No. 118.-1-14.2 to a point, said point being 500 feet northwesterly of the centerline of Angevine Road; thence

14. Northeasterly, 8,423 feet more or less, along a line parallel to and located 500 feet northwesterly of the centerline of Angevine Road to a point, said point being located on the northerly property line of Tax Account No. 107.-1-49.2; thence

15. Easterly, 248 feet more or less, along the northerly property line of Tax Account No. 107.-1-49.2 to a point, said point being the southwesterly property corner of Tax Account No. 107.-1-27; thence

16. Northerly, 789 feet more or less, along the westerly property line of Tax Account No. 107.-1-27 to a point, said point being 500 feet northwesterly of the centerline of Angevine Road; thence

17. Northeasterly, 2,284 feet more or less, along a line parallel to and 500 feet northwesterly of the centerline of Angevine Road to a point, said point being located on the northerly property line of Tax Account No. 107.-1-19.2; thence

18. Easterly, 78 feet more or less, along the northerly property line of Tax Account No. 107.-1-19.2 to a point, said point being a southwesterly property corner of Tax Account No. 107.-1-14; thence

19. Northeasterly, 569 feet more or less, along the westerly property corner of Tax Account No. 107.-1-14 to a point, said point being a southerly boundary of the Town of Barre Water District No. 4; thence

20. Easterly, 449 feet more or less, along the southerly boundary of the Town of Barre Water District No. 4 to a point, said point being the centerline of Angevine Road; thence

21. Northeasterly, 525 feet more or less, along the centerline Angevine Road to a point, said point being the point of beginning.

End of Boundary Description

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

NO.	REVISIONS	BY	DATE

PROJECT MANAGER

8/1/18
FIRM PRINCIPAL

PROJECT ENGINEER: SDM
DRAFTED BY: JBL
CHECKED BY: PRC
SCALE: 1" = 800'
DATE: JUNE 2018

CHATFIELD ENGINEERS, P.C.
2200 Dewey Avenue
Rochester, New York 14616
(585) 227-6040 • Fax 227-4283

PROJECT: TOWN OF BARRE WATER DISTRICT NO. 10

TITLE: WATER DISTRICT BOUNDARY MAP

PROJECT No. 18-1291

DRAWING No. 1 OF 1

filename: J:\Active\(T)Barre\18-1291 (W.D. #10)\CAD\Boundary Map.dwg

APPENDIX B

PROJECT AREA PHOTOGRAPHS

Angevine Road looking Southerly.

Angevine Road looking Southerly.

Angevine Road looking Southerly from East Barre Road.

Angevine Road looking Southerly from McNamar Road.

McNamar Road looking Westerly from Transit Road.

McNamar Road looking Westerly to Angevine Road.

McNamar Road looking Westerly.

Transit Road looking Southerly from Mansfield Road.

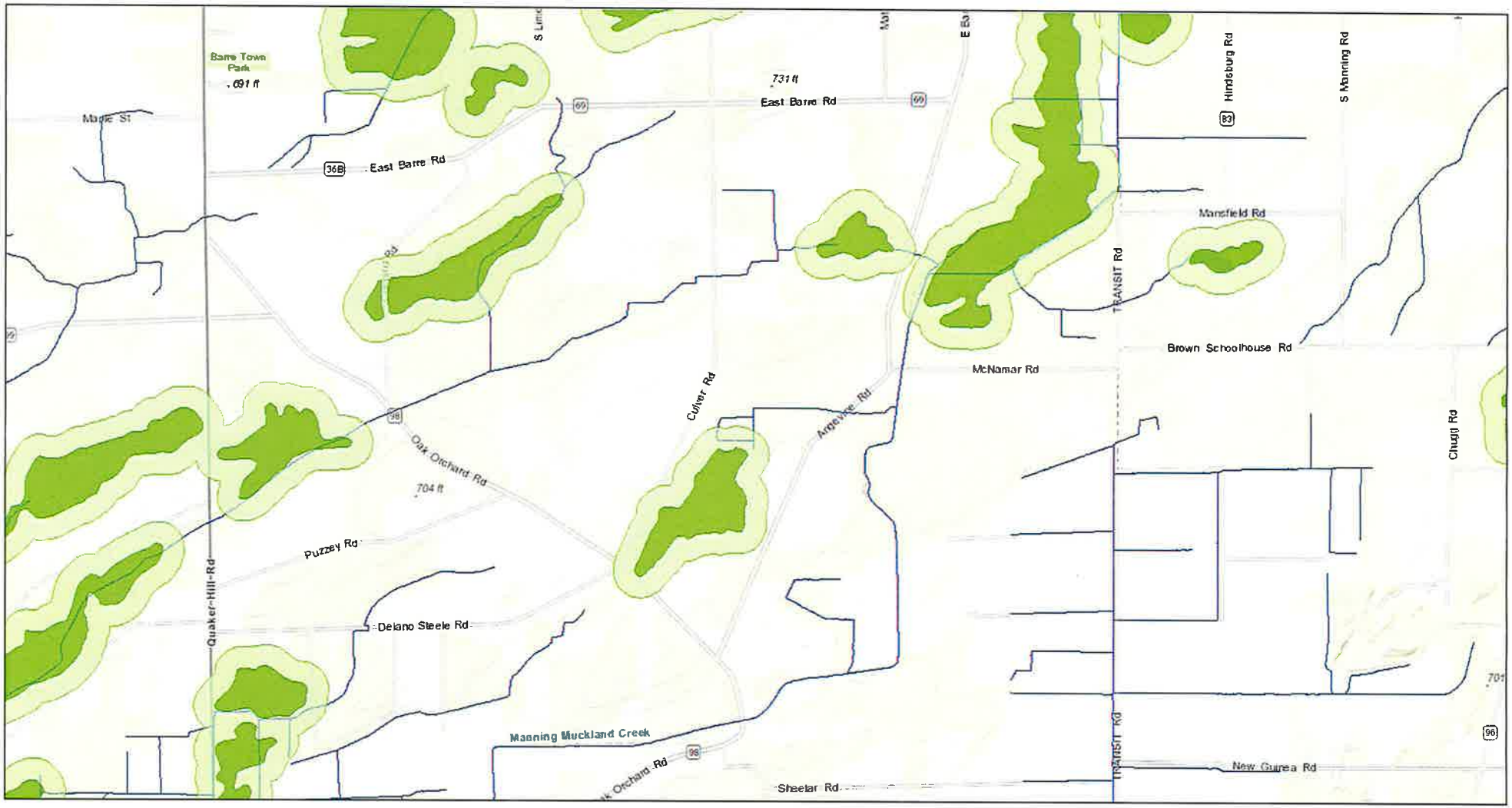
Transit Road looking Southerly to McNamar Road.

Transit Road looking Southerly.

