PROJECT PLAN
FOR
THE CITY OF GLADSTONE

DRINKING WATER STATE REVOLVING FUND
PROJECT PLAN
WATER

DELTA COUNTY, MICHIGAN

MAY 2023

COLEMAN ENGINEERING COMPANY
CIVIL ENGINEERING • ENVIRONMENTAL ENGINEERING
GEOTECHNICAL ENGINEERING • SURVEYING

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PROJECT PLAN
WATER

DELTA COUNTY, MICHIGAN

MAY 2023

COLEMAN ENGINEERING COMPANY
635 Circle Drive
Iron Mountain, MI 49801

CEC Project #EC-230071

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APPENDICES

SECTION 1: EXECUTIVE SUMMARY

This Project Plan has been prepared on behalf of the City of Gladstone (City) in an effort to evaluate their existing water distribution systems, determine deficiencies and propose corrective action. The report has been assembled in a format to meet the requirements of the Michigan Department of Environment, Great Lakes and Energy (EGLE). It is expected this document will be submitted to EGLE as part of an application for funding assistance through the Drinking Water State Revolving Fund (DWSRF) program. The need for this study and analysis was determined by the City of Gladstone.

The City of Gladstone is located in south central Delta County in the Upper Peninsula of Michigan. The City owns its water treatment and distribution systems. The water treatment plant is a 1.5 MGD plant which includes disinfection, coagulation, sedimentation, corrosion control, taste and order control, fluoridation, filtration and storage. The City has approximately 215,000-feet of water main, a 500,000-gallon finished water storage tank, a 1,000,000-gallon underground elevated reservoir, a 250,000-gallon elevated storage tank, one booster station and 273 fire hydrants. The City's water source is Little Bay de Noc on Lake Michigan.

The goal of the proposed project is to maintain a sustainable water distribution and raw water intake system while protecting the health and safety of the public and natural environment. Due to the age of the existing water intake, the raw water intake piping and crib have considerable deterioration. The findings from an underwater inspection are detailed later in this project plan. Although it is operating properly, the intake pipe and crib have been cited as a deficiency in the system by Michigan Department of Environment Great Lakes and Energy (EGLE) and should be replaced no later than December 31, 2025.

Additional funding is also being sought to construct a second 12-inch transmission main connecting the upper and lower service pressure district. A small portion of the existing water main will be replaced when the second 12-inch distribution main is connected. If any lead service lines are found in that area, they will be replaced. Currently there is only one 12-inch distribution main connecting the two pressure districts.

Total project cost for the recommended alternative is $7,927,050. A project of this magnitude is not easily funded by the City through normal rates considering the existing, primarily residential, user base in the City. In addition, most of the project cost is tied to construction of the water intake. Construction of the intake cannot be phased or split into multiple projects with cost spread out over multiple fiscal years. As such, the City is requesting assistance with project funding in the form of grants to limit the impact to user rates to the greatest extent possible.

None of the considered alternatives are expected to directly impact historical, archaeological, geological, cultural, or recreational resources in the study area. Both action alternatives would have construction related temporary direct adverse impacts to air quality, noise, traffic and material consumption. The action alternatives would have a temporary positive impact on

economics through construction related employment and materials purchased. They would also have positive long-term impacts on the area's water quality due to a reliable water distribution system. It is expected that the project contract documents and required permits will mitigate any adverse short-term environmental impacts related to construction activities.

SECTION 2: BACKGROUND

This Project Plan has been prepared on behalf of the City of Gladstone (City) in an effort to evaluate their existing water distribution system, determine deficiencies and propose corrective action. The report has been assembled in a format to meet the requirements of the Michigan Department of Environment, Great Lakes, and Energy (EGLE). It is expected this document will be submitted to EGLE as part of an application for funding assistance through the Drinking Water State Revolving Fund program. The need for this study and analysis was determined by the City of Gladstone.

A. Study and Service Area

The City of Gladstone is located in south central Delta County in the Upper Peninsula of Michigan. The study area for this Project Plan is in the City of Gladstone, located primarily in Sections 16, 20, 21 and 22 of Township 40N Range 22W. The proposed project area is limited to Sections 21 and 22 of Township 40N Range 22W. The City is bound on the north by Brampton Township, the west by Escanaba Township and on the south and east by Little Bay de Noc on Lake Michigan. Refer to Figure 1 for a location map and Figure 2 for a proposed project area map.

B. Population

U.S. Census Bureau data shows the population for the City of Gladstone has been trending up and down since 1970 and has been very inconsistent. Using those trends would not be an accurate representation of the projected population in 20 years. The most recent data from the Census Bureau estimates a decrease in population of -0.2% from 2020 to 2021. Using the same declining trend as the census, the population has been projected through the 20-year planning period.

Area	1970	1980	1990	2000	2010	2020	2030	2040
City of Gladstone	5237	4533	4565	5032	4973	5257	5168	5081

Table 1: Population

*Data from U.S. Census Bureau for 1970-2020

C. Existing Environment Evaluation

Cultural and Historic Resources

As per the National Register of Historic Places, there are no historical and archaeological sites within the City of Gladstone. An expanded search may be required if the project is approved. All construction activities will be within the current right-of-way or under Lake Michigan.

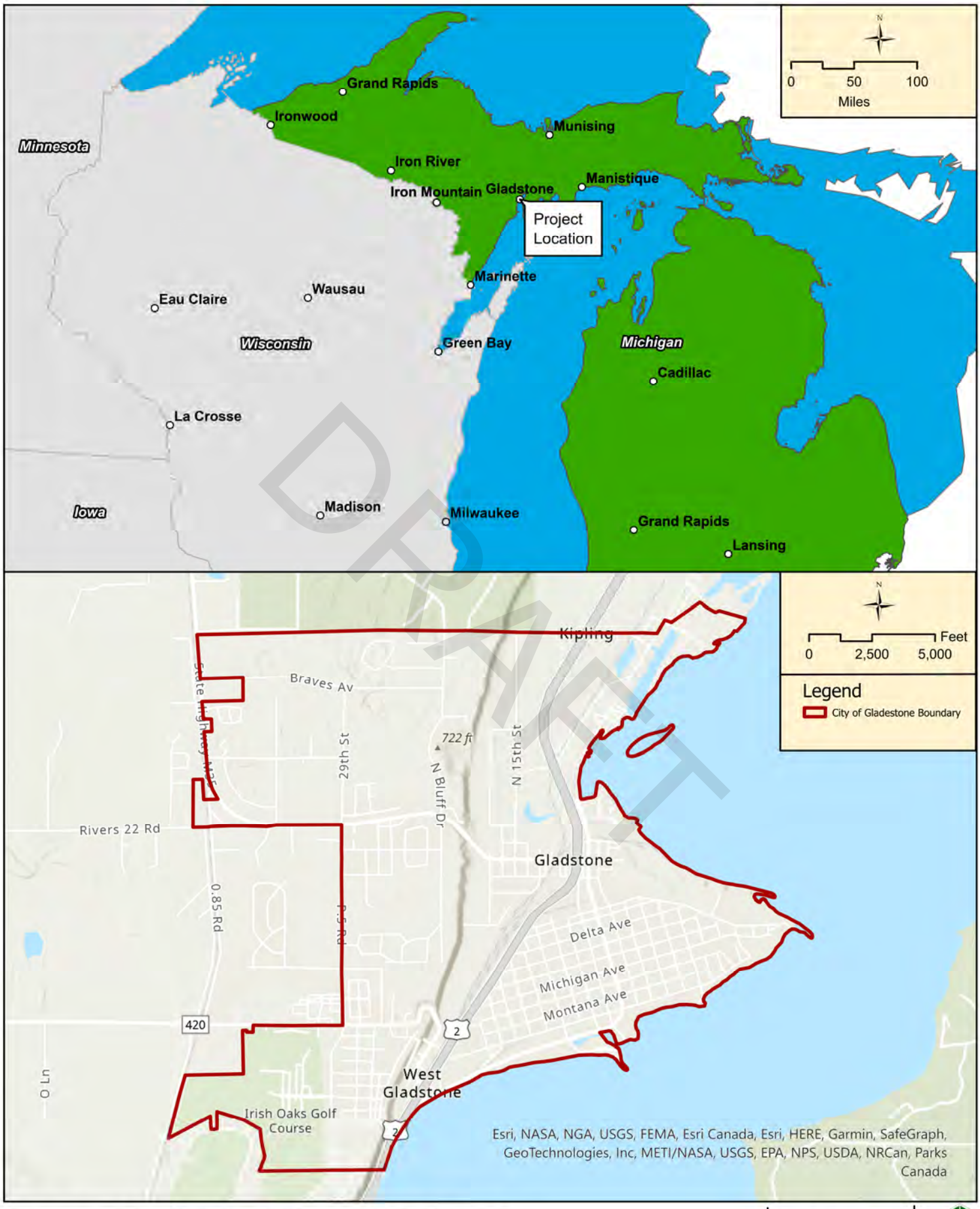


Figure 1 - Project Location Map

City of Gladstone

Project Number | 230071	
Date | 03/30/2023	
Drawn by | RHH	

COLEMAN ENGINEERING COMPANY

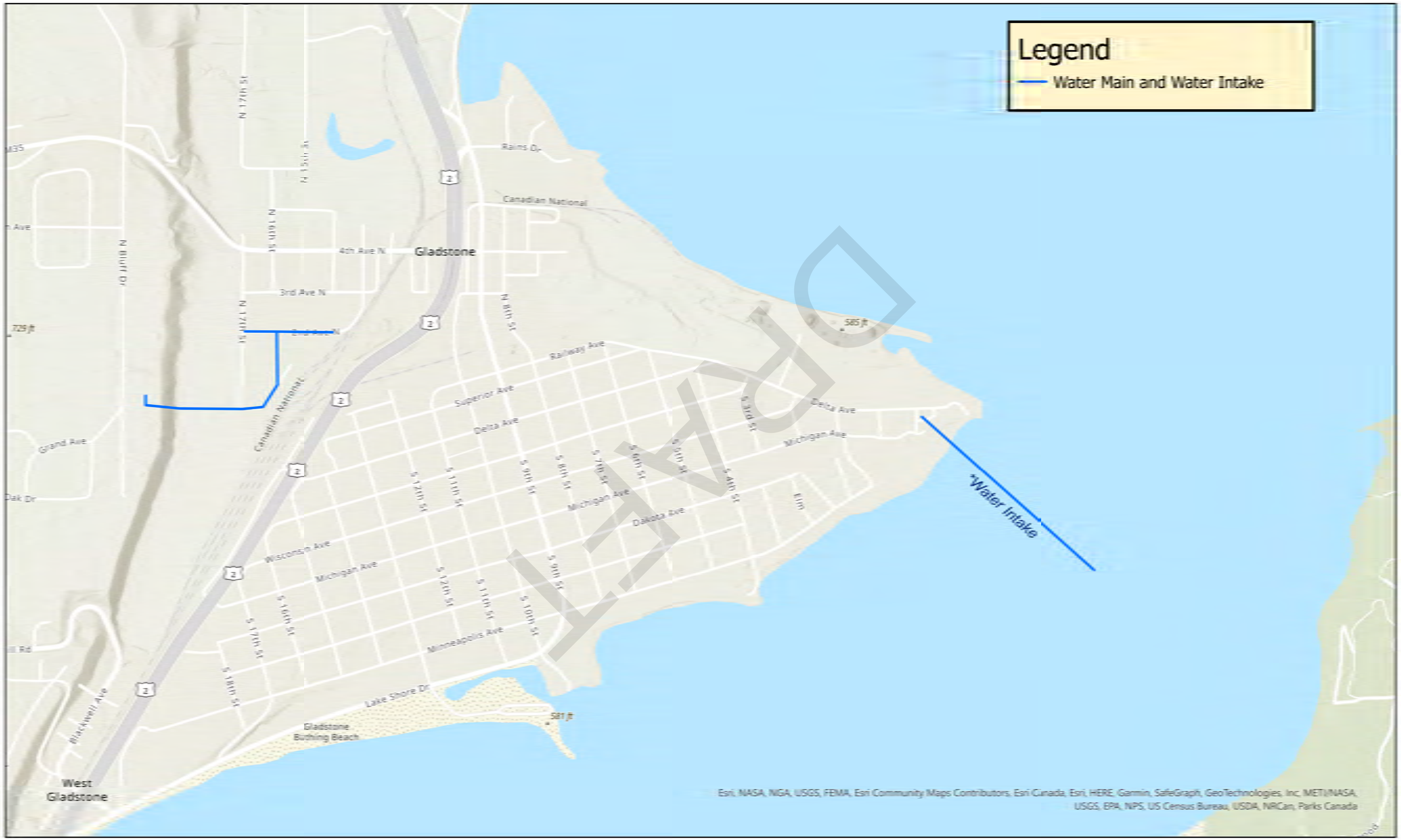


Figure 2 - Proposed Project Area Map

City of Gladstone

0 750 1,500 Feet

Project Number | 230071

Date | 03/30/2023

Drawn by | RHH

Air Quality

The air quality near the site is considered to be good but is site specific and has seasonal fluctuations. There are no indications in the scope of work for special air monitoring or air quality testing with the project site. Air quality impacts are not anticipated. Refer to Figure 3.

Wetlands

Impacts to wetlands will be avoided through the use of directional drilling. Permits will likely be needed for the line access to the lake. The location of wetlands is to the north and east of the site towards Lake Michigan. Refer to Figure 4.

Great Lakes Shorelands, Coastal Zones, and Coastal Management Areas

The project location does fall into parts of the Coastal Zone Management Boundary and is within the Coastal Zone Management area. Refer to Figure 5.

Floodplains

Floodplains exist on the north and east side of the project location near the shoreline of Lake Michigan. No long-term impact to the floodplain of Lake Michigan is anticipated as part of this project. Refer to Figure 6.1 and Figure 6.2.

Natural or Wild and Scenic Rivers

There are two major wild rivers in the Gladstone area. The Whitefish River is to the north and the Escanaba River is to the south. Neither river will be impacted by the construction phase of this project. Refer to Figure 7 and Figure 8.

