Project Planning Document

Wastewater System Improvements

Prepared for

City of Bronson

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2220860

Prein&Newhof

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EXECUTIVE SUMMARY

The City of Bronson is a community located on US-12, just a short drive from the Indiana border. The City owns and operates a public wastewater system that serves an estimated population of 2,345 people. The wastewater system is under an Administrative Consent Order and facing challenges from aging infrastructure. By completing a Corrective Action Plan, Wastewater System Evaluation, and System Flow Analysis, the City has identified and prioritized the following groups of projects:

a. Collection System Improvements
b. Lift Station Improvements
c. Wastewater Treatment Plant Improvements

The purpose of the project planning document is to discuss the projects and their environmental, historical, societal, and system effects. The project planning document is prepared on behalf of the City for the purpose of obtaining a Clean Water State Revolving Fund loan from the State of Michigan Department of Environment, Great Lakes, and Energy for the construction of improvements to the City's wastewater system.

1 PROJECT BACKGROUND

This Project Planning Document (PPD) is prepared on behalf of the City of Bronson (hereinafter referred to as the City), in Branch County, Michigan, for the purpose of obtaining a Clean Water State Revolving Fund (CWSRF) loan from the State of Michigan for the construction of improvements to the City's wastewater infrastructure. CWSRF is a low interest loan financing program that assists qualified local municipalities with the construction of needed water pollution control facilities.

The City's collection system includes approximately 66,600 lineal feet of gravity trunk sewer pipes, 890 lineal feet of force main, 2 lift stations, and 253 manholes. The Wastewater Treatment Plant (WWTP) generally consists of influent screening, grit removal, an oxidation ditch, secondary clarification, ultraviolet (UV) disinfection, and biosolids handling.

The improvements proposed in this PPD are based on recent condition assessments and financial planning documents including:

- Wastewater Corrective Action Plan, November 2022 (CAP, Appendix A).
- Administrative Consent Order: Flow Study – Wastewater Collection System Capacity Assessment and Inflow/Infiltration Analysis, July 2022 (ACO, Appendix B).
- Hydrogeological Report, May 2021.
- Wastewater System Evaluation, April 2021 (WSE, Appendix C).
- Sewer Flow Study – Wastewater Collection System Capacity Assessment and Inflow/Infiltration Analysis, April 2021 (Appendix D).
- Wastewater Treatment Plant Capacity Analysis, April 2021 (Appendix E).
- Smoke Testing Report, July 2019.

The recommended improvements will help make infrastructure more efficient, reduce the chance of wastewater asset failure, and protect water quality in the area. The proposed projects are aimed to address critical points in the collection and treatment systems that have high maintenance and operational cost or high potential for failure.

This report presents a comprehensive plan and evaluation of alternatives for improving the existing wastewater infrastructure. The evaluation includes an analysis of cost, technical feasibility, and environmental impacts for the proposed projects over the next 20 years.

1.1 Study Area Characteristics

1.1.1 Delineation of Study Area

The study area is equivalent to the City's wastewater system service area shown in Figure 1. The service area is fully within the City boundaries. The proposed projects will be conducted on infrastructure owned and operated by the City. The WWTP is located at 408 Mill Street, Bronson, MI 49028 in Section 11, Township 7 South, Range 8 West.

Proposed project areas are displayed in Figure 2. The proposed projects will not result in significant changes to the service area within the next 20 years.

1.1.2 Land Use

The current City zoning map is included in Appendix F. The existing land use in the project area is largely residential with a handful of businesses along Chicago Street and industrial areas on the north side of the City. No changes to the zoning or land use are anticipated.

1.1.3 Population Data

There are currently 1021.5 Equivalent Dwelling Units (EDUs) in the City. Population projections through 2045 have been developed by Southcentral Michigan Planning Council and are shown in Table 1. The population of the City is projected to increase by about 0.04% annually from 2020 to 2045. Seasonal flow changes are not anticipated to occur.

1.1.4 Environmental Evaluation

PPD preparation requires an equivalency applicant to make contact with several organizations to determine if there will be cultural or natural environmental impact due to the proposed construction activities. Since this project is not pursuing equivalency at this time, correspondence to these cultural and environmental agencies – indicating the location and scope of the proposed work activities – was not completed. Should the project be funded and selected for equivalency, these contacts will be made at a future date.

The proposed collection system projects will be conducted within infrastructure owned and operated by the City. The improvement projects are confined to existing developed rights-of-way and City-owned properties and/or easements. The proposed wastewater treatment projects will occur in areas with existing infrastructure and on land previously

developed around 1958. The proposed projects will not impact known environmental resources, cultural and historic resources, air quality, coastal zones, floodplains, natural or wild and scenic rivers, major surface waters, topography, geology, or agricultural resources. In addition, disturbed areas will be restored to their pre-construction condition. Therefore, no disruptions to the natural environment or cultural resources are expected.