APPENDIX C

WETLAND MAPS

Barre Water District No. 10 - NYSDEC Wetland Map



June 12, 2018

1:36,112

0 0.45 0.9 1.8 mi

0 0.5 1 2 km

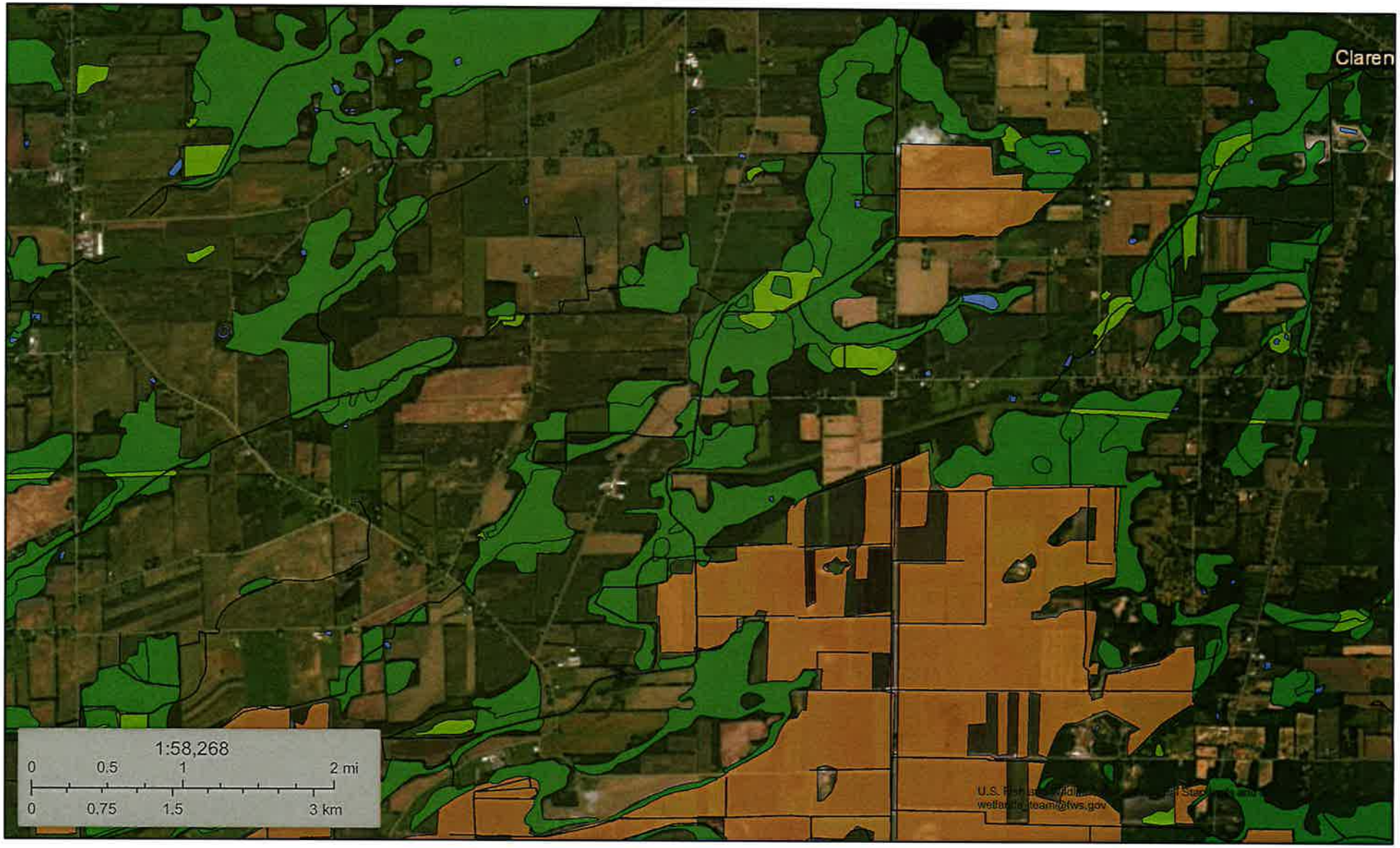
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

NYS Department of Environmental Conservation
Not a legal document

U.S. Fish and Wildlife Service

National Wetlands Inventory

Barre Water District No. 10



June 12, 2018

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

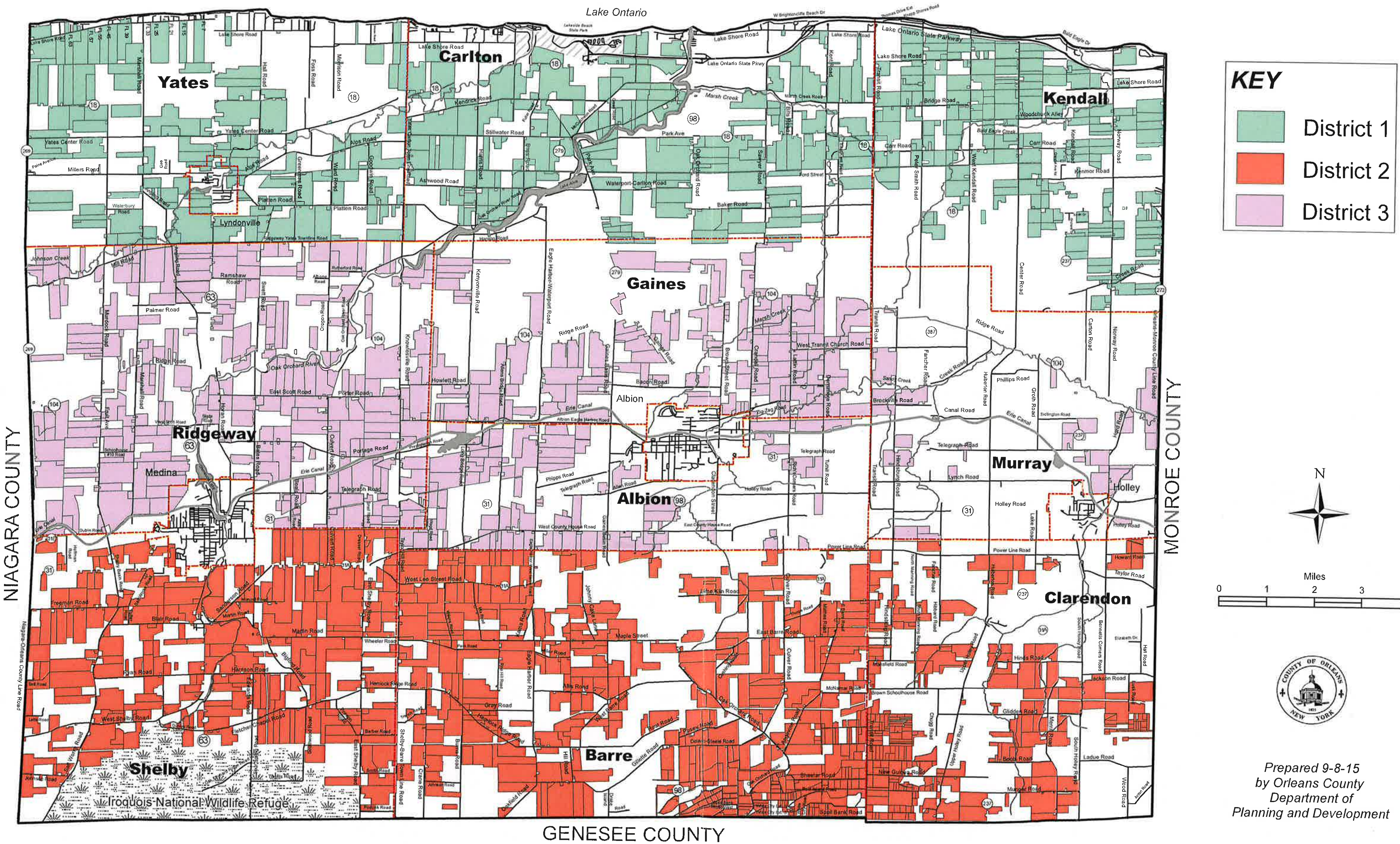
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