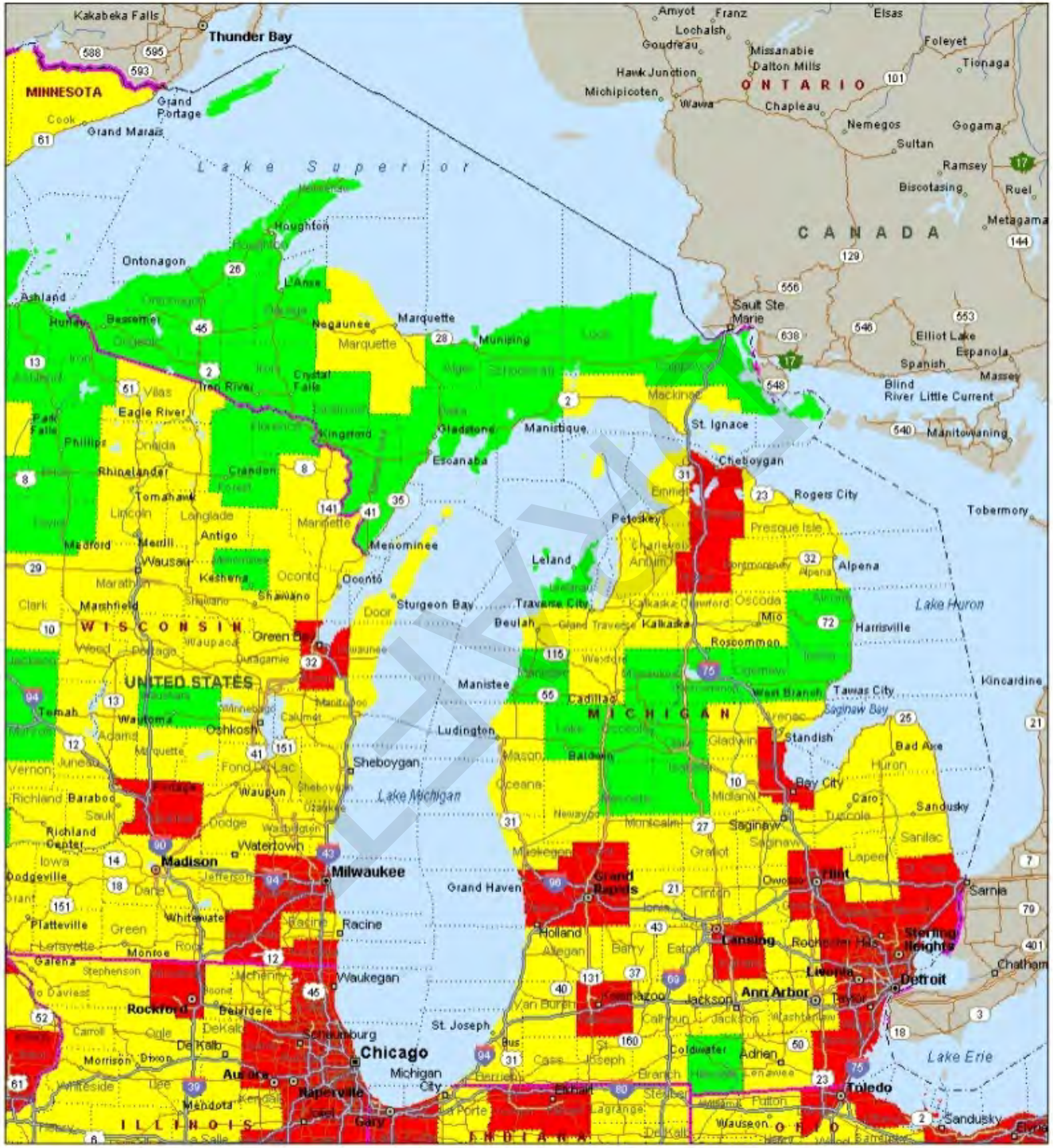
Major Surface Waters

Major surface water is identified as Little Bay De Noc, a bay of Lake Michigan. Construction of the water intake will be completed under the bottom of the lake, with construction of the new water intake structure near the existing water intake. An EGLE/USACE (U.S. Army Corps of Engineers) Joint Permit is expected to be required as part of the intake's construction. Refer to Figure 9.

Topography

The City is generally flat with slight elevational fluctuations moving toward the lake front. A major vertical elevation change in the form of the Gladstone Bluff (Bluff) divides the City north to south. Elevations west of the Bluff range from 700 to 720 feet above sea level. Elevations east of the Bluff range from 580 to 610 feet above sea level. Refer to Figure 10.

Figure 3 - Air Quality



A B C D F

A = Best/Cleanest in the US; F = Worst/Dirtiest in the US.

Figure 4 - Wetlands

February 14, 2023

Sedimentary Basins
Structural Lineaments

Cross Section Lines
A-A'
A-B
A-C
A-D
A-E
A-F
A-G
A-H
A-I
A-J
A-K
A-L
A-M
A-N
A-O
Cross Section Wells

Part 303 Final Wetlands Inventory
Wetlands as identified on NWI and MIRIS maps
Soil areas which include wetland soils
Wetlands as identified on NWI and MIRIS maps and soil areas whch include wetland soils

1:13,091

0 0.15 0.3 0.6 mi
0 0.25 0.5 1 km

Map by: State of Michigan - CSS

Figure 5 - Coastal Zones

Delta County
Brampton Township, T40N R22W
Gladstone, T40N R22W
Escanaba Township, T40N R22W
Wells Township, T39N R22W and T39N R23W
Escanaba City, T38N R22W, T38N R23W and T39N R22W

The heavy red line is the ***Coastal Zone Management Boundary***
The red hatched area is the ***Coastal Zone Management Area***

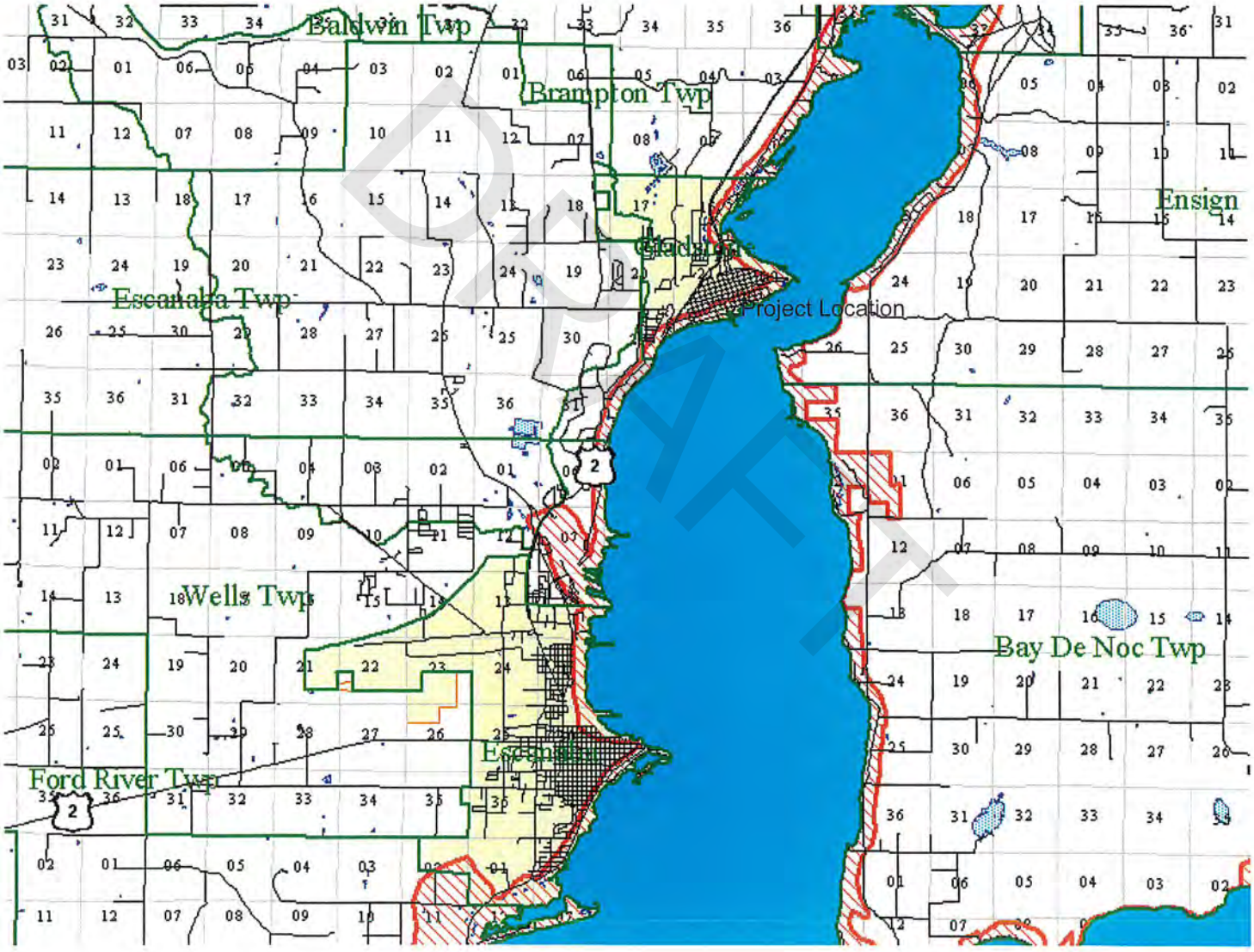
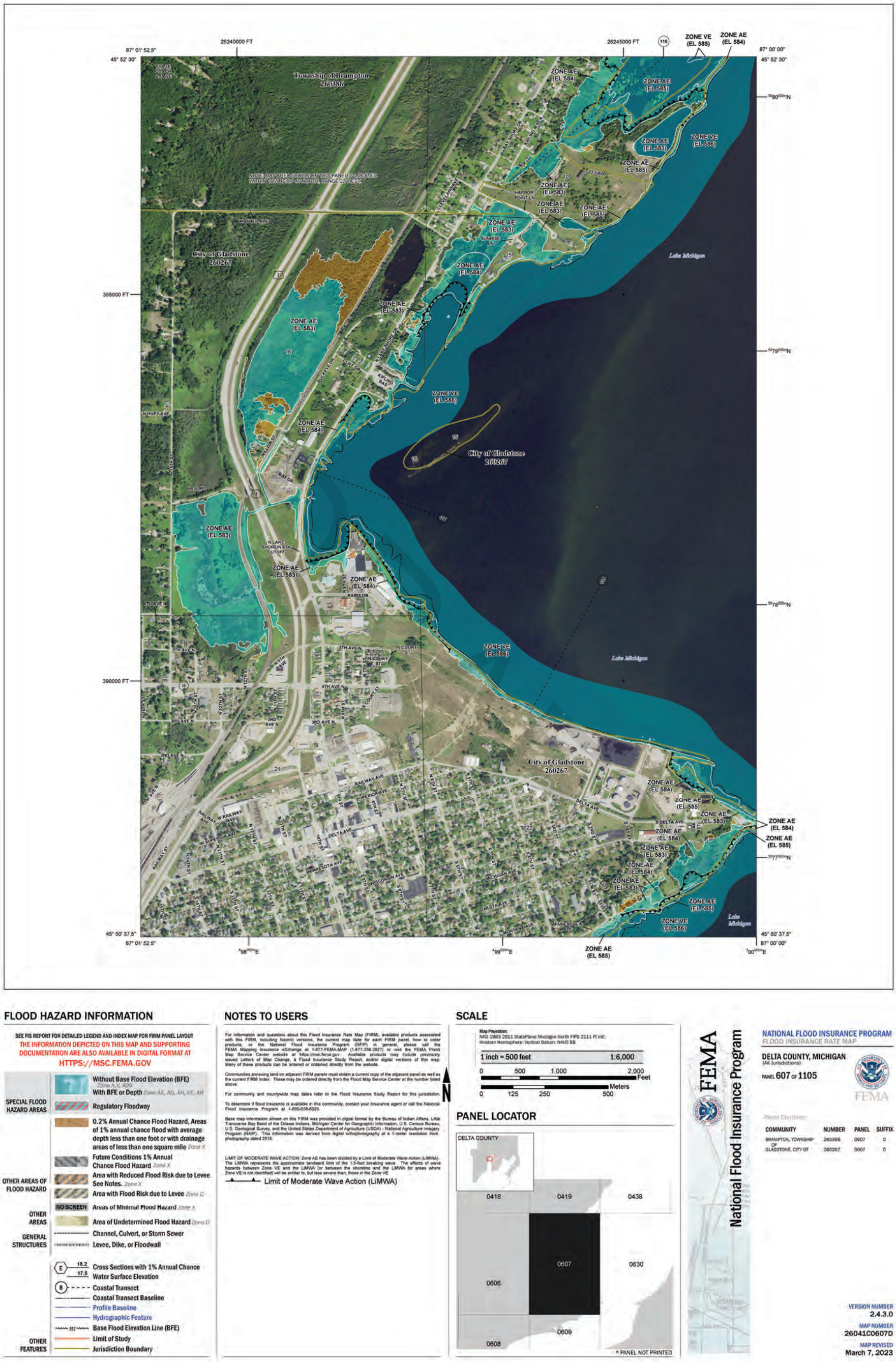


Figure 6.1 - Gladstone FEMA Map-1



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X
- Area with Flood Risk due to Levee Zone D
- NO SCREEN Areas of Minimal Flood Hazard Zone X

OTHER AREAS
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the Bureau of Indian Affairs, Little Transverse Bay Band of the Odawa Indians, Michigan Center for Geographic Information, U.S. Census Bureau, U.S. Geological Survey, and the United States Department of Agriculture (USDA) - National Agriculture Imagery Program (NAIP). This information was derived from digital orthophotography at a 1-meter resolution from photography dated 2018.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in the Zone VE.

Limit of Moderate Wave Action (LiMWA)

SCALE

Map Projection:
NAD 1983 2011 StatePlane Michigan North FIPS 2111 Ft Intl;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

N

PANEL LOCATOR

* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

DELTA COUNTY, MICHIGAN
(All Jurisdictions)

PANEL 607 OF 1105

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
BRAMPTON, TOWNSHIP OF	260386	0607	D
GLADSTONE, CITY OF	260267	0607	D

VERSION NUMBER
2.4.3.0

MAP NUMBER
26041C0607D

MAP REVISED
March 7, 2023

Figure 6.2 - Gladstone FEMA Map-2

FLOOD HAZARD INFORMATION

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SCALE

Map Projection:
NAD 1983 2011 StatePlane Michigan North FIPS 2111 Ft Intl;
Western Hemisphere; Vertical Datum: NAVD 88

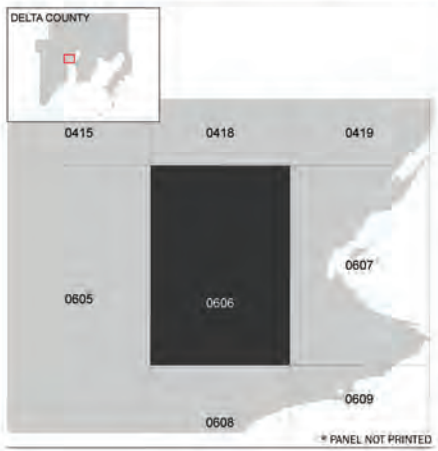
1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

N

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

DELTA COUNTY, MICHIGAN
(All Jurisdictions)

PANEL 606 OF 1105

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
BRAMPTON, TOWNSHIP OF	260386	0606	D
ESCANABA, TOWNSHIP OF	260387	0606	D
GLADSTONE, CITY OF	260267	0606	D

VERSION NUMBER
2.4.3.0

MAP NUMBER
26041C0606D

MAP REVISED
March 7, 2023

Figure 7 - Natural Rivers

Figure 8 - Wild and Scenic Rivers

Figure 9 - Major Surface Waters

February 16, 2023
AerialBest

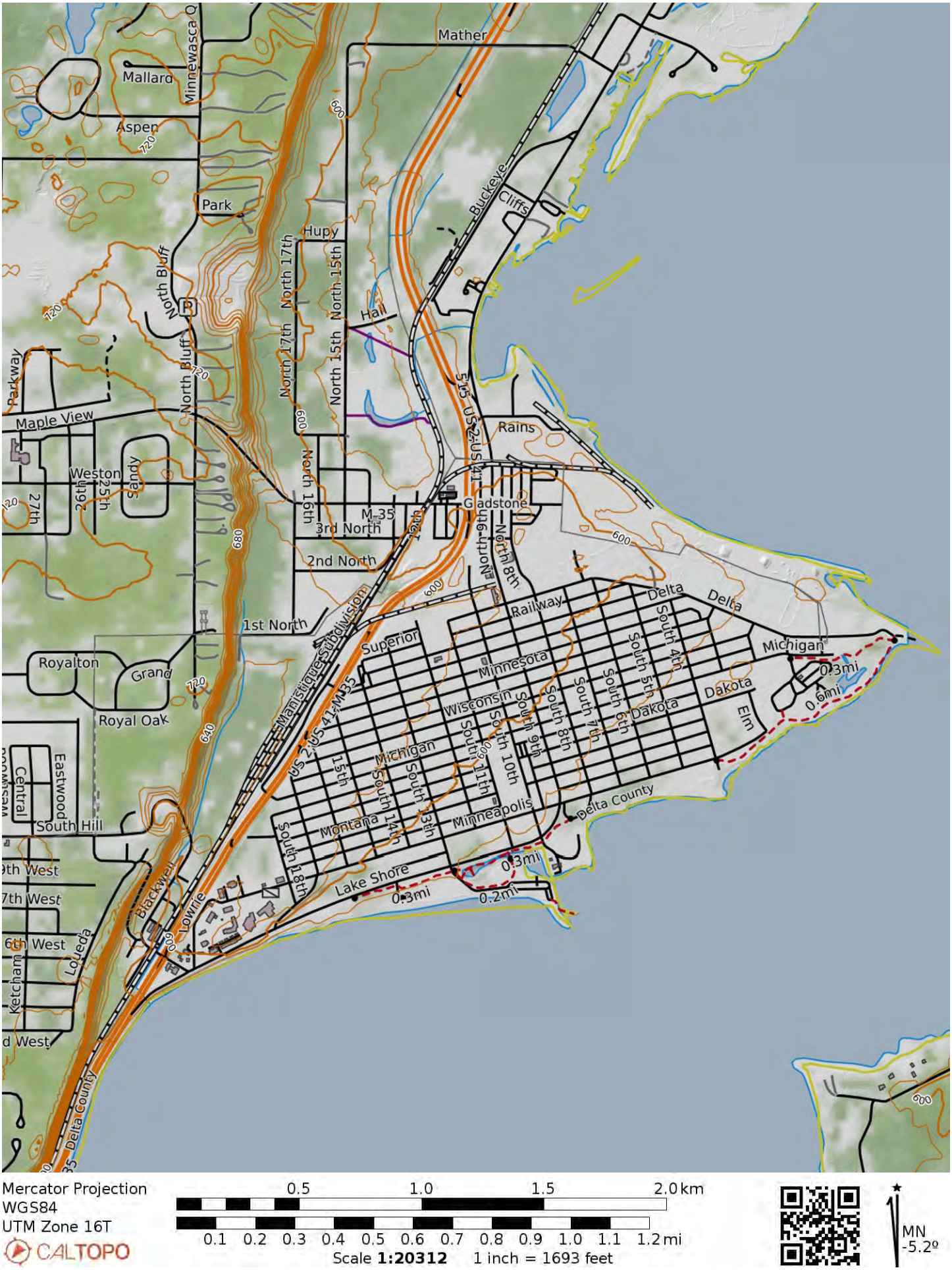
Red: Band_1
Green: Band_2
Blue: Band_3

1:13,086

0 0.15 0.3 0.6 mi
0 0.25 0.5 1 km

Map by: State of Michigan - CSS
copyright 2013

Figure 10 - Topography



Mercator Projection
WGS84
UTM Zone 16T
CALTOPO

0.5 1.0 1.5 2.0 km
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 mi
Scale **1:20312** 1 inch = 1693 feet

MN
-5.2º

Figure 10

Geology

Geologic information of the site location indicates a composition of glacial outwash, sand, gravel and post glacial alluvium. Refer to Figure 11.

Soil Types

Soil types in the proposed project location consist of previously disturbed and developed lands. Soils include wetland soils, sand, muck, peat and marl. Refer to Figure 12.

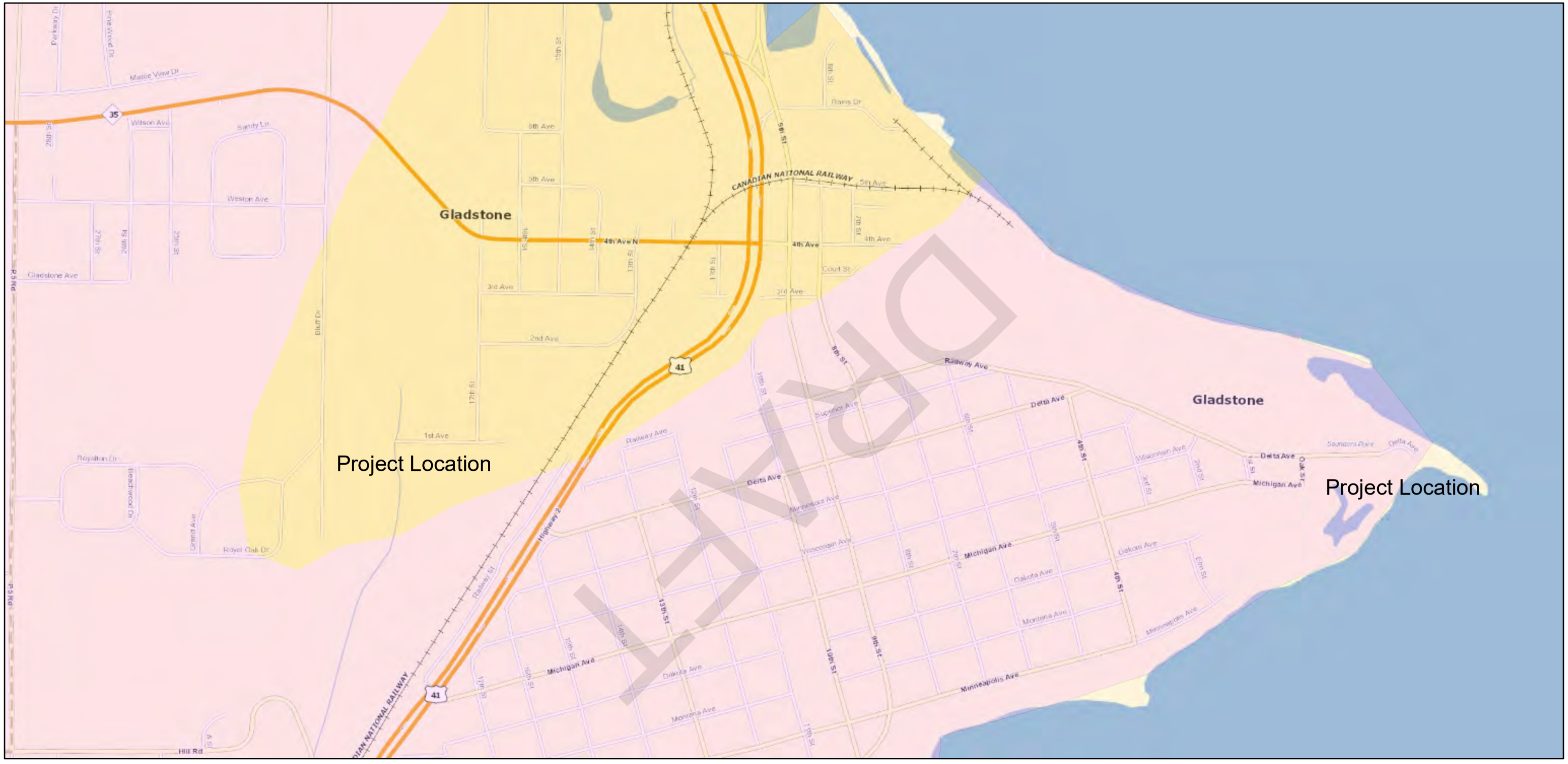
Agricultural Resources

Agricultural land is not anticipated to be impacted by the project. It does not appear there will be any long-term significant negative impact on these resources due to the project construction. Refer to Figure 13.

Fauna and Flora

Fauna and flora mainly consist of white pine and white oak at, or close to, the areas of watermain construction. Wetland locations are also within the project areas near the location of the water intake. Impacts to existing wetlands will be minimized though the use of directional drilling techniques. Refer to Figure 14.

Figure 11 - Geology



April 21, 2023

Quaternary Geology

- Peat and muck
- Postglacial alluvium
- Dune sand
- Lacustrine clay and silt
- Lacustrine sand and gravel
- Glacial outwash sand and gravel and postglacial alluvium
- Ice-contact outwash sand and gravel
- Fine-textured glacial till
- End moraines of fine-textured till
- Medium-textured glacial till
- End moraines of medium-textured till
- Coarse-textured glacial till
- End moraines of coarse-textured till
- Thin to discontinuous glacial till over bedrock
- Artificial fill
- Exposed bedrock surfaces
- Water

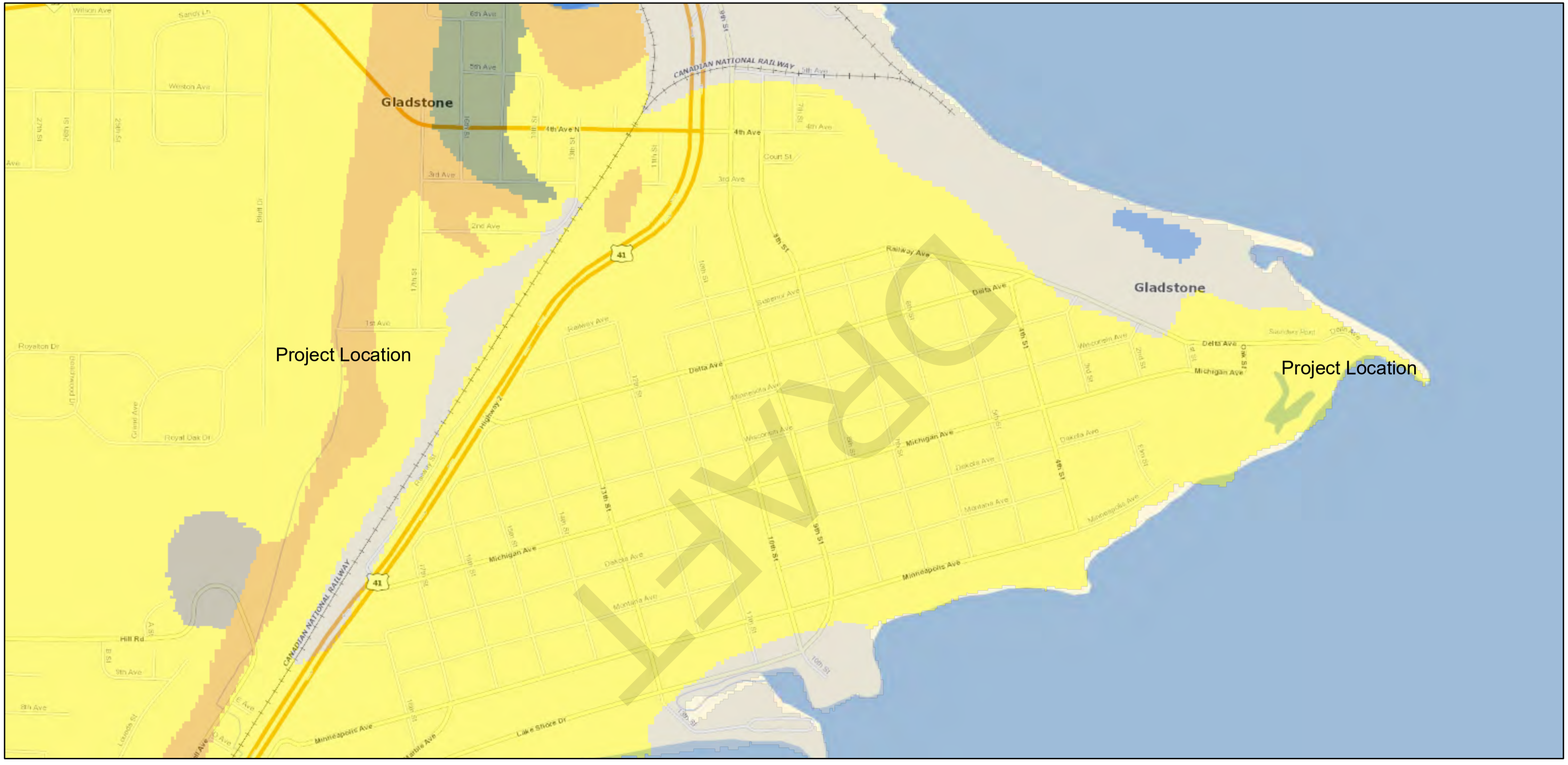
1:10,043

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

Map by: State of Michigan - CSS

Figure 12 - Soils



April 21, 2023

Soils SSURGO 10 Meter Grid

- Area Not Mapped
- Pits, Quarries, Mines
- Landfill, Made Land, Disturbed, Other
- Urban Land
- Water
- Rock Outcrop
- Other
- Sand
- Loamy Sand
- Sandy Loam
- Loam
- Silt Loam
- Sandy Clay Loam
- Clay Loam
- Silty Clay Loam
- Silt Clay
- Clay
- Muck, Peat, Marl

1:10,043

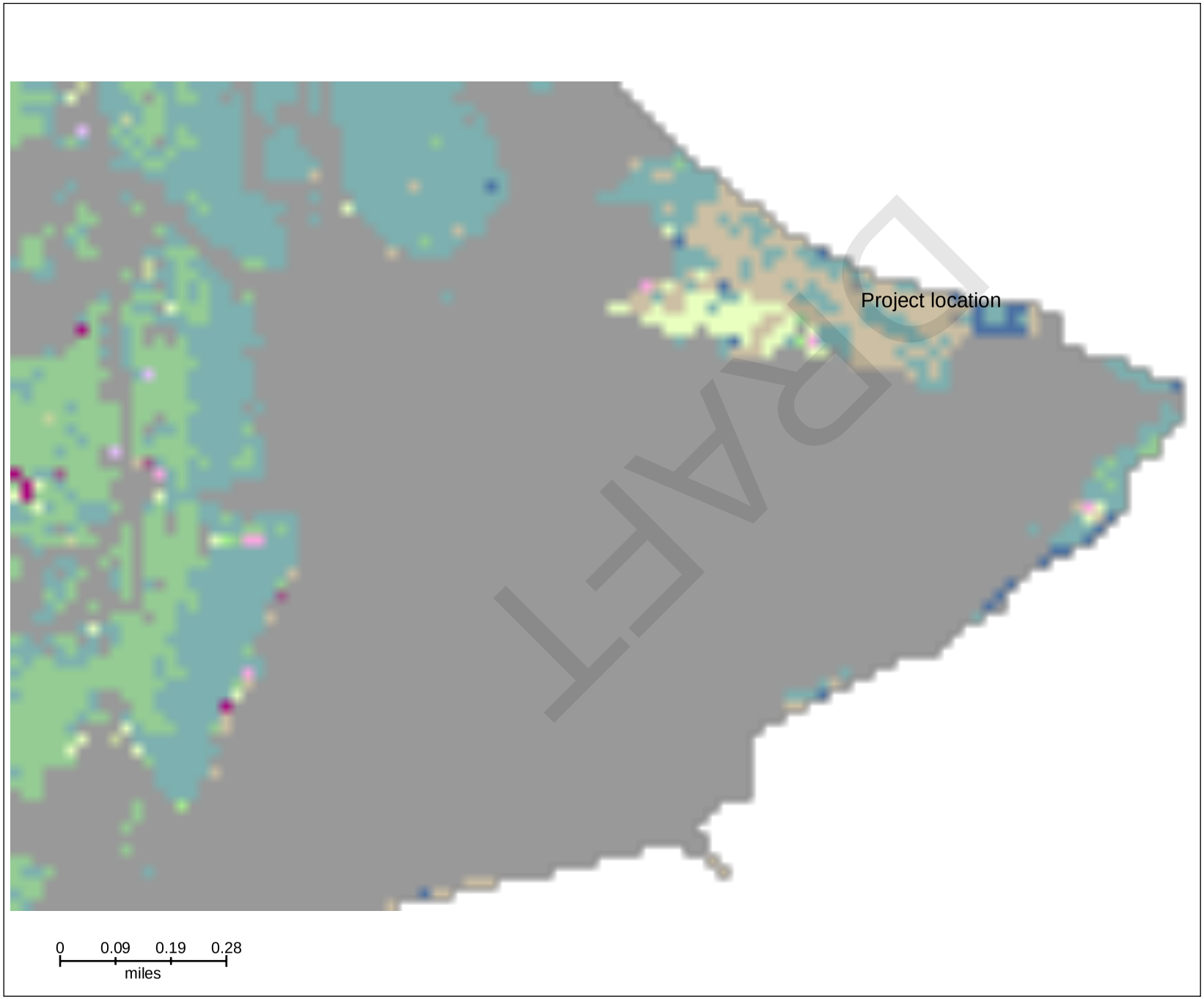
0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

Map by: State of Michigan - CSS

Figure 13 - Agricultural Resources

CDL2022 Area of Interest



Land Cover Categories

(by decreasing acreage)