APPENDIX D

ORLEANS COUNTY AGRICULTURAL DISTRICT MAPS

Orleans County Agricultural Districts through 2014



APPENDIX E

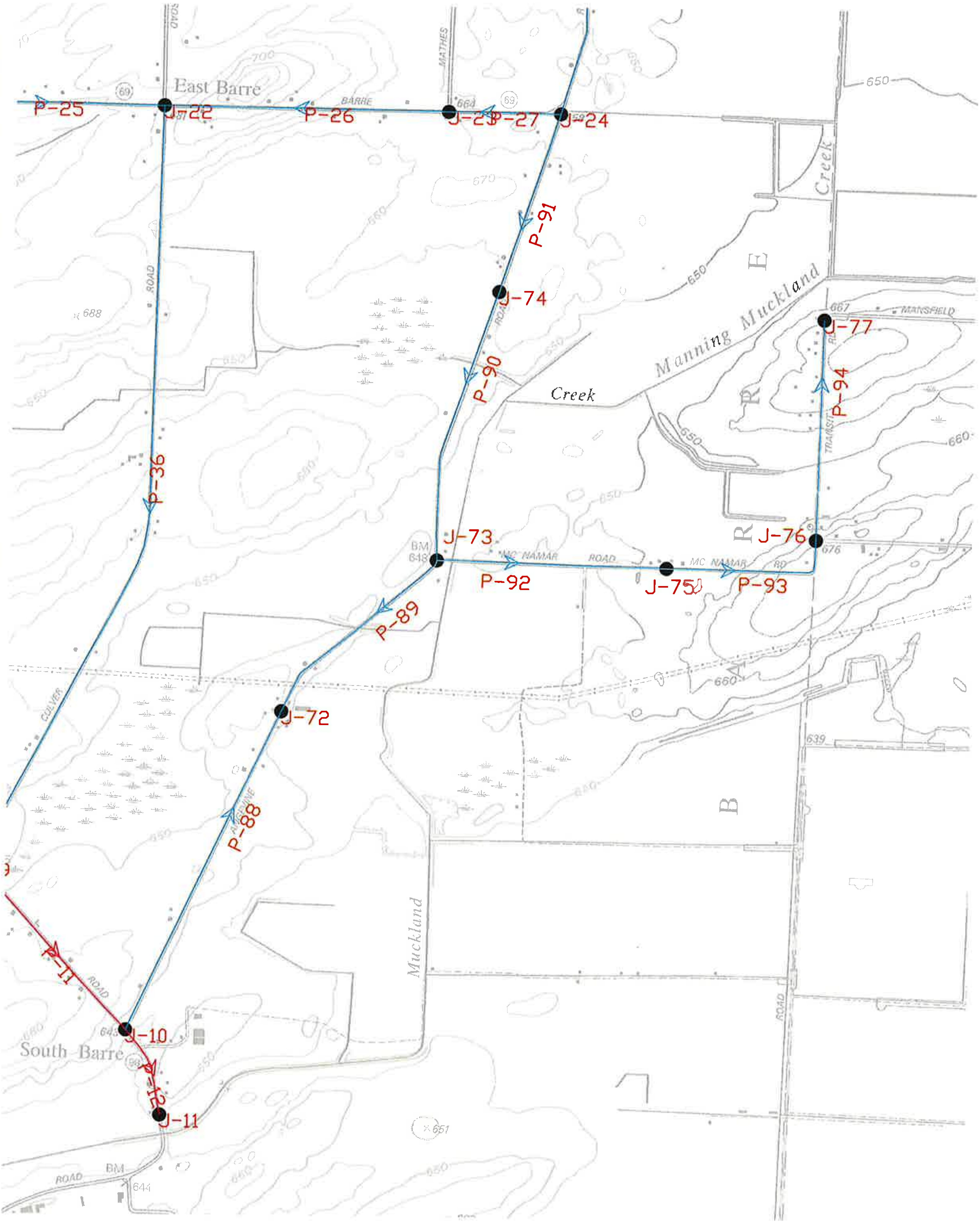
LIST OF PARCELS IN WATER DISTRICT

Tax Map #	Name	Location	Mailing 1	City State Zip	Property Class	Unit	AV
118.-1-19	Triple G. Farms, Inc.	Angevine Rd	5407 Oak Orchard Rd	Elba, NY 14058	130	0.00	437,500
118-1-13	Jeffrey / Sharon Hillabush	5334 Angevine Rd	5334 Angevine Rd	Albion, NY 14411	210	1.00	65,900
118-1-14.2	Angevine Farms	Angevine Rd	5140 Angevine Rd	Albion, NY 14411	105	0.00	365,600
118-1-14.1	Brandon S. Gurnsey	5290 Angevine Rd	5290 Angevine Rd	Albion, NY 14411	210	1.00	70,500
107-1-56	Michael J. Dillion	5188 Angevine Rd	5188 Angevine Rd	Albion, NY 14411	240	1.00	98,300
107-1-55	James / Jean Peglow	5170 Angevine Rd	5170 Angevine Rd	Albion, NY 14411	210	1.00	93,000
107-1-54	Jon / Melissa Peglow	5185 Angevine Rd	5185 Angevine Rd	Albion, NY 14411	210	1.00	84,000
107-1-53	Jon / Melissa / Jean / James Peglow	5140 Angevine Rd	5185 Angevine Rd	Albion, NY 14411	112	1.00	349,400
107-1-72	National Grid	Angevine Rd	300 Erie Blvd W	Syracuse, NY 13202	380	0.00	53,500
107-1-51.2	Florence S. Surdi	Angevine Rd	13919 Allen Road	Albion, NY 14411	322	0.50	24,300
107-1-51.1	Jon / James Peglow	Angevine Rd	5185 Angevine Rd	Albion, NY 14411	105	0.00	165,400
107-1-52	James E. Robinson	5114 Angevine Rd	7610 Bank St Rd	Elba, NY 14058	210	1.00	33,900
107-1-43.12	Sheila M. Allport	15250 Mcnamar Rd	15250 Mcnamar Rd	Holley, NY 14470	210	1.00	190,000
107-1-45	Paul / Catherine Jakaub	5005 Angevine Rd	5005 Angevine Rd	Albion, NY 14411	210	1.00	81,800
107-1-46	Janet Engle (Life Use) / Deborah Mar	4997 Angevine Rd	250 North Main St	Albion, NY 14411	210	1.00	78,800
107-1-47	Stacy / Jerome Scharlav	Mcnamar Rd	8 Bartz Dr	Alexander, NY 14005	323	0.50	40,900
107-1-50	Panek Family LLC	Angevine Rd	13420 West Countyhouse Rd	Albion, NY 14411	105	0.00	388,500
107-1-49.2	Alvin Smith	Angevine Rd	12524 Barber Rd	Medina NY 14103	105	0.00	239,100
107-1-48	Terry / Sanora Jurs	4892 Angevine Rd	4892 Angevine Rd	Albion, NY 14411	210	1.00	77,000
107-1-28	Mark Waite	Angevine Rd	7911 Lewiston Rd	Batavia, NY 14021	323	0.50	33,400
107-1-44	Germain / Kristine Welles	15263 Mcnamar Rd	15263 Mcnamar Rd	Holley, NY 14470	210	1.00	90,400
107-1-43.11	Jeffery / Stacey Braley	Mcnamar Rd	3379 Kenyonville Rd	Albion, NY 14411	105	0.00	116,400
107-1-43.2	John / Jean Swabb (Life Use) / Jule N	15300 Mcnamar Rd	15300 Mcnamar Rd	Holley, NY 14470	210	1.00	86,100
107-1-42.1	Nicholas / Paul Calarco	Mcnamar Rd	PO Box 85	Oakfield, NY 14125	323	0.50	30,200
107-1-36	Jon / Melissa / Jean / James Peglow	Mcnamar Rd	5185 Angevine Rd	Albion, NY 14411	105	0.00	170,400
107-1-35.1	Donald / Elizabeth Ann Sparks	Mcnamar Rd	4991 Transit Rd	Holley, NY 14470	310	0.50	10,000
107-1-34.2	Sunrise Bees, Inc.	15523 Mcnamar Rd	PO Box 220 7599 Oak Orchard	Elba, NY 14058	312	0.50	7,900
107-1-34.1	Sunrise Bees, Inc.	Mcnamar Rd	PO Box 220 7599 Oak Orchard	Elba, NY 14058	323	0.50	13,100
107-1-41	David M. Press	Mcnamar Rd	4600 Hibbard Rd	Holley, NY 14470	322	0.50	32,300
107-1-37	Roger Kingdollar Jr.	15425 Mcnamar Rd	15425 Mcnamar Rd	Holley, NY 14470	210	1.00	47,500