AGRICULTURE

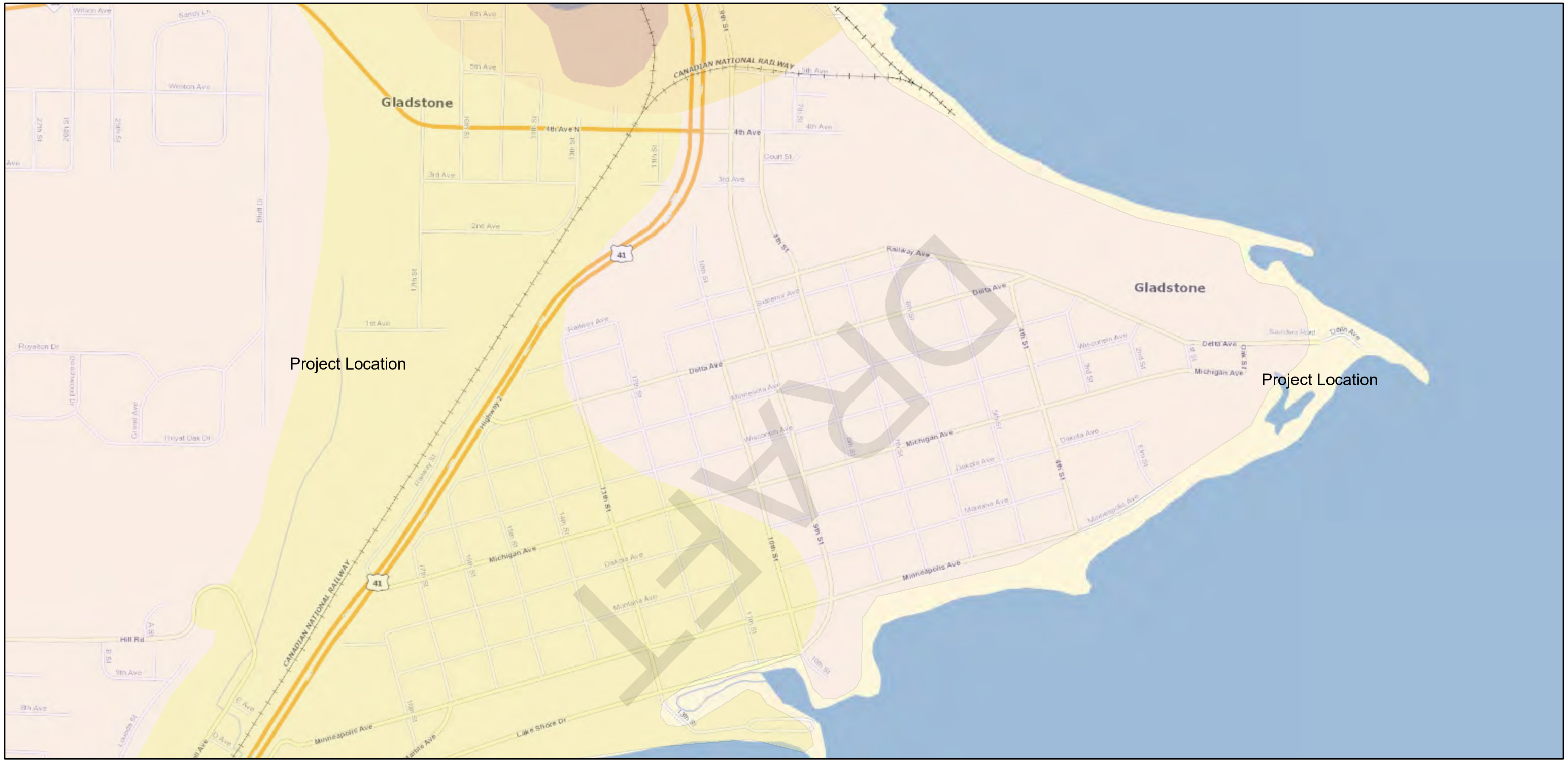
- Grass/Pasture
- Alfalfa
- Rye
- Oats
- Clover/Wildflowers
- Other Hay/Non Alfalfa

NON-AGRICULTURE*

- Developed/Medium Intensity
- Developed/Low Intensity
- Woody Wetlands
- Developed/Open Space
- Developed/High Intensity
- Deciduous Forest

* Only top 6 non-agriculturecategories are listed.

Figure 14 - Fauna and Flora



April 21, 2023

1:10,043

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

MNFI Landcover Circa 1800

- ASPEN-BIRCH FOREST
- BEECH-SUGAR MAPLE FOREST
- BEECH-SUGAR MAPLE-HEMLOCK FOREST
- BLACK ASH SWAMP
- BLACK OAK BARREN
- CEDAR SWAMP
- EXPOSED BEDROCK
- GRASSLAND
- HEMLOCK-WHITE PINE FOREST
- HEMLOCK-YELLOW BIRCH FOREST
- JACK PINE-RED PINE FOREST
- LAKE/RIVER
- MIXED CONIFER SWAMP
- MIXED HARDWOOD SWAMP
- MIXED OAK FOREST
- MIXED OAK SAVANNA
- MIXED PINE-OAK FOREST
- MUSKEG/BOG
- OAK-HICKORY FOREST
- OAK/PINE BARRENS
- PINE BARRENS
- SAND DUNE
- SHRUB SWAMP/EMERGENT MARSH
- SPRUCE-FIR-CEDAR FOREST
- SUGAR MAPLE-BASSWOOD FOREST
- SUGAR MAPLE-HEMLOCK FOREST
- SUGAR MAPLE-YELLOW BIRCH FOREST
- WET PRAIRIE
- WHITE PINE-MIXED HARDWOOD FOREST
- WHITE PINE-RED PINE FOREST
- WHITE PINE-WHITE OAK FOREST
- Undetermined

Map by: State of Michigan - CSS

D. Existing System

Water System

The City of Gladstone owns and operates a public water system which provides potable water to residents within the city limits. There are two (2) metered customers outside of the city limits supplied with water. The system draws raw water from Little Bay de Noc on Lake Michigan through a 24-inch intake pipe and built in crib arrangement. Surface water is treated in a 1.5 MGD conventional surface water treatment plant that utilizes coagulation, flocculation, sedimentation, filtration, disinfection and treated water storage.

The existing distribution system consists of approximately 215,000-feet of 4-inch to 12-inch water main, a 500,000-gallon finished water ground tank, a 1,000,000-gallon underground reservoir, a 250,000-gallon elevated tank and a booster station near the industrial park. Refer to Figure 15, 16 and 17 for project area components maps.

The Gladstone service area operates in two separate pressure districts. Water produced at the City treatment plant flows from the existing finished water storage tank to the 1,000,000-gallon underground storage tank which services the eastern portion of the City, built below the Gladstone Bluff (Bluff) and generally includes the easterly 50% of the City service area. The Bluff booster pump station draws suction from the ground storage reservoir and pumps to a 250,000-gallon elevated tank. This is the elevated storage for the upper pressure district. The Bluff booster pump station is a 1.5 MGD firm capacity pump station upgraded in 1997. The ground storage structure is approximately 85 years old, and the elevated tank is approximately 40 years old.

Intake and Crib.

The original raw water intake is a 24-inch inner dimension wood stave pipe and was constructed in 1887. In 1924, a section of the shore portion was replaced with 24-inch steel pipe. The shore portion of the pipe is 14-inch in diameter, connecting the shore well to the 24-inch steel pipe. The condition of the stave pipe and crib structure are summarized in an inspection report from Underwater Construction Corporation dated July 22, 2019. The intake crib is still in service but in poor condition, with screens no longer in place. The crib is a 5-foot square and sits approximately 3 feet, 9 inches above the surrounding lake bottom at a depth of 45 feet. There are four (4) anchor cables on each corner, connected 18 inches below the top, running into the lake bottom. The side consists of horizontal 2-inch by 6-inch planks with 2 inches of spacing between them. The planks are thin and weak and could be moved easily. The top of the crib is made up of 2-inch by 10-inch planks with a 24-inch diameter hole cut out for the intake pipe. All planks are present and gaps up to 3/4-inch have developed. The intake pipe is open to the lake and has no protective screens or grating. There is 100% coverage of zebra mussels inside the pipe, reducing the inside diameter.