107-1-27	Raymond E. Cook Jr.	4833 Angevine Rd	4833 Angevine Rd	Albion, NY 14411	240	1.00	100,000
107-1-20.2	Michael / Andrew Vanlieshout	Angevine Rd	4759 Oak Orchard Rd	Albion, NY 14411	105	0.00	193,500
107-1-20.1	Richard Decarlo / Sabrina Pearce	4778 Angevine Rd	4778 Angevine Rd	Albion, NY 14411	210	1.00	130,300
107-1-19.2	Michael / Andrew Vanlieshout	Angevine Rd	4759 Oak Orchard Rd	Albion, NY 14411	105	0.00	152,100
107-1-19.1	Ashley S. Neri	4742 Angevine Rd	4742 Angevine Rd	Albion, NY 14411	210	1.00	134,000
107-1-14	Randall Powley	4722 Angevine Rd	4722 Angevine Rd	Holley, NY 14470	210	1.00	103,200
107-1-16.1	Steven / Patricia Thiel	4705 Angevine Rd	4705 Angevine Rd	Albion, NY 14411	240	1.00	127,000
107-1-16.2	Alvis / Bonny Clay	4701 Angevine Rd	4701 Angevine Rd	Albion, NY 14411	210	0.00	82,000
107-1-15	Lynoa / James Bullivant	Angevine Rd	4712 Angevine Rd	Holley, NY 14470	311	0.00	12,000
107-1-38	Peter / Kirk Mathes	15423 Mcnamar Rd	15130 East Barre Rd	Albion, NY 14411	270	1.00	38,000
107-1-39	William / Arlene Hicks	15417 Mcnamar Rd	15417 Mcnamar Rd	Holley, NY 14470	210	1.00	40,400
107-1-40	John / Roger Kingdollar	15325 Mcnamar Rd	15325 Mcnamar Rd	Holley, NY 14470	270	1.00	40,700

Tax Map #	Name	Location	Mailing 1	City State Zip	Property Class	Unit	AV
107-1-33.1	Jennifer T. Citriniti	4958 Transit Rd	4958 Transit Rd	Holley, NY 14470	210	1.00	103,000
107-1-33.2	David M. Press	Transit Rd	4600 Hibbard Rd	Holley, NY 14470	322	0.50	17,300
107-1-32.21	Allen L. Neal	Transit Rd	120 Woodside Ct.	Holley, NY 14470	311	0.50	6,000
107-1-32.22	David Engle	4890 Transit Rd	6101 Tower Hill Rd	Byron, NY 14422	210	1.00	20,000
107-1-32.13	RHE Investments, LLC.	4880 Transit Rd	4870 Transit Rd	Holley, NY 14470	270	1.00	15,000
107-1-32.12	Leon / Pamela Baxter	4886 Transit Rd	4886 Transit Rd	Holley, NY 14470	210	1.00	71,000
107-1-31	Jack Nelson Estate & Richard Edman	4870 Transit Rd	4870 Transit Rd	Holley, NY 14470	210	1.00	19,100
107-1-30	Micah / Brenda Eldridge	4860 Transit Rd	4641 Hall Rd	Holley, NY 14470	210	0.50	6,000
107-1-29	Roger W. Jaczynsky	Transit Rd	PO Box 246	Byron, NY 14422	312	0.50	18,700
107-1-26	Jason Kozlowski	Transit Rd	95 Selye Terrace	Rochester, NY 14613	323	0.50	55,700
107-1-25	Rosemary P. Jaczynski	4836 Transit Rd	4836 Transit Rd	Holley, NY 14470	210	1.00	84,500
107-1-24	Geoffrey / Joan Whittier	4830 Transit Rd	12900 Roosevelt Hwy	Waterport, NY 14571	210	1.00	52,900
107-1-23	David J. Engle	4822 Transit Rd	6101 Tower Hill Rd	Byron, NY 14422	210	1.00	25,000
107-1-22	Jeffrey T. Coniglio	4810 Transit Rd	59 Rochester St	Bergen, NY 14416	311	0.50	4,700
Total Assesed Value							**5,227,200**
Total Number of Parcels in the District						**57**	
Total Number of Residences to be Served						**30.00**	
Total Chargeable Units (EDU's)						**37.00**	

APPENDIX F

HYDRAULIC MODEL INFORMATION



East Barre
South Barre
BARRE
MATHES
ROAD
MC NAMAR
ROAD
MC NAMAR RD
MANSFIELD
CULVER
Manning Muckland
Creek
Creek
Muckland
TRANSIT
P-25
J-22
P-26
J-23
P-27
J-24
P-91
J-74
P-90
J-73
P-92
J-75
P-93
J-76
P-94
J-77
P-89
J-72
P-88
P-36
P-11
J-10
P-12
J-11
650
660
670
700
688
639
644
651
676
667

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-77	60.6	500.00	676.80	20.0	J-76	20.0	807.04	<None>
J-76	56.7	500.00	737.23	20.0	J-77	20.0	807.05	<None>
J-75	63.6	500.00	859.84	26.9	J-76	20.0	807.05	<None>
J-74	63.7	500.00	1,345.77	20.5	J-76	20.0	807.12	<None>
J-73	68.8	500.00	1,161.14	32.1	J-76	20.0	807.07	<None>
J-72	63.2	500.00	1,290.06	20.4	J-76	20.0	807.07	<None>
J-71	62.3	500.00	1,300.35	20.0	J-68	20.0	807.03	<None>
J-70	64.5	500.00	1,512.68	22.5	J-68	20.0	807.03	<None>
J-69	56.7	500.00	1,345.78	22.6	J-68	20.0	807.03	<None>
J-68	41.2	500.00	982.23	20.0	J-67	20.0	807.11	<None>
J-67	43.8	500.00	1,032.96	21.3	J-68	20.0	807.13	<None>
J-66	63.7	500.00	1,247.71	20.0	J-61	20.0	807.27	<None>
J-65	49.4	500.00	1,246.55	20.0	J-68	20.0	807.21	<None>
J-64	65.9	500.00	1,291.37	35.9	J-68	20.0	807.22	<None>
J-63	60.2	500.00	1,211.51	34.5	J-68	20.0	807.19	<None>
J-62	63.3	500.00	1,270.21	35.2	J-68	20.0	807.20	<None>
J-61	52.5	500.00	1,328.56	20.0	J-68	20.0	807.27	<None>
J-60	76.7	500.00	1,184.36	20.0	J-34	20.0	807.28	Zone
J-57	67.2	500.00	787.73	20.0	J-34	20.0	807.27	Zone
J-56	(N/A)	500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	<None>
J-55	(N/A)	500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	<None>
J-54	72.7	500.00	1,327.49	24.7	J-53	20.0	807.02	<None>
J-53	63.2	500.00	1,137.90	20.0	J-68	20.0	807.02	<None>
J-52	70.5	500.00	1,206.18	20.0	J-51	20.0	807.02	<None>
J-51	63.6	500.00	1,126.72	20.0	J-68	20.0	807.02	<None>
J-50	68.8	500.00	1,413.23	20.0	J-51	20.0	807.03	<None>
J-49	68.4	500.00	1,730.53	20.0	J-51	20.0	807.04	<None>
J-48	61.4	500.00	1,320.53	20.0	J-68	20.0	807.03	<None>
J-47	65.8	500.00	1,464.57	20.0	J-37	20.0	807.02	Zone
J-46	61.5	500.00	840.76	20.1	J-29	20.0	808.18	Zone
J-45	67.9	500.00	1,414.56	28.7	J-44	20.0	807.02	Zone
J-44	59.3	500.00	1,290.59	20.0	J-37	20.0	807.02	Zone
J-43	72.7	500.00	1,290.59	23.5	J-44	20.0	807.02	Zone
J-42	65.8	500.00	1,506.83	20.0	J-37	20.0	807.03	Zone
J-41	63.2	500.00	1,504.83	21.5	J-44	20.0	807.03	Zone
J-40	64.0	500.00	1,527.84	20.6	J-38	20.0	807.02	Zone
J-39	59.3	500.00	1,061.45	20.0	J-37	20.0	807.03	Zone
J-38	59.3	500.00	1,510.96	20.0	J-37	20.0	807.02	Zone
J-37	53.2	500.00	1,207.52	20.0	J-39	20.0	807.03	Zone
J-36	58.0	500.00	1,471.48	20.0	J-13	20.0	807.03	Zone
J-35	(N/A)	500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	Zone
J-34	66.7	500.00	806.56	20.0	J-57	20.0	807.27	Zone
J-33	69.8	500.00	850.29	23.0	J-34	20.0	807.27	Zone
J-32	63.6	500.00	1,082.06	20.0	J-22	20.0	807.07	Zone
J-31	65.8	500.00	790.26	20.0	J-22	20.0	807.14	Zone
J-30	63.9	500.00	1,466.74	20.0	J-29	20.0	808.65	Zone

Fire Flow Node FlexTable: Fire Flow Report

Label	Pressure (psi)	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Residual Lower Limit) (psi)	Hydraulic Grade (ft)	Zone
J-29	58.5	500.00	1,155.37	20.0	J-28	20.0	808.18	Zone
J-28	58.5	500.00	1,145.89	20.0	J-29	20.0	808.14	Zone
J-27	58.8	500.00	1,114.09	20.0	J-28	20.0	807.86	Zone
J-26	63.8	500.00	748.00	20.0	J-25	20.0	807.39	Zone
J-25	58.6	500.00	1,193.48	20.0	J-26	20.0	807.39	Zone
J-24	64.5	500.00	1,523.56	20.0	J-25	20.0	807.17	Zone
J-23	61.9	500.00	1,434.83	20.0	J-22	20.0	807.16	Zone
J-22	54.6	500.00	1,422.41	20.0	J-23	20.0	807.14	Zone
J-21	61.5	500.00	1,511.02	20.0	J-22	20.0	807.14	Zone
J-20	60.6	500.00	1,552.38	20.0	J-31	20.0	807.15	Zone
J-19	75.4	500.00	1,573.75	28.7	J-34	20.0	807.28	Zone
J-18	67.1	500.00	1,788.35	20.0	J-17	20.0	807.98	Zone
J-17	69.5	500.00	1,916.55	20.0	J-34	20.0	807.54	Zone
J-16	65.9	500.00	1,883.68	20.0	J-15	20.0	807.32	Zone
J-15	66.3	500.00	1,875.57	20.0	J-16	20.0	807.32	Zone
J-14	49.9	500.00	5,000.00	49.8	J-4	20.0	807.22	Zone
J-13	57.1	500.00	1,424.31	20.0	J-36	20.0	807.04	Zone
J-12	54.5	500.00	2,053.60	20.0	J-37	20.0	807.07	Zone
J-11	68.0	500.00	1,484.33	20.0	J-10	20.0	807.07	Zone
J-10	71.0	500.00	1,626.50	23.0	J-11	20.0	807.07	Zone
J-9	65.8	500.00	1,725.81	22.2	J-32	20.0	807.07	Zone
J-8	65.4	500.00	1,838.38	20.0	J-32	20.0	807.07	Zone
J-7	58.0	500.00	2,157.30	20.0	J-12	20.0	807.08	Zone
J-6	63.2	500.00	2,359.64	26.1	J-12	20.0	807.10	Zone
J-5	55.5	500.00	3,164.78	20.0	J-12	20.0	807.17	Zone
J-4	49.9	500.00	5,000.00	41.4	J-3	20.0	807.25	Zone
J-3	49.9	500.00	5,000.00	34.1	J-4	20.0	807.32	Zone
J-2	64.6	500.00	3,903.02	20.0	J-1	20.0	808.23	Zone
J-1	64.5	500.00	3,346.04	20.0	J-30	20.0	809.19	Zone