Figure 15 - Project Area Component Map

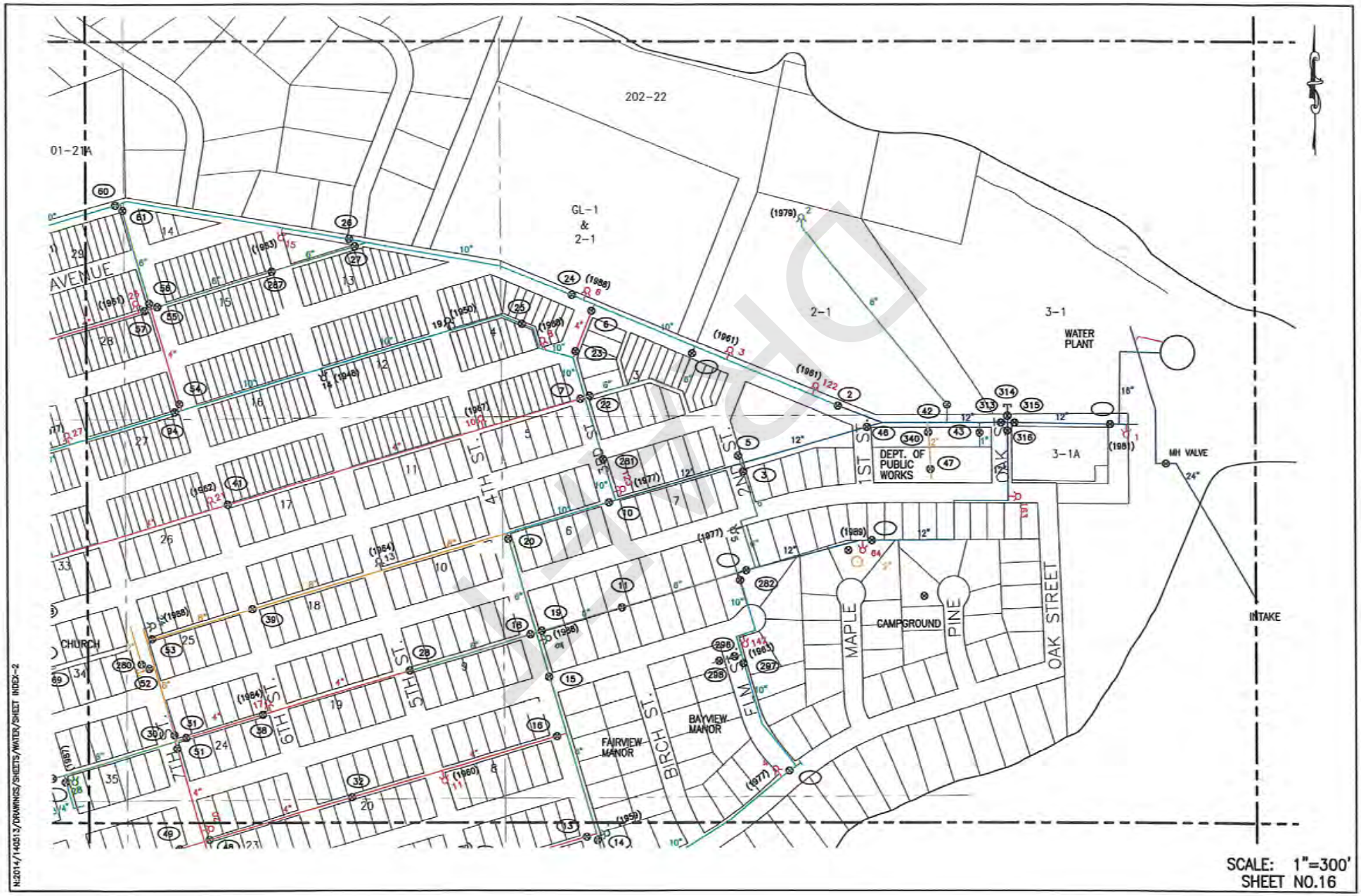


Figure 16 - Project Area Component Map

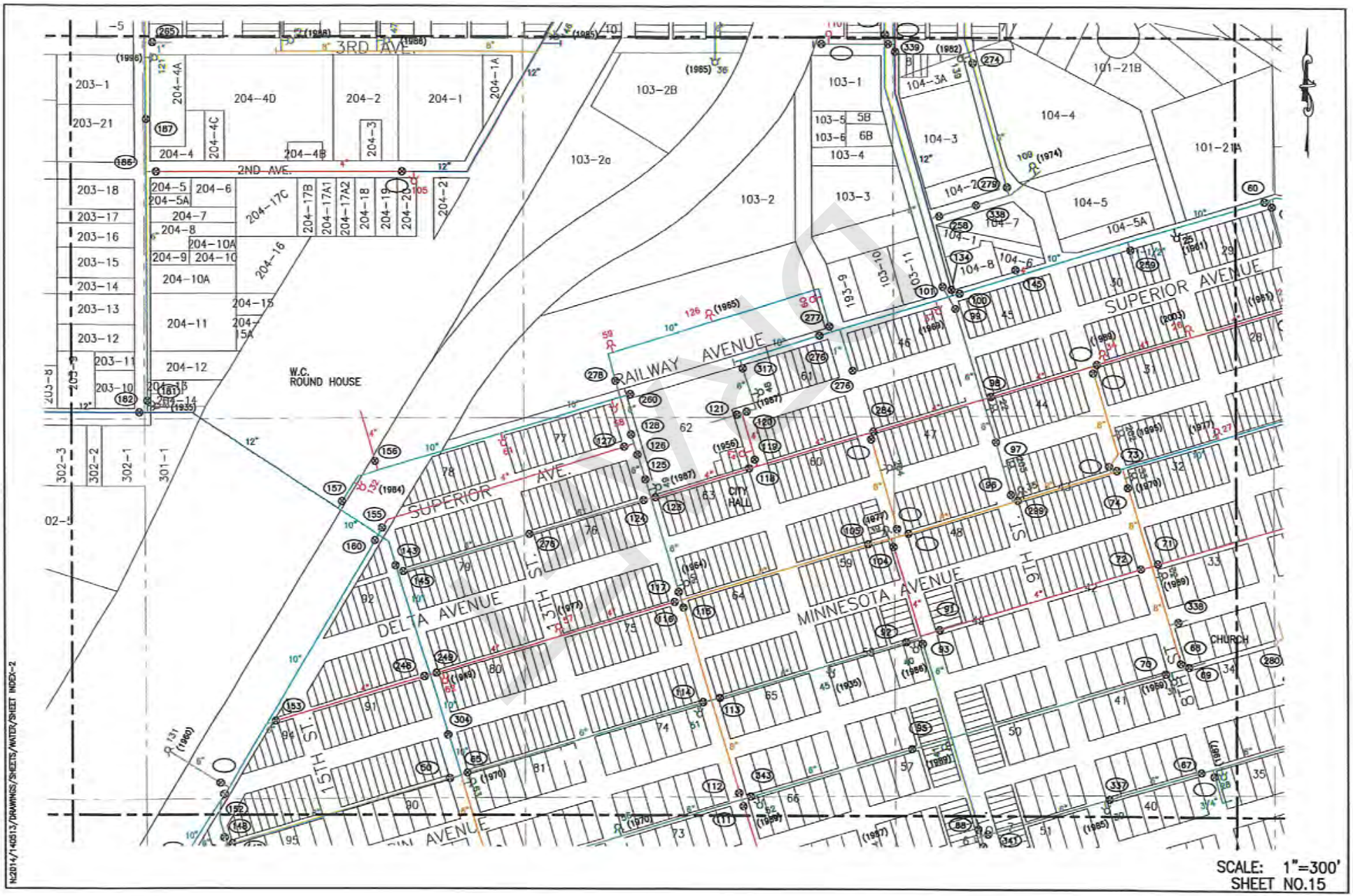
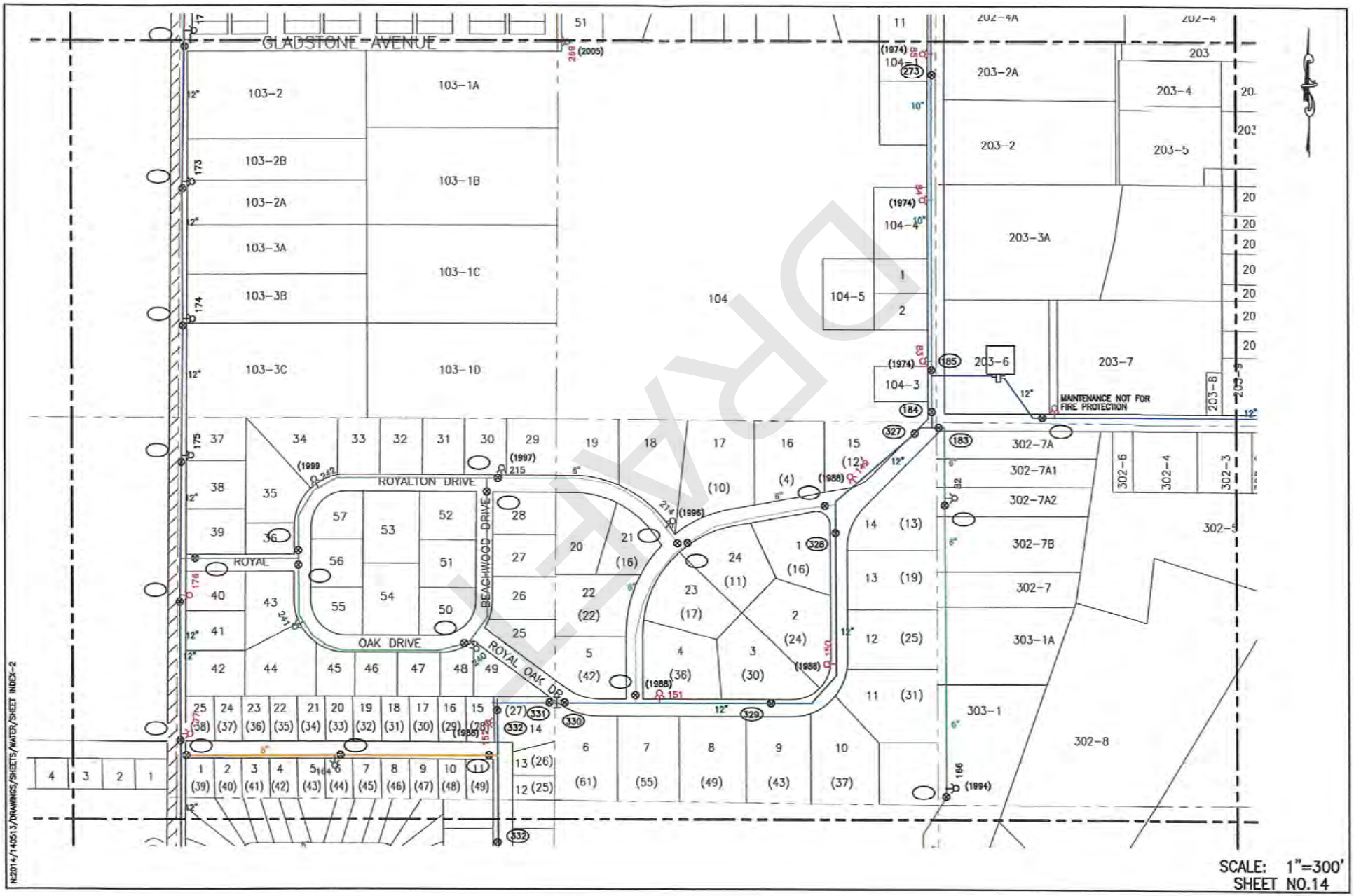


Figure 17 - Project Area Component Map



The intake pipeline is a 24-inch diameter wooden stave pipe and appears to be in fair condition for its age. The wooden stave pieces are in good condition and tightly jointed. There are steel hoop bands every 12 inches on the exposed pipeline. Of the 935 feet of exposed pipeline inspected, seven (7) openings were documented. The openings range in size from a 1-inch hole to a gap 14 inches long by 3 inches wide.

The intake is connected to a rectangular concrete shore well, which is 55 feet long by 15 feet wide and has a side water depth (SWD) between 6 and 10 feet. The shore well is constructed to accept baffling and the concrete is in fair condition.

Surface water is treated in a 1.5 MGD conventional surface water treatment plant that utilizes coagulation, flocculation, sedimentation, filtration, disinfection and treated water storage. Treated water is pumped to the distribution system through a single 12-inch ductile iron water main.

Pipe materials for the distribution lines consist of cast iron, ductile iron and HDPE. Sizing is as follows.

	Ductile/Cast Iron	HDPE
12-inch:	29,324 ft.	880 ft.
10-inch:	55,903 ft.	395 ft.
8-inch:	30,099 ft.	
6-inch:	80,536 ft.	245 ft.
4-inch:	17,664 ft.	

The condition of the distribution system piping has been summarized in the City of Gladstone Asset Management Plan (AMP). The City has summarized the condition, based on the installation year of the main and valve. Groups 1, 2, 3 and 4 (1880–1959) show moderate deterioration; groups 5, 6 and 7 (1960–1989) show minor deterioration; and groups 8, 9 and 10 (1990–present) are considered in excellent condition. Refer to Figure 18 for asset inventory.

Asset Inventory **Table 1**

Figure 18 - Asset Inventory

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Directions
A. List assets
B. Enter asset information
C. To add more assets use insert function and add rows then copy first asset row to new rows to transfer formulas
D. Enter information in highlighed cells
E. Remaining cells will calculate automatically.

A	B	C	D	E	F	G	H	I	J	K	L	M
Source Assets	**Material**	**Location**	**Latitude**	**Longitude**	**Manufacturer**	**Original Cost**	**Replacement Cost**	**Remaining Useful Life in Years**	**Condition**	**Probability of Failure**	**Consequence of Failure**	**Criticality Factor**
Administration and Service Building (1970)	Concrete	22 Delta Avenue	45°50'53"	87°0'11"	W.W. Champion	$496,894	$1,285,500	22	3	2.5	4	10
Interior Piping (Raw Water, Settled Water, Filter Influent, Wastewater Drain, Filter Effluent, and Finished Water)	Steel	22 Delta Avenue	45°50'53"	87°0'11"	ARMCO Steel	$50,714	$131,200	22	3	3	3	9
Interior Valving (Raw Water, Settled Water, Filter Influent, Wastewater Drain, Filter Effluent, and Finished Water)	Steel	22 Delta Avenue	45°50'53"	87°0'11"	ARMCO Steel	$40,586	$105,000	22	3	3	3	9
Mechanical Support Systems, HP Air, Sump Pump Systems		22 Delta Avenue	45°50'53"	87°0'11"		$4,832	$12,500	22	3	3	2	6
Electrical Service and Distribution System, 480 Volt, 3 Ph (Switchgear, MCC-A, Transfer Switch)		22 Delta Avenue	45°50'53"	87°0'11"	General Electric	$35,175	$91,000	2	4	2.5	4	10
												0
Low Voltage Electrical Distribution		22 Delta Avenue	45°50'53"	87°0'11"		$39,775	$102,900	2	3	2.5	3	8
Lighting (new LED upgrade December 2018)		22 Delta Avenue	45°50'53"	87°0'11"		$41,200	$41,200	50	1	1	2	2
Instrumentation, Online Turbidity Meters Operating Computer, Chlorine Analyzer		22 Delta Avenue	45°50'53"	87°0'11"	Hach, W&T	$15,462	$40,000	5	2	2.5	4	10
WTP Flow Meter, Level Sensor, and Signal Equipment		22 Delta Avenue	45°50'53"	87°0'11"	Yokogawa	$23,458	$25,900	20	2	2	2	4
Laboratory Equipment		22 Delta Avenue	45°50'53"	87°0'11"	Thermo, Hach,IDEXX	$26,942	$69,700	22	3	3	3	9
Water Plant Shore well 1934-38, 2015-16 build and rehab		22 Delta Avenue	45°50'53"	87°0'11"	TCR & Lippens, 2016	$725,117	$769,500	72	1	2	4	8
Raw Water Intake Pipe and Crib (Original - 1890)	Wood	22 Delta Avenue				$0	$2,113,900	2	4	4	4.5	18
Raw Water Intake Pipe and Crib (1970)		22 Delta Avenue				$353,373	$914,200	52	3	2.5	4.5	11
Low Service Pumps - Horizontal Split Case Pumps w/ VFD Controllers, No. 1, 2, and 3		22 Delta Avenue	45°50'53"	87°0'11"	Allis Chalmers	$33,281	$86,100	2	2	1	4	4
Sedimentation Tank, Upflow Clarification Equipment (Mixers, Flocculators, Skimmers)		22 Delta Avenue	45°50'53"	87°0'11"	Walker	$115,343	$298,400	27	3	1	4	4
Filter Equipment (Troughs, Underdrain, Surface Wash Equipment, Sand Media)		22 Delta Avenue	45°50'53"	87°0'11"	Wheeler,Leopold,	$106,839	$276,400	2	3	3	5	15
GAC Filter Media (New Nov 17)	GAC	22 Delta Avenue	45°50'53"	87°0'11"	Calgon	$41,128	$106,400	1	3	3	3	9
Filter Surface Wash Pump		22 Delta Avenue	45°50'53"	87°0'11"	Allis Chalmers	$8,195	$21,200	20	1	3	3	9
Filter Backwash Pump		22 Delta Avenue	45°50'53"	87°0'11"	Allis Chalmers	$21,685	$56,100	2	3	3	4	12
Filter Effluent Pumps		22 Delta Avenue	45°50'53"	87°0'11"	Allis Chalmers	$23,192	$60,000	2	3	3	4	12
			45°50'53"	87°0'11"								0
Filter Effluent Pump VFD		22 Delta Avenue	45°50'53"	87°0'11"	Yaskawa	$17,621	$18,700	27	1	2	2	4
Filtration Control Panel, Backwash Control		22 Delta Avenue	45°50'53"	87°0'11"	Fisher Porter	$6,030	$15,600	2	3	2.5	2	5
High Service Pumps, Horizontal Split Case, No. 1, 2, and 3 and OCV		22 Delta Avenue	45°50'53"	87°0'11"	Allis Chalmers	$56,550	$146,300	2	3	2	2	4
Finished Water Reservoir/Clearwell (500,000 Ground Storage Tank)		22 Delta Avenue	45°50'53"	87°0'11"	Universal Tank	$338,220	$875,000	27	3	2.5	4.5	11
			45°50'53"	87°0'11"								0
Alum Sludge Lagoons		22 Delta Avenue	45°50'53"	87°0'11"		$338,220	$875,000	27	2	1	1	1
Enter asset								0				0

If Criticality Factor is greater than 16 cell will turn RED
If Criticality Factor is greater than 16 add to CIP table

A	B	C	D	E	F	G	H	I	J	K	L	M
Treatment Assets	**Material**	**Location**	**Latitude**	**Longitude**	**Manufacturer**	**Original Cost**	**Replacement Cost**	**Remaining Useful Life in Years**	**Condition**	**Probability of Failure**	**Consequence of Failure**	**Criticality Factor**
Chlorine Gas Feed System, Pre and Post Chlorination		22 Delta Avenue	45°50'53"	87°0'11"	CIT, Superior	$56,518	$62,400	15	1	2	5	10
Chlorine Leak Detector with Sensors		22 Delta Avenue	45°50'53"	87°0'11"	Wallace & Tiernan	$2,661	$3,800	12	2	2	1	2
PACL Chemical Feed Equipment		22 Delta Avenue	45°50'53"	87°0'11"	BlueWhite/Forceflow	$6,007	$6,900	23	1	2	5	10
Corrosion Control, Orthophosphate Chemical Feed Equipment		22 Delta Avenue	45°50'53"	87°0'11"	BlueWhite/Forceflow	$6,632	$6,900	28	1	2	2	4
Carbon Slurry Feed System (Not in use)		22 Delta Avenue	45°50'53"	87°0'11"	Graco pump	$13,093	$18,700	12	2	2.5	0	0
Polymer Feed System		22 Delta Avenue	45°50'53"	87°0'11"	BlueWhite/Forceflow	$18,700	$18,700	30	1	2	3	6
Fluoride Feed System		22 Delta Avenue	45°50'53"	87°0'11"	BlueWhite/Mettler	$6,007	$6,900	23	2	2	2	4
Facility Yard Piping and Valves (3" and Larger)		22 Delta Avenue	45°50'53"	87°0'11"		$91,725	$237,300	22	3	3	1	3
Facilities Heating, Ventilating, and Air Conditioning		22 Delta Avenue	45°50'53"	87°0'11"	Weil McClain	$18,167	$47,000	20	2	2	2	4
Driveway Pavement		22 Delta Avenue	45°50'53"	87°0'11"		$22,110	$57,200	2	3	3	1	3
Enter asset								0				0
										5		

If Criticality Factor is greater than 16 cell will turn RED
If Criticality Factor is greater than 16 add to CIP table

A	B	C	D	E	F	G	H	I	J	K	L	M
Storage/Distribution Assets	**Material**	**Location**			**Manufacturer**	**Original Cost**	**Replacement Cost**	**Remaining Useful Life in Years**	**Condition**	**Probability of Failure**	**Consequence of Failure**	**Criticality Factor**
Bluff Booster Pump Station (Building, Storage Tank, Pump Well)		North Bluff Dr.				$636,103	$1,350,000	32	2	3	4	12
Booster Pumps No. 1, 2, and 3		North Bluff Dr.				$63,014	$90,000	12	1	2	2	4
Watermains and Valves, Group 1 (1880-1900) approx. 15,000'	Cast	City of Gladstone				?	$2,385,300	2	3	3.5	4	12
Watermains and Valves, Group 2 (1900-1920) approx. 7,800'	Cast	City of Gladstone				?	$1,165,000	2	3	3	3	10
Watermains and Valves, Group 3 (1920-1940) approx. 5,300'	Cast	City of Gladstone				?	$478,100	22	3	3	3	10
Watermains and Valves, Group 4 (1940-1960) approx. 5,200'	Cast	City of Gladstone				?	$556,800	32	3	3	3	9
Watermains and Valves, Group 5 (1960's) approx. 17,000'	Cast	City of Gladstone				?	$5,367,300	42	2	2.5	3	7
Watermains and Valves, Group 6 (1970's) approx. 21,400'	cast/Duct	City of Gladstone				$1,731,031	$4,478,300	52	2	2.5	3	6
Watermains and Valves, Group 7 (1980's) approx. 36,000'	Duct	City of Gladstone				$4,266,553	$9,054,900	62	2	2	3	6
Watermains and Valves, Group 8 (1990's) approx. 76,900	Duct	City of Gladstone				$8,072,145	$14,053,800	72	1	2	2	4
Watermains and Valves, Group 9 (2000's) approx. 13,500	Duc/HDP	City of Gladstone				$1,704,748	$2,434,800	82	1	2	2	4
Watermains and Valves, Group 10 (2010 or newer) approx. 8,700'	Duc/HDP	City of Gladstone				$850,247	$996,200	92	1	1	3	3
Service and Curb Stop, Group 1 (1880-1900) > 41	Galv/Cu	City of Gladstone				?	$249,800	2	4	3.5	3.2	11
Service and Curb Stop, Group 2 (1900-1920) > 95	Galv/Cu	City of Gladstone				?	$135,800	2	4	3.5	3.0	11
Service and Curb Stop, Group 3 (1920-1940) > 73	Galv/Cu	City of Gladstone				?	$48,500	22	4	3.5	3.5	12
Service and Curb Stop, Group 4 (1940-1960) > 36	Galv/Cu	City of Gladstone				?	$65,200	32	3	3	3.2	10
Service and Curb Stop, Group 5 (1960's) > 32	Galv/Cu	City of Gladstone				?	$564,300	42	3	3	3.0	9
Service and Curb Stop, Group 6 (1970's) > 130	Galv/Cu	City of Gladstone				$362,534	$937,900	52	3	2.5	2.8	7
Service and Curb Stop, Group 7 (1980's) 663	Cu	City of Gladstone				$441,926	$937,900	62	2	2.5	2.3	6
Service and Curb Stop, Group 8 (1990's) 476	Cu	City of Gladstone				$821,068	$1,429,500	72	2	2	2.2	4
Service and Curb Stop, Group 9 (2000's) 311	Cu/HDPE	City of Gladstone				$176,230	$251,700	82	2	2	2.0	4
Service and Curb Stop, Group 10 (2010 or newer) 78	Cu/HDPE	City of Gladstone				$86,032	$100,800	92	1	1.5	1.8	3
Fire Hydrants	cast/Duct	City of Gladstone			TCIW,Waterous,EJ	$1,008,940	$1,559,800	53	2	2.5	3	8
Elevated Storage Tank, 200,000 Gallon	Steel	29th Street				$2,802,712	$600,000	62	3	3	4	12
Radio Telemetry, installed 2008, 3 units operating + 1 spare pre programed		City of Gladstone			Elpro	$18,000	$38,000	10	2	2	4	8
Water Meters + ERTs,								0				0
Enter asset								0				0

If Criticality Factor is greater than 16 cell will turn RED
If Criticality Factor is greater than 16 add to CIP table

E. Need for the Project

Compliance Status

The City's water treatment plant operates in accordance with water supply serial number WSSN: 02640.