FlexTable: Pipe Table

ID	Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Headloss (ft)
282	P-94	3,045.00	J-76	J-77	8.0	PVC	150.0	5.00	0.00
280	P-93	2,480.00	J-75	J-76	8.0	PVC	150.0	10.00	0.01
278	P-92	3,186.00	J-73	J-75	8.0	PVC	150.0	15.00	0.02
276	P-91	2,609.00	J-74	J-24	8.0	PVC	150.0	-28.33	0.05
275	P-90	3,848.00	J-73	J-74	8.0	PVC	150.0	-23.33	0.05
273	P-89	3,040.00	J-72	J-73	8.0	PVC	150.0	-3.33	0.00
271	P-88	4,887.00	J-10	J-72	8.0	PVC	150.0	1.67	0.00
269	P-87	8,406.00	J-71	J-40	8.0	PVC	150.0	3.43	0.00
268	P-86	3,484.00	J-69	J-71	8.0	PVC	150.0	8.43	0.01
266	P-85	4,051.00	J-69	J-70	8.0	PVC	150.0	8.20	0.01
265	P-84	2,157.00	J-70	J-37	8.0	PVC	150.0	-1.32	0.00
264	P-83	4,007.00	J-38	J-70	8.0	PVC	150.0	-4.52	0.00
262	P-82	6,775.00	J-68	J-69	8.0	PVC	150.0	21.62	0.08
260	P-81	992.00	J-67	J-68	8.0	PVC	150.0	26.62	0.02
258	P-80	2,614.00	J-63	J-67	8.0	PVC	150.0	31.62	0.06
251	P-78	1,600.00	J-61	J-66	8.0	PVC	150.0	5.00	0.00
249	P-77	1,181.00	J-65	J-62	8.0	PVC	150.0	14.68	0.01
248	P-76	5,836.00	J-61	J-65	8.0	PVC	150.0	19.68	0.06
246	P-75	3,784.00	J-62	J-64	8.0	PVC	150.0	-10.91	0.01
245	P-74	2,682.00	J-64	J-19	8.0	PVC	150.0	-31.95	0.06
244	P-73	3,917.00	J-63	J-64	8.0	PVC	150.0	-16.04	0.03
242	P-72	1,301.00	J-62	J-63	8.0	PVC	150.0	20.58	0.01
238	P-70	2,675.00	J-16	J-61	8.0	PVC	150.0	29.68	0.06
233	P-69	3,434.00	J-60	J-19	8.0	PVC	150.0	-4.00	0.00
228	P-67	610.00	J-34	J-57	8.0	PVC	150.0	1.35	0.00
225	P-66	4,992.00	J-55	J-56	8.0	PVC	150.0	(N/A)	(N/A)
223	P-65	1,627.00	J-35	J-55	8.0	PVC	150.0	(N/A)	(N/A)
221	P-64	4,161.00	J-12	J-49	8.0	PVC	150.0	18.31	0.04
220	P-63	2,559.00	J-54	J-47	8.0	PVC	150.0	-5.60	0.00
219	P-62	3,977.00	J-53	J-54	8.0	PVC	150.0	-2.60	0.00
217	P-61	4,393.00	J-52	J-53	8.0	PVC	150.0	0.40	0.00
215	P-60	2,946.00	J-51	J-52	8.0	PVC	150.0	3.40	0.00
213	P-59	6,611.00	J-50	J-51	8.0	PVC	150.0	6.40	0.01
211	P-58	2,868.00	J-49	J-50	8.0	PVC	150.0	9.40	0.01
209	P-57	7,898.00	J-48	J-49	8.0	PVC	150.0	-5.91	0.01
207	P-56	3,912.00	J-41	J-48	8.0	PVC	150.0	-2.91	0.00
204	P-55	1,421.00	J-47	J-38	8.0	PVC	150.0	-6.95	0.00
202	P-54	4,494.00	J-29	J-46	8.0	PVC	150.0	1.35	0.00
200	P-53	605.00	J-44	J-45	8.0	PVC	150.0	-2.70	0.00
199	P-52	1,161.00	J-45	J-41	8.0	PVC	150.0	-5.75	0.00
198	P-51	3,972.00	J-38	J-45	8.0	PVC	150.0	-1.70	0.00
196	P-50	1,017.00	J-43	J-44	8.0	PVC	150.0	-1.35	0.00
193	P-49	4,673.00	J-42	J-36	8.0	PVC	150.0	-5.55	0.00
192	P-48	1,918.00	J-41	J-42	8.0	PVC	150.0	-4.20	0.00
188	P-46	497.00	J-40	J-38	8.0	PVC	150.0	2.08	0.00
186	P-45	1,888.00	J-37	J-39	8.0	PVC	150.0	1.35	0.00
182	P-43	8,349.00	J-36	J-37	8.0	PVC	150.0	4.02	0.00
180	P-42	1,742.00	J-13	J-36	8.0	PVC	150.0	10.92	0.01
178	P-41	487.00	J-34	J-35	8.0	PVC	150.0	(N/A)	(N/A)

FlexTable: Pipe Table

ID	Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Headloss (ft)
177	P-40	1,031.00	J-33	J-34	8.0	PVC	150.0	4.35	0.00
176	P-39	6,828.00	J-19	J-33	8.0	PVC	150.0	7.35	0.01
175	P-38	1.00	T-2	J-14	12.0	PVC	150.0	-153.11	0.00
174	P-37	3,056.00	J-9	J-32	8.0	PVC	140.0	3.00	0.00
173	P-36	11,068.00	J-9	J-22	8.0	PVC	125.0	-12.75	0.07
172	P-35	2,100.00	J-20	J-31	6.0	PVC	150.0	3.00	0.00
171	P-34	6,017.00	J-30	J-1	8.0	PVC	150.0	-65.65	0.54
170	P-33	5,660.00	J-29	J-30	8.0	PVC	150.0	-62.65	0.47
169	P-32	535.00	J-28	J-29	8.0	PVC	150.0	-58.30	0.04
168	P-31	4,216.00	J-27	J-28	8.0	PVC	150.0	-55.30	0.28
167	P-30	7,052.00	J-25	J-27	8.0	PVC	140.0	-52.30	0.48
166	P-29	3,568.00	J-25	J-26	8.0	PVC	100.0	3.00	0.00
165	P-28	3,989.00	J-24	J-25	8.0	PVC	140.0	-46.30	0.21
164	P-27	1,559.00	J-23	J-24	8.0	PVC	130.0	-14.98	0.01
163	P-26	3,947.00	J-22	J-23	8.0	PVC	130.0	-11.98	0.02
162	P-25	3,977.00	J-21	J-22	8.0	PVC	140.0	3.77	0.00
161	P-24	2,100.00	J-20	J-21	8.0	PVC	150.0	6.77	0.00
160	P-23	5,951.00	J-5	J-20	8.0	PVC	150.0	12.77	0.03
159	P-22	5,575.00	J-17	J-19	8.0	PVC	150.0	46.30	0.26
158	P-21	7,989.00	J-18	J-1	8.0	PVC	150.0	-87.00	1.22
157	P-20	3,027.00	J-17	J-18	8.0	PVC	150.0	-84.00	0.43
156	P-19	7,971.00	J-16	J-17	8.0	PVC	150.0	-34.70	0.22
155	P-18	1,463.00	J-15	J-16	8.0	PVC	150.0	-2.03	0.00
154	P-17	7,909.00	J-3	J-15	8.0	PVC	150.0	0.97	0.00
153	P-16	550.00	J-14	J-4	12.0	PVC	150.0	-156.11	0.03
152	P-15	6,571.00	J-12	J-13	8.0	PVC	150.0	13.92	0.03
151	P-14	1,534.00	J-12	J-7	8.0	PVC	150.0	-11.34	0.01
150	P-13	1,844.00	J-6	J-12	8.0	PVC	150.0	24.89	0.03
149	P-12	1,302.00	J-10	J-11	10.0	PVC	130.0	3.00	0.00
148	P-11	3,097.00	J-9	J-10	10.0	PVC	130.0	7.67	0.00
147	P-10	3,058.00	J-8	J-9	10.0	PVC	130.0	0.93	0.00
146	P-9	6,879.00	J-7	J-8	10.0	PVC	130.0	3.93	0.00
145	P-8	2,388.00	J-6	J-7	8.0	PVC	150.0	19.27	0.02
144	P-7	1,461.00	J-5	J-6	8.0	PVC	150.0	48.15	0.07
143	P-6	952.00	J-4	J-5	8.0	PVC	150.0	63.92	0.08
142	P-5	378.00	J-3	J-4	12.0	PVC	120.0	223.03	0.07
141	P-4	4,790.00	J-2	J-3	12.0	PVC	120.0	227.00	0.90
140	P-3	4,996.00	J-1	J-2	12.0	PVC	120.0	230.00	0.97
139	P-2	420.00	PMP-1	J-1	12.0	PVC	120.0	385.66	0.21
138	P-1	1.00	T-1	PMP-1	12.0	PVC	120.0	385.66	0.00

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-77	667.00	5.00	807.04	60.6	676.80	20.0	<None>
J-76	676.00	5.00	807.05	56.7	737.23	20.0	<None>
J-75	660.00	5.00	807.05	63.6	859.84	26.9	<None>
J-74	660.00	5.00	807.12	63.7	1,345.77	20.5	<None>
J-73	648.00	5.00	807.07	68.8	1,161.14	32.1	<None>
J-72	661.00	5.00	807.07	63.2	1,290.06	20.4	<None>
J-71	663.00	5.00	807.03	62.3	1,300.35	20.0	<None>
J-70	658.00	5.00	807.03	64.5	1,512.68	22.5	<None>
J-69	676.00	5.00	807.03	56.7	1,345.78	22.6	<None>
J-68	712.00	5.00	807.11	41.2	982.23	20.0	<None>
J-67	706.00	5.00	807.13	43.8	1,032.96	21.3	<None>
J-66	660.00	5.00	807.27	63.7	1,247.71	20.0	<None>
J-65	693.00	5.00	807.21	49.4	1,246.55	20.0	<None>
J-64	655.00	5.00	807.22	65.9	1,291.37	35.9	<None>
J-63	668.00	5.00	807.19	60.2	1,211.51	34.5	<None>
J-62	661.00	5.00	807.20	63.3	1,270.21	35.2	<None>
J-61	686.00	5.00	807.27	52.5	1,328.56	20.0	<None>
J-60	630.00	4.00	807.28	76.7	1,184.36	20.0	Zone
J-57	652.00	1.35	807.27	67.2	787.73	20.0	Zone
J-56	635.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	<None>
J-55	658.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	<None>
J-54	639.00	3.00	807.02	72.7	1,327.49	24.7	<None>
J-53	661.00	3.00	807.02	63.2	1,137.90	20.0	<None>
J-52	644.00	3.00	807.02	70.5	1,206.18	20.0	<None>
J-51	660.00	3.00	807.02	63.6	1,126.72	20.0	<None>
J-50	648.00	3.00	807.03	68.8	1,413.23	20.0	<None>
J-49	649.00	3.00	807.04	68.4	1,730.53	20.0	<None>
J-48	665.00	3.00	807.03	61.4	1,320.53	20.0	<None>
J-47	655.00	1.35	807.02	65.8	1,464.57	20.0	Zone
J-46	666.00	1.35	808.18	61.5	840.76	20.1	Zone
J-45	650.00	1.35	807.02	67.9	1,414.56	28.7	Zone
J-44	670.00	1.35	807.02	59.3	1,290.59	20.0	Zone
J-43	639.00	1.35	807.02	72.7	1,290.59	23.5	Zone
J-42	655.00	1.35	807.03	65.8	1,506.83	20.0	Zone
J-41	661.00	1.35	807.03	63.2	1,504.83	21.5	Zone
J-40	659.00	1.35	807.02	64.0	1,527.84	20.6	Zone
J-39	670.00	1.35	807.03	59.3	1,061.45	20.0	Zone
J-38	670.00	1.35	807.02	59.3	1,510.96	20.0	Zone
J-37	684.00	1.35	807.03	53.2	1,207.52	20.0	Zone
J-36	673.00	1.35	807.03	58.0	1,471.48	20.0	Zone
J-35	653.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	Zone
J-34	653.00	3.00	807.27	66.7	806.56	20.0	Zone
J-33	646.00	3.00	807.27	69.8	850.29	23.0	Zone
J-32	660.00	3.00	807.07	63.6	1,082.06	20.0	Zone
J-31	655.00	3.00	807.14	65.8	790.26	20.0	Zone
J-30	661.00	3.00	808.65	63.9	1,466.74	20.0	Zone
J-29	673.00	3.00	808.18	58.5	1,155.37	20.0	Zone

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Zone
J-28	673.00	3.00	808.14	58.5	1,145.89	20.0	Zone
J-27	672.00	3.00	807.86	58.8	1,114.09	20.0	Zone
J-26	660.00	3.00	807.39	63.8	748.00	20.0	Zone
J-25	672.00	3.00	807.39	58.6	1,193.48	20.0	Zone
J-24	658.00	3.00	807.17	64.5	1,523.56	20.0	Zone
J-23	664.00	3.00	807.16	61.9	1,434.83	20.0	Zone
J-22	681.00	3.00	807.14	54.6	1,422.41	20.0	Zone
J-21	665.00	3.00	807.14	61.5	1,511.02	20.0	Zone
J-20	667.00	3.00	807.15	60.6	1,552.38	20.0	Zone
J-19	633.00	3.00	807.28	75.4	1,573.75	28.7	Zone
J-18	653.00	3.00	807.98	67.1	1,788.35	20.0	Zone
J-17	647.00	3.00	807.54	69.5	1,916.55	20.0	Zone
J-16	655.00	3.00	807.32	65.9	1,883.68	20.0	Zone
J-15	654.00	3.00	807.32	66.3	1,875.57	20.0	Zone
J-14	692.00	3.00	807.22	49.9	5,000.00	49.8	Zone
J-13	675.00	3.00	807.04	57.1	1,424.31	20.0	Zone
J-12	681.00	4.00	807.07	54.5	2,053.60	20.0	Zone
J-11	650.00	3.00	807.07	68.0	1,484.33	20.0	Zone
J-10	643.00	3.00	807.07	71.0	1,626.50	23.0	Zone
J-9	655.00	3.00	807.07	65.8	1,725.81	22.2	Zone
J-8	656.00	3.00	807.07	65.4	1,838.38	20.0	Zone
J-7	673.00	4.00	807.08	58.0	2,157.30	20.0	Zone
J-6	661.00	4.00	807.10	63.2	2,359.64	26.1	Zone
J-5	679.00	3.00	807.17	55.5	3,164.78	20.0	Zone
J-4	692.00	3.00	807.25	49.9	5,000.00	41.4	Zone
J-3	692.00	3.00	807.32	49.9	5,000.00	34.1	Zone
J-2	659.00	3.00	808.23	64.6	3,903.02	20.0	Zone
J-1	660.00	3.00	809.19	64.5	3,346.04	20.0	Zone