EGLE conducted a Water System Sanitary Survey (Survey) on March 9, 2022. Based on that inspection, the City has received a letter from EGLE dated May 12, 2022, stating that the intake crib and pipeline must be replaced to resolve deficiency by December 31, 2025.

Deficiencies indicate non-compliance with Act 399. The following deficiencies were identified during the survey:

1. R 325.10907: Intake inlet and pipeline
   Rule 907(3) requires that the intake pipeline shall be constructed to reasonably protect against physical hazards associated with the surface water source. The most recent inspection report indicates the intake crib is in poor condition. Portions of the intake pipe are exposed on the lakebed and holes were observed in the exposed pipe. Zebra mussel colonization was observed on the intake crib and pipe. Replacement of the intake is identified as a fiscal year 2025 capital improvement project. To resolve this deficiency, complete replacement of the intake crib and pipeline must be completed no later than December 31, 2025.

2. R325.11112: Storage tanks generally; R325.11113: Gravity storage tanks
   Rule 1112 states storage tanks shall have no unprotected openings. Rule 1113 states gravity storage tanks shall have a vent of sufficient size. Per Ten States' Standards, section 7.0.7, overflow pipes shall be fitted with 24-mesh non-corrodible screen. Use of a solid flapper or duckbill valve should be considered to minimize air movement and ice formation. Per section 7.0.8, access hatches to the tank's wet interior shall be fitted with a watertight cover which overlaps the framed opening and extends down around the frame by at least two inches. Per section 7.09, vents shall be fitted with 24-mesh non-corrodible screen. Elevated tanks shall also be fitted with a pressure/vacuum-style vent.

   29th Street elevated tank and the North Bluff Drive ground level tank were cited with having deficiencies. Those deficiencies are being corrected under a separate contract for repair and are not included in this Project Plan document. Construction on these repairs is planned for the summer of 2023.

Although not cited as a deficiency in the transmission/distribution system, there is only one (1) 12-inch transmission pipe connecting the storage tank located on the Bluff to the lower pressure district. This pipe also serves as the feed pipe to the storage tank from the water treatment plant. If this pipe fails, the City has contingency plans in place to provide water to the lower district. There is no contingency plan in place to service the upper

pressure district should a break in the existing transmission main occur. A break at this location will most likely result in a loss of water service to the upper pressure district until repairs can be made. The second 12-inch transmission pipe, included in the Project Plan, is to enhance water service and operational stability in the system.

Orders

There are currently no court orders, Federal or State enforcement orders, or administrative consent orders against the City of Gladstone's water treatment plant or distribution systems.

Water Quality Problems

The ultimate goal of the proposed project is to maintain a sustainable water intake, distribution and treatment system while protecting the health and safety of the public and natural environment. Due to the age of the intake pipe and crib structure there has been significant deterioration observed. The addition of a second 12-inch distribution pipe from the ground finished water storage tank would provide a more resilient distribution system providing potable water to Gladstone residents.

Projected Needs

Through the development of the Water Asset Management Plan and Capital Improvements Plan, the City has identified the areas of the water intake and distribution system that need upgrading. The current treatment plant system relies on a 24-inch wood stave pipe and intake crib installed in 1887, along with the shore portion of 24-inch steel pipe upgraded in 1924.

It has been determined that the addition of 3,200 feet of 12-inch water transmission main to the City's storage tank would provide a redundant water supply line to the city water tank.

Future Environment without the Proposed Project

The primary purpose of the proposed project is to replace failing water infrastructure. This will protect surface water quality and public health. Without the project, water intake could have debris issues, as there is currently no screening or grate protection on the crib structure. Corrective maintenance will consume City staff time and resources. Failure of the 12-inch transmission pipe feeding the storage tank will lead to service interruptions, as well as reduced fire protection flows. In the end, the proposed project will help provide a safe, reliable water treatment plant raw water supply and a more reliable distribution system to the City's customers.

F. Projected Future Needs

The City of Gladstone has completed an Asset Management Plan (AMP) for inventoried assets in the water treatment, distribution and treated water storage systems. Listed in the Replacement and Capital Improvements Plans are various assets projected for

replacement. The Replacement Plan concentrates on assets to be replaced within 5 (five) years. The Capital Improvements Plan has a 5-year and a 20-year schedule. Lead service lines will also need to be replaced to meet State of Michigan mandates and the City has identified approximately 381 potential lead services that are not included as part of this project.

SECTION 3: ANALYSIS OF ALTERNATIVES

A. Identification of Potential Alternatives

No Action

The no action alternative would save the City a large amount of capital investment. However, this option would result in adverse impacts to the City and its water and customers. Those negative impacts include the following:

- decreased reliability in aging infrastructure, resulting in more water disruptions to customers;
- increased maintenance required on intake pipe and crib, resulting in higher pumping and treatment costs;
- increased intake water loss from obstructed piping and crib, resulting in higher pumping and treatment costs;
- reduced reliability due to only having one 12-inch transmission pipe to and from the finished water storage tank; and
- higher costs associated with dealing with repairs on an emergency basis.

It is due to these reasons that the City of Gladstone has deemed the No Action alternative not feasible, because it will not address long-term sustainability to the water distribution systems.

System Rehabilitation

This alternative involves relining the existing intake pipe. Any relining of the intake would require that the existing pipe be structurally sound enough to allow relining and that contractors would be able to access the end of pipe 40-feet below the lake surface. This alternative would do nothing to address the reliability of the existing 12-inch transmission main to and from the treated water storage tank.

System Replacement

This alternative would replace approximately 1,850-feet of 24-inch water intake pipe through directional drilling. A new Clear Well Structure would be constructed. An additional 12-inch transmission main would be installed supplying water to and from the treated water storage tank. A small portion of the existing water main will be replaced when the second 12-inch distribution main is connected. If any lead service lines are found in that area, they will be replaced.

Optimum Performance of Existing Systems

Optimization of existing facilities without capital improvements will not restore service life to the water distribution and treatment systems. There are no operational changes or additional training for operating personnel that would optimize the current intake and crib structures.

Regional Alternatives

Regional alternatives have been considered in the past and would consist of a connection to the neighboring City of Escanaba, Michigan, located 3.5 miles to the southwest, or Rapid River, located 5 miles to the northeast. Connection to Escanaba has been eliminated as a regionalization alternative due to the as a lack of treatment capacity at the existing City of Escanaba water treatment plant and the long transmission distance between the two cities. Rapid River does not operate a municipal water system. Regional alternatives would not address the old water mains, some of which have been in service since before 1900, or the need for a new redundant transmission main.

B. Analysis of Principal Alternatives

The three principal alternatives that were considered include:

1. No Action: This alternative would do nothing to put the City in compliance with the deficiency cited during the inspection conducted by EGLE on March 9, 2022. Based on that inspection, the City has received a letter from EGLE dated May 12, 2022, stating that the intake crib and pipeline must be replaced to resolve deficiency by December 31, 2025.
2. System Rehabilitation: This alternative involves relining of the existing intake pipe. Any relining of the intake would require that the existing pipe be structurally sound enough to allow relining and that contractors would be able to access the end of pipe 40-feet below the lake surface. This alternative would do nothing to address the reliability of the existing 12-inch transmission main to and from the treated water storage tank.
3. System Replacement: This alternative involves replacement of the existing 24-inch water intake, new crib structure, new clear well structure and the addition of a 12-inch transmission pipe to and from the treated water storage tank. A small portion of the existing water main will be replaced when the second 12-inch distribution main is connected. If any lead service lines are found in that area, they will be replaced.

Alternative 1: No Action

The water intake system will continue to deteriorate as time passes. The crib structure currently does not have any screening mechanisms. The no action alternative would not put the City in compliance with the letter issued by EGLE dated May 12, 2022, stating that the intake must be replaced by December 31, 2025. Drinking water quality will suffer and available fire flows will continue to decrease as the system ages.

It was for these reasons that the no action alternative was deemed not feasible.

Alternative 2: System Rehabilitation

This alternative involves relining of the existing intake pipe. Any relining of the intake would require that the existing pipe be structurally sound enough to allow relining and that contractors would be able to access the end of pipe 40-feet below the lake surface.

Relining will extend the life of a pipe, but it is quite possible the pipe will still fail within the life of the Drinking Water State Revolving Fund (DWSRF) loan. Overall, pipe relining is very expensive; the cost per foot is much greater than it would be for standard replacement. Another issue is when there are good and bad segments in a run of pipe; a run of pipe cannot be relined unless the entire pipe is still structurally sound. This alternative does not yield the same quality and useful life as pipe replacement would.

This alternative would do nothing to address the reliability of the existing 12-inch transmission main to and from the treated water storage tank.

See Appendix A for a cost estimate of this alternative.

It was for these reasons that the system rehabilitation alternative was not chosen.

Alternative 3: System Replacement

This alternative would replace approximately 1,850-feet of 24-inch water intake pipe through directional drilling. A new clear well structure would be constructed. An additional 12-inch transmission main would be installed, supplying water to and from the treated water storage tank. A small portion of the existing water main will be replaced when the second 12-inch distribution main is connected. If any lead service lines are found in that area, they will be replaced.

This alternative achieves all the goals of the project and does it in the most cost-effective way. Pipe replacement will give the City the longest useful life out of its pipes. This alternative is also the least expensive, so it will yield smaller user rate increases and will not be as much of a financial burden to the City's customers. Refer to user costs in the selected alternative section for user rate increases.

See Appendix A for a cost estimate of this alternative.

This is why the system replacement alternative was chosen as the preferred option.

C. Monetary Evaluation

Table 2: Present Worth Analysis

Description	Alternative 2	Alternative 3
Capital Costs	$10,212,450	$7,927,050
Annual O & M	$1,442,056	$1,442,056
Future Salvage Value	$0	$0
Present Worth of O & M	$22,480,445	$22,480,445
Present Worth of Salvage Value	$0	$0
Total Present Worth	$32,692,895	$30,407,495

Note: Federal discount rate of 2.5% for water resources projects was used.

Sunk Costs

Financial commitments made before and during the project planning have not been included in the project cost or cost-effectiveness analysis. The existing facilities and land have been under City control for many years and existing bond indebtedness, if any, has not been included in the cost-effectiveness analysis for the various alternatives. The Project Plan preparation costs have also not been included in the cost-effectiveness analyses.

Present Worth

Present worth is the sum that if invested now at a given interest rate, would provide exactly the funds required to pay all present and future costs. A present worth analysis was used in the monetary evaluation of the alternatives. A planning period of 20 years and a real discount rate of 2.5% was used for this analysis.

Salvage Value

Salvage value is assumed to be $0. Once a piece of pipe is put in the ground it no longer has a monetary value.

Escalation

Cost estimates for each alternative were done in 2025 dollars and no cost escalator was used.

Interest During Construction

Interest during construction was not applied in the present worth analysis.

Mitigation Costs

No significant structural or nonstructural mitigative measures are expected to be needed for long-term implementation of the project. Temporary construction control measures, such as limiting working hours and installation of soil erosion and sedimentation control measures, are planned to minimize short-term environmental impacts of the construction activities. Short-term mitigation measures have been accounted for in the cost estimates.

User Costs

Refer to user costs in the selected alternative section for details on what the proposed project will do to the City's utility rates.

Delivery Method

The proposed project is intended to be delivered using the design-bid-build delivery method.

D. Partitioning the Project

The City has identified that the project to replace the raw water intake and crib needs to be completed in its entirety to correct the deficiencies identified in the EGLE letter dated

May 12, 2022. The 12-inch transmission main would provide a more reliable distribution system and should be completed in this project. Disruption to the customers would be minimal.

E. Environmental Evaluation

Table 3 summarizes the potential environmental impacts due to each alternative.

Table 3: Environmental Evaluation

Category	Alternative 1 No Action	Alternative 2 System Rehabilitation	Alternative 3 System Replacement
Historical/Archaeological	1	1	1
Air Quality	1	1	1
Wetlands	1	1	1
Coastal Zones	1	1	1
Floodplains	1	1	1
Natural or Wild and Scenic Rivers	1	1	1
Surface Waters	2	1	1
Recreational Facilities	1	1	1
Topography	1	1	1
Geology	1	1	1
Soils	2	1	1
Agricultural Resources	1	1	1
Sensitive Habitats	1	1	1
Threatened/Endangered Species	1	1	1
Unique Features	1	1	1
Total	**17**	**15**	**15**

1 = No Impact, 2 = Some Impact, 3 = Most Impact

None of the considered alternatives are expected to result in long-term impact to historical, archaeological, geological, cultural or recreational resources in the study area. Both action alternatives would have temporary construction related direct adverse impacts to air quality, noise, traffic and material consumption. The action alternatives would have a temporary positive impact on economics through construction related employment and materials purchased. They would also have positive long-term impacts on the area water quality due to a reliable water distribution system.

F. Implementation and Public Participation

The City of Gladstone has completed construction projects over the past several decades. All projects are openly discussed at public council and board meetings. The Project Plan

will be advertised and displayed for citizen review ten (10) days prior to the public hearing.

G. Technical and Other Considerations

Reliability

Reliability is a big reason why the proposed project is needed. Reliability of the City's water systems will be improved by eliminating some of the structural deficiencies. This will mean less time and money spent on maintenance by the City and fewer service interruptions to the City's utility customers.

SECTION 4: SELECTED ALTERNATIVE

A. Relevant Design Parameters

The selected alternative is alternative 3: system replacement. This alternative will replace approximately 1,850 feet of raw water intake, crib structure, clear water tank and 3,200 feet of new 12-inch water transmission main providing a more reliable distribution system. Associated valves and lead water service lines will be replaced in conjunction with the water main. All work is expected to take place within existing public right-of-way with the exception of the private side lead water service line replacements. In accordance with current engineering standards, 12-inch piping will be installed. Construction will consist of open trench excavation and installation of water mains and associated valves. Any lead water service lines encountered will be replaced and restoration of surface features will be performed.

B. Design Criteria

Water System

Design criteria will be in accordance with "Recommended Standards for Water Works – 2012" (Ten States Standards); Michigan's requirements under the Clean Water Act, Act 399 P.A. 1976; and EGLE's requirements of 100 gallons per inch diameter per mile per day allowable leakage. The following general criteria should also be observed for water distribution systems.

- A minimum pipe size diameter of six (6) inches is required on all municipal water lines (water lines which provide fire protection)
- Operating pressures: 35 psi minimum, 150 psi maximum, 20 psi minimum residual during fire flow
- Fire flow: residential 750 GPM, commercial/industrial 2,000 GPM, duration 2 hours
- Water mains shall be subjected to pressure and leakage testing in accordance with AWWA C600
- Minimum storage: Average daily demand.

C. Project Maps

Refer to Figure 2.

D. Controlling Factors

Access to construction sites is readily available and should not impact construction activities. Coordination will be required with residents and business owners to ensure access will be maintained to homes and businesses during construction. The high

groundwater table in the area may require dewatering during construction but is common in the area and can be handled by competent contractors.

Planning and design will be done in accordance with the following applicable industry standards:

- AWWA Standards,
- "Ten States" Standards,
- EGLE and USACE permitting requirements,
- SHPO and THPO requirements, and
- City utility and road standards.

E. Special Assessment District Projects

The special assessment district is not applicable to this project.

F. Sensitive Features

Landward construction will take place in areas that have been previously developed. This will prevent any environmentally sensitive features from being impacted. Where environmental risks are present, the construction contract documents will require detailed mitigation measures. Water and environmental permitting will provide coordination with the regulatory agencies during the design process.

G. Schedule for Design and Construction

The following table shows the proposed schedule.

Table 4: Proposed Schedule

Task	Date
Notice of Intent to Apply	October 2022
Disadvantaged Status Form	March 2023
Draft Project Plan Submittal	May 2023
Advertise for Public Hearing	May 2023
Hold Public Hearing	May 2023
Submit Final Project Plan	June 2023
Project Priority List Announcement	September 2023
Milestone Schedule	October 2023
EA and FONSI	April 2024
Rate Methodology	April 2024
Plans and Specs Draft to EGLE	April 2024
Part I Application	May 2024
Part II Application	May 2024
Advertise for Bids	May 2024

Bid Open	June 2024
Part III Application	July 2024
Loan Closing	August 2024
Construction Award	September 2024
Construction Completion	November 2025

H. Cost Summary

Table 5: Total Project Costs Funded Through DWSRF

Total Water Related Costs	$7,927,050

Refer to Appendix A for a detailed project cost estimate.

I. Authority to Implement the Selected Alternative

The City of Gladstone has successfully implemented numerous public works projects and has proven it has the legal, institutional, financial, and managerial resources to accomplish completion of the proposed alternative.

J. User Costs

The City plans to use water user charges to repay the debt for the proposed project. A summary of the water user costs before and after the project is presented in Table 6 and Table 7. These costs are based on the average usage of a residential customer. Average residential usage from City billing records was determined to be 2,774 gallons per month for water. The City has approximately 2,230 residential and commercial water users.

Table 6: Current Utility Rates

Description	Water
Fixed Charge	$14.75
Commodity Charge per 1000 gal.	$5.70
Total Monthly Charge	$30.56

The City is requesting a 30-year loan term from EGLE. For the purpose of this report, assumed loan terms of 2.75% interest for 20 years was used in the user cost analysis.

The following table shows the estimated rate increases required to cover the loan payments.

Table 7: Utility Rates After Project

Description	Water
Project Cost Funded Through SRF	$7,927,050
Annual Payment – 2.75% for 20 Years	$520,583
Monthly Increase per Residential User	$16.94
Total Monthly Charge Before Project	$30.56
Total Monthly Charge After Project	$47.50

K. Overburdened Community Status

The Overburdened Status and Significantly Overburdened Community Status Determination worksheets were submitted to EGLE in March of 2023. At the time of report writing, it is assumed that the City is considered overburdened. Refer to Appendix G.

L. Useful Life

The project will install ductile iron pipe for water main, copper pipe for the water services and HDPR pipe for the water intake. These materials all have a useful life of 100 years, which is much longer than the DWSRF loan terms.

SECTION 5: EVALUATION OF ENVIRONMENTAL IMPACTS

A. Analysis of the Impacts

Direct Impacts

1. Construction Impacts: There will not be any negative impacts to archaeological, historical, or cultural resources. Surface water and groundwater will not be negatively impacted by the project. Mitigation measures to control stormwater runoff during construction will be required by the contract documents. There will be short-term impacts to air quality due to fugitive dust from construction activities. This will be mitigated through watering. The project is not expected to have any adverse impacts to floodplains, wetlands, stream crossings, shorelands, prime or unique agricultural lands or threatened and endangered species. All work will be limited to previously developed areas.
2. Operational Impacts: Improvements to the water systems will reduce overall system operation and maintenance due to replacement of old failing infrastructure.
3. Social Impacts: There will be an increase to water user costs as a result of the project. The City will need to increase rates to pay for the water loan. Refer to the user cost section on pages 38 and 39 for rate increases. The project will create short-term economic benefits due to the needed construction workers and materials. The project will also cause short-term traffic delays during construction. Relocation of residents or businesses will not be required. Long-term social impacts will be positive, as this project will increase efficiency, reliability and capacity in the project area.

Indirect Impacts

1. Land Development: The areas of improvement are in areas of existing water service and will not change the rate, density, or type of land development. No changes will be made to any transportation routes.
2. Land Use: The project will not make changes to land use.
3. Air and Water Quality: The project will not negatively impact air and water quality.
4. Secondary Growth: The project is not expected to spur secondary growth.
5. Cultural, Human, Social and Economic: Impacts to cultural, human, social and economic resources will be positive, as a sustainable water distribution system will promote public health and safety.
6. Aesthetics: The project will not negatively impact area aesthetics. Minor destruction during construction will be offset by restoration.
7. Resource Consumption: The project will not increase resource consumption in any way. Construction activities will produce extra solid waste, but the extra waste will not be reoccurring over the useful life of the infrastructure.

Cumulative Impacts

The proposed project is not expected to create any adverse impacts to the environment that increase over time or that result from individually minor but collectively significant actions taking place over time.

SECTION 6: MITIGATION

Where adverse impacts due to construction of the proposed project cannot be avoided, mitigation measures will be implemented. Costs for mitigation measures were considered and included, where applicable, in the engineer's opinion of cost. Mitigation measures needed during construction will be included in the construction contract documents.

A. Short-Term Construction Related Mitigation

General Construction

Anticipated construction problems include high groundwater and areas of inferior pipe bedding and backfill soil material. These are normal occurrences with construction in the area. Planning and design will mitigate these issues and should not be a problem for qualified contractors.

Traffic

Short-term street closures and traffic rerouting is expected during construction. Any traffic disruptions that occur due to construction related activities will be organized and controlled to minimize disruption to local, transient, and emergency traffic. All needed barriers and signing or flagging will be in accordance with City, County and Michigan Department of Transportation (MDOT) standards.

Safety

All work shall comply with Federal, State and local laws governing activities, safeguards, devices and protective equipment. Minimum requirements are defined by the U.S. Department of Labor and the Michigan Occupational Safety and Health Act.

Dust and Noise

Construction dust and noise will be required to be kept to a minimum. No on-site burning will be allowed. Water will be used to control fugitive dust.

Erosion

A Soil Erosion and Sedimentation Control Permit will be required for the project. Site specific mitigation measures will be addressed during design and included in the construction contract documents.

Restoration

Damaged roadway, curbing, driveway, and sidewalk surfaces will be restored to equal or better condition, in accordance with modern construction standards. Undeveloped areas will be restored with topsoil, fertilizer, mulch and seed or sod as needed.

Utilities

Disruptions of utility services during construction will be kept to the minimum necessary to complete the project. In the event proposed utility upgrades will disrupt service for a long duration, temporary service lines will be required. It is expected there will be minor disruptions when water services going to individual residential houses and businesses are replaced.

Valuable Features

This project is not expected to significantly impact valuable existing features such as mature vegetation. Areas of proposed construction are already fully developed.

Construction Spoils

Disposal of construction spoils in wetlands, floodplains, shorelines, or other sensitive areas will not be allowed. Any disposal of material will need to be permitted and disposed of at an approved location.

Permitting

Water permits will be required from the EGLE, along with a Soil Erosion and Sedimentation Control Permit from Delta County.

Endangered/Threatened Species

The project is not anticipated to impact endangered or threatened species.

Stream Crossings

The proposed work does not involve any stream crossings.

Wetlands

The project is not anticipated to impact wetland areas due to the use of directional drilling.

B. Mitigation of Long-Term Impacts

General Construction

No adverse long-term impacts are expected as a result of the proposed project.

Siting Decisions

All construction will take place in already developed street right-of-ways. Exact locations of utilities will be determined during project design.

Operational Impacts

The proposed project will not have an operational impact to the City's water distribution or water treatment systems. The project will be replacing old failing infrastructure.

C. Mitigation of Indirect Impacts

Master Plan and Zoning

Long range planning by the City identified the proposed project areas. These areas are all in previously developed areas and would have no effect on planning and zoning in the City. The work will not impact historical features, agricultural land or other natural features.

Ordinances

Local ordinances are in place regarding minimum building construction, operation standards and site erosion control. Wetlands, floodplains and other sensitive habitats are protected by State laws and permits.

Staging of Construction

Construction activities will be staged in a way to minimize disruption to local residences and businesses.

SECTION 7: PUBLIC PARTICIPATION

A. Public Meeting on Project Alternatives. Refer to Appendix B for Draft minutes and comments.

A public meeting was held at 6:00 p.m. on May 22, 2023 at Gladstone City Hall. Refer to Appendix F for Advertisement.

B. Adoption of the Project Plan

On May 22, 2023 the City of Gladstone passed a resolution for water which approves the Project Plan. Refer to Appendix C for the signed resolutions.

APPENDICES

APPENDIX A: COST ESTIMATES

ALTERNATIVE 2 Intake Relining

Engineer's Opinion of Cost

City of Gladstone Water Intake and Transmission Main **3/24/2023**

Item	Description	Unit	Qty.	Unit	Total
Water Intake Construction					
1	Mobilization (15%)	Lump Sum	1	$970,000.00	$970,000.00
2	24-inch Intake (Reline)	Foot	1,850	$2,500.00	$4,625,000.00
3	24-inch Gate Valve	Each	1	$30,000.00	$30,000.00
4	Zebra Mussle Chemical Control	Lump Sum	1	$45,000.00	$45,000.00
5	Raw Water Sample Line	Lump Sum	1	$25,000.00	$25,000.00
6	Intake Crib	Lump Sum	1	$135,000.00	$135,000.00
7	Clear Well Concrete Structure	Lump Sum	1	$240,000.00	$240,000.00
8	Clear Well Storage Building/Roof	Lump Sum	1	$65,000.00	$65,000.00
9	On-site Piping Changes	Lump Sum	1	$30,000.00	$30,000.00
10	Clear Well Electrical	Lump Sum	1	$15,000.00	$15,000.00
11	Marine Barge and Crane	Lump Sum	1	$1,200,000.00	$1,200,000.00
12	Restoration	Square Yard	1,500	$6.50	$9,750.00
13	Erosion Control	Lump Sum	1	$45,000.00	$45,000.00
				SUBTOTAL	**$7,434,750.00**
Transmission Main Construction					
14	Mobilization (10%)	Lump Sum	1	$46,000.00	$46,000.00
15	6-inch Ductile Iron Water Main	Foot	360	$75.00	$27,000.00
16	12-inch Ductile Iron Water Main	Foot	3,200	$115.00	$368,000.00
17	6-inch Gate Valve and Box	Each	2	$1,850.00	$3,700.00
18	12-inch Gate Valve and Box	Each	4	$3,500.00	$14,000.00
19	12-inch x 6-inch Reducer	Each	1	$550.00	$550.00
20	12-inch x 12-inch x 12-inch Tee	Each	1	$1,750.00	$1,750.00
21	6-inch x 6-inch x 6-inch Tee	Each	1	$1,250.00	$1,250.00
22	1-inch Corporation Stop	Each	11	$475.00	$5,225.00
23	1-inch Curb Stop and Box	Each	11	$750.00	$8,250.00
24	1-inch Type "K" Copper Water Service	Foot	385	$55.00	$21,175.00
25	12-inch Bend	Each	4	$1,400.00	$5,600.00
26	Connect to Existing 12-inch Water Main	Lump Sum	1	$2,200.00	$2,200.00
27	Connect to Existing Storage Tank	Lump Sum	1	$6,500.00	$6,500.00
28	Erosion Control Blanket	Square Yard	1,200	$8.50	$10,200.00
29	Special Backfill	Cubic Yard	500	$12.00	$6,000.00
30	Clearing and Grubbing	Acre	1.5	$14,000.00	$21,000.00
31	HMA Surface, Rem	Square Yard	6,100	$5.00	$30,500.00
32	HMA, 5EL	Ton	1,000	$140.00	$140,000.00
33	Aggregate Base, 8-inch	Square Yard	6,100	$14.00	$85,400.00
34	Restoration	Lump Sum	1	$30,000.00	$30,000.00
				SUBTOTAL	**$834,300.00**

Total Construction	$8,269,050.00
Contingency	$827,000.00
Legal/Admin	$124,100.00
Engineering	$992,300.00
TOTAL	**$10,212,450.00**

ALTERNATIVE 3 New Intake

Engineer's Opinion of Cost

City of Gladstone Water Intake and Transmission Main **3/21/2023**

Item	Description	Unit	Qty.	Unit	Total
Water Intake Construction					
1	Mobilization (15%)	Lump Sum	1	$729,000.00	$729,000.00
2	24-inch HDPE Intake (Directionally Drilled)	Foot	1,850	$1,630.00	$3,015,500.00
3	24-inch Gate Valve	Each	1	$30,000.00	$30,000.00
4	Zebra Mussle Chemical Control	Lump Sum	1	$45,000.00	$45,000.00
5	Raw Water Sample Line	Lump Sum	1	$25,000.00	$25,000.00
6	Intake Crib	Lump Sum	1	$135,000.00	$135,000.00
7	Clear Well Concrete Structure	Lump Sum	1	$240,000.00	$240,000.00
8	Clear Well Storage Building/Roof	Lump Sum	1	$65,000.00	$65,000.00
9	On-site Piping Changes	Lump Sum	1	$30,000.00	$30,000.00
10	Clear Well Electrical	Lump Sum	1	$15,000.00	$15,000.00
11	Marine Barge and Crane	Lump Sum	1	$1,200,000.00	$1,200,000.00
12	Restoration	Square Yard	1,500	$6.50	$9,750.00
13	Erosion Control	Lump Sum	1	$45,000.00	$45,000.00
				SUBTOTAL	**$5,584,250.00**
Transmission Main Construction					
14	Mobilization (10%)	Lump Sum	1	$46,000.00	$46,000.00
15	6-inch Ductile Iron Water Main	Foot	360	$75.00	$27,000.00
16	12-inch Ductile Iron Water Main	Foot	3,200	$115.00	$368,000.00
17	6-inch Gate Valve and Box	Each	2	$1,850.00	$3,700.00
18	12-inch Gate Valve and Box	Each	4	$3,500.00	$14,000.00
19	12-inch x 6-inch Reducer	Each	1	$550.00	$550.00
20	12-inch x 12-inch x 12-inch Tee	Each	1	$1,750.00	$1,750.00
21	6-inch x 6-inch x 6-inch Tee	Each	1	$1,250.00	$1,250.00
22	1-inch Corporation Stop	Each	11	$475.00	$5,225.00
23	1-inch Curb Stop and Box	Each	11	$750.00	$8,250.00
24	1-inch Type "K" Copper Water Service	Foot	385	$55.00	$21,175.00
25	12-inch Bend	Each	4	$1,400.00	$5,600.00
26	Connect to Existing 12-inch Water Main	Lump Sum	1	$2,200.00	$2,200.00
27	Connect to Existing Storage Tank	Lump Sum	1	$6,500.00	$6,500.00
28	Erosion Control Blanket	Square Yard	1,200	$8.50	$10,200.00
29	Special Backfill	Cubic Yard	500	$12.00	$6,000.00
30	Clearing and Grubbing	Acre	1.5	$14,000.00	$21,000.00
31	HMA Surface, Rem	Square Yard	6,100	$5.00	$30,500.00
32	HMA, 5EL	Ton	1,000	$140.00	$140,000.00
33	Aggregate Base, 8-inch	Square Yard	6,100	$14.00	$85,400.00
34	Restoration	Lump Sum	1	$30,000.00	$30,000.00
				SUBTOTAL	**$834,300.00**

Total Construction	$6,418,550.00
Contingency	$641,900.00
Legal/Admin	$96,300.00
Engineering	$770,300.00
TOTAL	**$7,927,050.00**

APPENDIX B: PUBLIC PARTICIPATION

APPENDIX C: PROJECT PLAN RESOLUTIONS

A RESOLUTION ADOPTING A FINAL PROJECT PLANNING DOCUMENT FOR WATER SYSTEM IMPROVEMENTS AND DESIGNATING AN AUTHORIZED PROJECT REPRESENTATIVE

WHEREAS, the City of Gladstone, Michigan recognizes the need to make improvements to its existing water treatment and distribution system; and

WHEREAS, the City of Gladstone, Michigan authorized Coleman Engineering Company to prepare a Project Planning Document, which recommends the construction of water distribution system replacement and lead service line replacement in designated areas; and

WHEREAS, said Project Planning Document was presented at a Public Hearing held on May 22, 2023 at 6:00 P.M. and all public comments have been considered and addressed;

NOW THEREFORE BE IT RESOLVED, that the City of Gladstone, Michigan formally adopts said Project Planning Document and agrees to implement the selected alternative (Alternative 3).