FlexTable: Tank Table

ID	Label	Zone	Elevation (Base) (ft)	Elevation (Minimum) (ft)	Elevation (Initial) (ft)	Elevation (Maximum) (ft)	Volume (Inactive) (gal)	Diameter (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
135	T-1	Zone	660.00	660.00	695.00	700.00	0.00	110.00	385.66	695.00
136	T-2	Zone	790.00	800.00	807.22	810.22	0.00	15.00	-153.11	807.22

FlexTable: Pump Table

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
137	PMP-1	660.00	31A Pump	On	695.00	809.40	385.66	114.40

APPENDIX G

BUDGET REPORT (FORM E)

FORM E

RURAL DEVELOPMENT (RD) PROJECT BUDGET/COST CERTIFICATION

Project Name:	Town of Barre Water District No. 10	**Date:**	08/03/23	**Report No.:**	Preliminary-As Bid-With June 2023 LOC
				Actual:	
				Estimate:	

Funding Source(s)	**Amount**
RD Loan	$524,000.00
RD Loan	$500,000.00
RD Grant	$601,000.00
RD Grant	$500,000.00
SUB TOTAL:	**$2,125,000.00**

Other Funding Source(s)		**Amount**
Other Source:		
Other Source:		
Other Source:		
	SUBTOTAL:	$0.00
	TOTAL:	$2,125,000.00

ITEM	APPROVED BUDGET	MODIFIED BUDGET	PREVIOUS EXPENDITURES	EXPENDITURES THIS PERIOD	EXPENDITURES TO DATE	BALANCE REMAINING
A. ADMINISTRATIVE						
1. Legal	$7,000.00	**$45,000.00**	$0.00		$0.00	$45,000.00
2. Bonding	$9,600.00	**$19,200.00**	$0.00		$0.00	$19,200.00
3. Net Interest	$8,500.00	**$78,000.00**	$0.00		$0.00	$78,000.00
4. Fiscal Coordination	$7,000.00	**$11,000.00**	$0.00		$0.00	$11,000.00
5. Project Management	$13,000.00	**$28,000.00**	$0.00		$0.00	$28,000.00
6. Lands & Rights of Way	$1,000.00	$1,000.00	$0.00		$0.00	$1,000.00
7. Single Audit	$4,000.00	**$18,000.00**	$0.00		$0.00	$18,000.00
8. Miscellaneous	$958.00	**$1,300.00**	$0.00		$0.00	$1,300.00
Total A. Administrative	**$51,058.00**	**$201,500.00**	**$0.00**	**$0.00**	**$0.00**	**$201,500.00**
B. TECHNICAL SVCS.						
1. Engineering						
a. Study and Report Phase	$3,250.00	**$5,750.00**	$0.00		$0.00	$5,750.00
b. Design Development	$22,700.00	**$22,596.00**	$0.00		$0.00	$22,596.00
c. Design	$17,832.00	**$17,832.00**	$0.00		$0.00	$17,832.00
d. Bidding	$2,360.00	**$14,500.00**	$0.00		$0.00	$14,500.00
e. Construction Administration	$12,472.00	**$40,456.00**	$0.00		$0.00	$40,456.00
f. Post Construction Phase	$520.00	**$10,000.00**	$0.00		$0.00	$10,000.00
g. Construction Observation	$28,800.00	**$60,800.00**	$0.00		$0.00	$60,800.00
h. Additional Services	$3,066.00	**$3,066.00**	$0.00		$0.00	$3,066.00
2. SEQR/NEPA Compliance	$5,000.00	$5,000.00	$0.00		$0.00	$5,000.00
Total B. Technical Svcs.	**$96,000.00**	**$180,000.00**	**$0.00**	**$0.00**	**$0.00**	**$180,000.00**
C. CONSTRUCTION						
1. Construction Contracts						
a. Contract 1	$867,220.00	**$1,585,000.00**	$0.00	$0.00	$0.00	$1,585,000.00
b. Contract 2						
c. Contract 3						
d. Contract 4						
e. Contract 5						
2. Direct Expenditures						
a.						
b.						
c.						
Total C. Construction	**$867,220.00**	**$1,585,000.00**	**$0.00**	**$0.00**	**$0.00**	**$1,585,000.00**
D. CONTINGENCY						
1. Contingency	$86,722.00	**$158,500.00**				
Total D. Contingency	**$86,722.00**	**$158,500.00**				**$158,500.00**
TOTAL PROJECT COST	**$1,101,000.00**	**$2,125,000.00**	**$0.00**	**$0.00**	**$0.00**	**$2,125,000.00**

I certify to the best of my knowledge and belief that the billed costs or disbursements are in accordance with the terms of the project and that the reimbursement represents the Federal share due, which has not been previously requested and that an inspection has been performed and all work is in accordance with the terms of the award.

1923500 1923500

Applicant Title

Engineer/ Architect

Reviewed By _____ Date Reviewed _____

(revised 12/1/2005)

APPENDIX H

USER INFORMATION SHEET (FORM A)

USDA RURAL DEVELOPMENT

FORM A – USER INFORMATION SHEET

Applicant: Town of Barre

Project: Water District No. 10

In order for USDA - Rural Development (RD) to determine a funding package for a Municipality, the number of EDUs (Equivalent Dwelling Units) that will pay debt service for the project must be determined.

1 EDU = 1 Typical Residential Household
Village - EDU count must include the entire Village.
Town - EDU count only includes services within the proposed District.

RD calculates a Municipality's EDU count based on flow. In order for RD to compare similar system costs across the state, all EDU calculations must use this method of calculation. If a municipality has calculated their EDUs previously, or uses an existing EDU count for billing purposes, RD cannot accept that EDU calculation.

1. Number of residential services (hook-ups) in proposed system: 30
2. Number of users outside the Village or proposed District: 0
3. Residential flow per month from typical residential user: 5,000
4. Number of commercial / business / industrial services (hook-ups) in proposed system: 0
5. Monthly commercial /business / industrial flow (actual or est) in proposed system: 0
6. Number of vacant parcels: 14

Bulk Users (Water Only) - Wholesale purchasers, not large volume commercial or residential (attach an additional page if needed for more Bulk Users)

Name None
Bulk Cost (per 1,000 gallon or cubic ft)_____
Bulk User Description _____
Volume used per month_____

Name None
Bulk Cost (per 1,000 gallon or cubic ft)_____
Bulk User Description _____
Volume used per month_____

Operation & Maintenance for proposed system (Annual Costs)

Administration	$ 1,180
Cost to treat or purchase ($177.60 x 31)	$ 5,506
Salaries and Benefits	$ 2,859
Supplies	$ 0
Utilities	
Other (specify) Water tank painting ($60 x 31)	$ 1,860
TOTAL = Expected Revenue of $360/Unit x 31	$ 11,160

Certification - I certify to the best of my knowledge the information provided above is correct and accurate

_____ _____

Applicant/Title Engineer

Rev 05/14