BE IT FURTHER RESOLVED, that the City Manager, a position currently held by Eric Buckman, is designated as the authorized representative for all activities associated with the project referenced above, including the submittal of said Project Planning Document as the first step in applying to the State of Michigan for a Drinking Water State Revolving Fund Loan to assist in the implementation of the selected alternative.

Yeas:

Nays:

Abstain:

Absent:

I certify that the above Resolution was adopted by the Gladstone City Council on May 22, 2023.

BY: _____

Name and Title *(please print or type)*

_____

Signature Date

APPENDIX D: PROJECT PLAN SUBMITTAL FORMS

APPENDIX E: INTENT TO APPLY FORM

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
FINANCE DIVISION
CLEAN WATER AND DRINKING WATER STATE REVOLVING FUND/
STRATEGIC WATER QUALITY INITIATIVES FUND

INTENT TO APPLY FORM

This form should be submitted by all applicants seeking funding in the next five years. Applicants participating in the ITA process receive early indication of the funding outlook for their project(s).

DATE: October 27, 2022

PROJECT(S) NAME (Brief Identifier): City of Gladstone Water Intake Replacement Project

PROJECT(S) PURPOSE (Including general location and public health or water quality issue being addressed): Replacement of the City's existing 1924-24" wood stave water intake line and intake crib. Construction of 3,200 feet of 12-inch water transmission main to the City's storage tank to provide a redundant water supply line to the city water tank.

Applicant Legal Name: City of Gladstone

Applicant Contact Name: Eric Buckman Title: City Manager

Mailing Address (street, city, state, zip+4): 1100 Delta Avenue, Gladstone, MI 49837

Phone No.: 906-428-3181 Email: ebuckman@gladstonemi.org

Consulting Engineer Name* (if applicable): Scott Nowack Firm: Coleman Engineering Company

Mailing Address (street, city, state, zip+4): 635 Circle Drive, Iron Mountain, MI 49801

Phone No.: 906-774-3440 Email: snowack@coleman-engineering.com

PROJECT INFORMATION

Applicant Population: 5,248 Population Served by Project: 5,248

Treatment Facility Name (if applicable):

Estimated Total Project Cost: $6,200,000

Year 1 Costs $6,200,000	Estimated Year 1 Costs Financed Through SRF: $6,200,000
Future Year Costs (if applicable): $0	Estimated Future Costs Financed Through SRF: $0

Other Funding Sources (check all that apply): ☐MDOT ☐MEDC ☐USDA Rural Development
☐Other Financing/Funding Agency: Click here to enter text.

Proposed Construction Start Date (mm/yyyy): 06/2024

Completed Project-Related Planning Documents (check all that apply; do not need to submit at this time):
☒Capital Improvements Plan ☒Asset Management Plan ☐Preliminary Engineering Report
☐Environmental Report ☐Project Plan ☐Infiltration & Inflow Study ☐Sanitary Sewer Evaluation Study
☐NASSCO Report ☐Watershed Management Plan ☐Master Plan ☒Reliability Study ☐Other:

ADDITIONAL INFORMATION

Disadvantaged Community (as determined by EGLE)? ☐Yes ☐No ☒Unknown

For a preliminary determination from EGLE, complete and attach the Disadvantaged Community Status Determination Worksheet.

Does the proposed project include any green infrastructure, water or energy efficiency improvements, or other environmentally innovative activities? ☐Yes ☐No ☒Unknown

If yes, please describe:

Deadlines: The ITA form may be submitted at any time, but is due on or before November 1, to allow for sufficient time for the pre-application meeting and to be placed on the DWSRF or CWSRF/SWQIF Project Priority List (PPL). **Please note:** Applicants for CWSRF funding must use a Qualifications-based Selection (QBS) process to select and hire an architectural and engineering firm in order for those costs to be eligible for CWSRF funding. This includes planning, design engineering and construction engineering services.

Pre-Application Meeting: The applicant will be contacted by an assigned Water Infrastructure Financing Section (WIFS) project manager within 14 days of receipt of this ITA form to schedule a pre-application discussion. This meeting can help to identify project funding opportunities and challenges earlier in the planning stage to better guide the efforts of the applicant and their consulting engineer. Suggested attendees would include the WIFS project manager, EGLE district engineer, applicant representative(s), and any other applicable attendees.

Questions: Please visit our website at Michigan.gov/CWSRF or Michigan.gov/DWSRF or call 517-284-5433.

Please submit this form by email to EGLE-WIFS@Michigan.gov.

APPENDIX F: PUBLIC HEARING ADVERTISEMENT

NOTICE OF PROJECT PLAN PUBLIC HEARING

The City of Gladstone will hold a public hearing on the proposed City of Gladstone Drinking Water State Revolving Fund Utility Project for the purpose of receiving comments from interested persons.

The hearing will be held at 6:00 p.m. on May 22, 2023 at the following location:

Gladstone City Hall
1100 Delta Avenue
Gladstone, MI 49837

The purpose of the proposed project is to replace the aged raw water intake, water main and water service lines. Project construction will involve the replacement of street surface, curbs, gutters, sidewalk, and water main within the project areas. A map of the project area is included as part of the Project Plan and is available for review.

Impacts of the proposed project include short-term roadway closures, water service interruptions and long-term improvement to the water quality in the City of Gladstone.

The estimated cost to users for the proposed project will come in the form of a water user rate increase with the exact amount of the increase determined by future funding arrangements.

Copies of the plan detailing the proposed project are available for inspection at the following location(s):

City of Gladstone
1100 Delta Avenue
Gladstone, MI 49837

Written comments received before the hearing record is closed on May 22, 2023 will receive responses in the final project plan. Written comments should be sent to:

Ms. Kim Berry, City Clerk
City of Gladstone
1100 Delta Avenue
Gladstone, MI 49837

APPENDIX G: OVERBURDENED COMMUNITY STATUS WORKSHEETS

EGLE

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

OVERBURDENED AND SIGNIFICANTLY OVERBURDENED COMMUNITY STATUS DETERMINATION WORKSHEET

The following data is required from each State Revolving Fund (SRF) applicant requesting a determination for overburdened and significantly overburdened community status.

The most recent census and tax data are available in a searchable table on EGLE's State Revolving Fund – Overburdened Community Definition and Scoring Criteria Development webpage along with an excel worksheet to help determine blended Median Annual Household Income (MAHI) and blended taxable value per capita for regional systems. The MAHI and taxable value per capita table will be used to make all FY24 determinations. Applicants are encouraged to visit this page prior to completing this form to see if they qualify based on MAHI (blended MAHI if applicable) or taxable value per capita (blended taxable value per capita if applicable) alone. If so, they only need to fill out lines 1 and 2 of this form, electronically sign it on page 2, and submit.

Alternately, **if the applicant's MAHI or blended MAHI is above the state average - $63,498 for FY24 – they cannot be determined as being overburdened or significantly overburdened for FY24 funding and should not complete or turn in this form.**

For applicants whose MAHI or blended MAHI is below $63,498 but do not automatically qualify based on MAHI or taxable value per capita alone, please complete the entire form and return to:

Mark Conradi
conradim@michigan.gov

Name of Applicant

City of Gladstone

Please check the box indicating which funding source this determination is for:

DWSRF ☑

CWSRF ☐

1. Is this a regional system? A regional system refers to any system that serves more than one municipality (cities, townships, and/or villages)

   Yes ☑
   No ☐

   If yes, refer to the instructions at the end of this form to complete calculations for a blended MAHI and blended taxable value per capita. Additionally, page 3 of this form will also need to be completed.

2. Median Annual Household Income from table on the overburdened webpage (blended if applicable)

   $54,542

3. Taxable Value Per Capita from table on the overburdened webpage (blended if applicable)

   $22,667

4. Total amount of anticipated debt for the proposed project (amount of loan requested for FY24 loan)

5. Annual payments on the existing debt for the system

6. Total operation, maintenance, and replacement expenses (OM&R) for the system on an annual basis

7. Number of residential equivalent users (REUs) in the system

***I (** Rob Spreitzer **) hereby certify that the information in this form is complete, true, and correct to the best of my knowledge.**

Signature

03-03-2023
Date

For determinations made using anticipated debt, a final determination will be made based upon the awarded loan amount and not the anticipated amount provided on this form.

Regional System Breakdown (If applicable)

Name of municipality	Percentage of flow
City of Gladstone	99.86%
Name of municipality	Percentage of flow
Escanaba Township	0.14%
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow
Name of municipality	Percentage of flow

If more spaces are needed, please include them in the email along with this submission. Percentages of flow must add up to 100%.

Regional Systems - Blended MAHI and TVPC Calculations					
Name of Municipality	**Percentage of Flow (Total must = 100)**	**Taxable Value Per Capita (TVPC)**	**Median Annual Household Income (MAHI)**	**TVPC Percentage (automatically calculated)**	**MAHI Percentage (Automatically calculated)**
City of Gladstone	99.86%	$22,635	$54,528	$22,603	$54,452
Escanaba Township	0.14%	$45,411	$64,375	$64	$90
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
				$0	$0
Total	**100%**			**Blended TVPC**	**Blended MAHI**
				$22,667	**$54,542**

Instructions for Regional Systems (single municipality systems skip this tab and click the "Overburdened calculations" tab at the bottom of this page)

For blended taxable value per capita and blended MAHIs use the searchable chart on EGLE's Overburdened Community Definition and Scoring Criteria website. The chart is titled, "Fiscal Year 2024 Overburdened Median Annual Household Income (MAHI) and Taxable Values List For SRF Projects; the State of Michigan MAHI is $63,498 for FY24 Projects." Clicking the + sign next to the title will open the table and a search box will appear at the top right of the table.

-Fill in the municipalities that make up the regional system in Column A
-Enter the percentage of flow each municipality contributes to the system in column B. The total in cell B18 must equal 100%
-Use the search function to find the municipality's taxable value per capita on the Overburdened website listed above and enter it in column C
-Use the search function to find the municipality's MAHI on the Overburdened website listed above and enter it in column D

The sheet will calculate the blended TVPC for the regional system in cell E19 and blended MAHI in cell F19. Click the "Overburdened calculations" tab below to complete the calculations. The blended TVPC and blended MAHI numbers will be automatically filled in.

Overburdened and Significantly Overburdened Calculation Worksheet

2. Median Annual Household Income (blended if necessary)	$54,542	**City of Gladstone**	
3. Taxable Value Per Capita (blended if necessary)	$22,667		
4. Amount of anicipated debt - FY24 SRF loan only			
Terms	20		
Rate	2.75%		
New Annual debt from SRF loan	$0		
5. Annual Payments on existing debt			
6. Total OM&R			
7. Number of REUs			
Total Annual Cost	$0		
Annual User Cost	$0		
MAHI Threshold $ amount	**$545**		
			Result
125% of Federal Poverty MAHI	$37,500	**Significantly Overburdened**	NO
Lowest 10% TVPC	$15,170	**Significantly Overburdened**	NO
Lowest 20% TVPC	$22,920	**Overburdened without calculation needed**	YES
Michigan MAHI	$63,498	**Overburdened with calculation**	NO

Instructions

This calculation template is designed to be used in conjunction with the "Overburdened and Significantly Overburdened Community Status Determination Worksheet" which must be completed and submitted to conradim@michigan.gov for any FY24 SRF project wanting an overburdened determination. Once that form has been completed this calculation template will allow the applicant to get a preliminary idea of whether they qualify for overburdened or significantly overburdened status. Unlike the status determination worksheet, this calculation template is not required to be completed but is recommended. The results of this preliminary calculation do not guarantee any final determinations. Final determinations will be made by EGLE.

Only fill in the cells that are highlighted in grey: cells B2, B4, B6, B11, B13, and B15. These cells are titled and numbered to directly correlate to the questions and numbers in the completed Overburdened and Significantly Overburdened Community Status Determination worksheet.

There are three ways an applicant can automatically qualify as overburdened or significantly overburdened:
-If they have a MAHI or blended MAHI below 125% of the federal poverty MAHI (Row 23)
-If they have a TVPC in the lowest 10% of the state (Row 25)
-If they have a TVPC in the lowest 20% of the state (Row 27)

These calculations are completed once cells B2 and B4 are entered, and the results are shown as a red "no" or a green "yes" in cells E23, E25, and E27. If any of these results in a green "YES" the applicant is automatically qualified* as overburdened or significantly overburdened and does not need to enter any cost data (*provided the numbers entered into B2 and B4 are accurate and followed the rules outlined in the Status Determination Worksheet).

The final way an applicant can be determined overburdened is if their MAHI falls below the state average of $63,498 AND their annual user costs are greater than 1% of their MAHI or blended MAHI. If the MAHI or blended MAHI is greater than $63,498, an applicant cannot be eligible for overburdened status, should not complete or send in an application, and a red "Do Not Qualify" will show up in cell B20. For applicants under $63,498 fill in cells B6, B11, B13, and B15 using the corresponding data from the completed Status Determination Worksheet. If the calculations turn out to be greater than 1% cell E29 will turn green and read "YES." If any of the results in E23, E25, E27, or E29 result in a "YES", the applicant preliminarily qualifies as overburdened or significantly overburdened.

*Regional Systems

First complete the tab on the bottom left of this sheet titled, "Blended MAHI and TVPC calcs". Once completed, cells B2 and B4 will automatically populate with the completed calculations. If they do not, enter the blended MAHI in cell B2 and the blended TVPC in cell B4.

Municipality Name:		Gladstone			
	WATER				
Meter Size	Residential Meter Equivalents	Number of Meters	Calculated REU's	Escanaba Township Number of Meters	Escanaba Township Calculated REU's
5/8"	1.00	2089	2089	1	1
3/4"	1.00		0		
1"	2.50	115	288	1	2.5
1-1/2"	5.00	14	70		
2"	8.00	9	72		
3" Disp.	9.00	2	18		
3" CMPD	16.00		0		
4" CMPD	25.00	1	25		
4" Turb.	30.00		0		
6" CMPD	50.00		0		
6"Turb.	62.50		0		
8" CMPD	80.00		0		
10"CMPD	115.00		0		
		2230	**2562**	Meter Based	4
			2615	Flow Based	
			99.86%	City	
			0.14%	Township	