1.1.4.1 Soil Types

No undisturbed soil will be affected by the proposed projects. The natural soils in the study area are dominated by loamy soils underlain by sand and gravel. A National Resources Conservation Service (NRCS) Soil Survey is included in Appendix G.

1.1.4.2 Fauna and Flora

It is not likely that state threatened or endangered species will be impacted by this project due to the project being located in developed land and road right-of-ways. The project will not reduce or permanently impact habitat for endangered species.

The following species were identified in the Information for Planning and Consultation (IPaC) report (Appendix H): Indiana Bat, Northern Long-eared Bat, Tricolored Bat, Copperbelly Water Snake, Eastern Massasauga, Mitchell's Satyr Butterfly, and Monarch Butterfly.

As tree removal is not anticipated, there are no anticipated effects to the Indiana Bat, the Northern Long-eared Bat, or the Tricolored Bat which generally roost underneath bark, in cavities, or in crevices of both live and dead trees.

The Copperbelly Water Snake and Eastern Massasauga Rattlesnake are strongly associated with wetlands across most of their ranges, specifically wet prairies, bogs and swamps. There are no wetlands within or near the project areas, so there are no anticipated effects to this species.

The Mitchell's Satyr Butterfly and the Monarch Butterfly has generally been affected by habitat destruction and/or conversion. The Mitchell's Satyr Butterfly is restricted to rare wetlands called fens, which are low nutrient wetlands that receive carbonate-rich ground water from seeps and springs. The southern populations are typically associated with beaver-influenced wetlands that are sedge dominated, and occasionally semi-open

riparian or floodplain forest areas. Whether it's a field, roadside area, open area, wet area or urban garden, milkweed and flowering plants are needed for the Monarch Butterfly habitat. Adult Monarch Butterflies feed on the nectar of many flowers during breeding and migration, but they can only lay eggs on milkweed plants. The proposed projects will be within the road rights-of-way which consist of manicured lawns beyond the road section or sidewalks, so there are no anticipated effects to this species. The US Fish and Wildlife Service was not contacted, since there is no anticipated habitat removal within the project areas.

1.1.4.3 Contaminated Sites

There is no known contamination on the WWTP site, but there are a few contamination sites within the service area of the City.

Michigan's Environmental Mapper program by EGLE was reviewed. Some sites of contamination are located within the proposed project areas where excavation is anticipated, as presented in Appendix I and further discussed below. Additional contaminant review will be completed during detailed design.

A Part 201 site is near the intersection of W. Railroad Street and N. Douglas Street where proposed excavating work will be required for disconnecting the storm catch basin from the sanitary sewer. This site is located at the 505 N. Douglas Street and is owned by Borg Warner and Anastasia Hamel. This Part 201 site also has a Restrictive Covenant. There is limited information available for this Part 201 site, and no pollutants are listed. Pollutant information can be determined by reviewing EGLE's Part 201 file for this site or obtaining site specific soil or groundwater samples, if needed.

The sewer repair near W. Railroad Street and N. Matteson Street has two Part 201 sites, two closed Part 211 Underground Storage Tank (UST) sites, and one closed Part 213 Leaking Underground Storage Tank (LUST) site near the proposed excavation. These sites are located at the 606 N. Matteson Street and is owned by the City, 600 N. Matteson Street & 114 W. Railroad Street and is owned by Nobert Drust, and a vacant parcel on the south side of W. Railroad Street that is owned by Michigan Land Bank/Fast Track Auto. Restrictive Covenants are recorded for 606 N. Mattson Street on the east side of N. Matteson Street and this land is owned by the City. These sites will also

require additional review during detailed design to obtain information to determine the potential environmental impact on the proposed project.

1.2 Existing Facilities

As part of the Stormwater, Asset Management, and Wastewater (SAW) Grant, Prein&Newhof inventoried and assessed the condition of the sewers, manholes, lift stations, and WWTP within the City's wastewater collection system. A summary of the inventory and condition assessments for the existing facilities can be found in the WSE in Appendix C. Typical flows are found in Table 2.

1.2.1 Stormwater System

The City owns, operates, and maintains the stormwater system within the proposed project areas. There are 5 catch basins that will be disconnected from the sanitary system as part of the proposed projects. Stormwater infrastructure that is incidentally impacted by the proposed projects will be replaced in-kind.

1.2.2 Climate Resiliency

The City faces challenges with climate resilience. The existing wastewater system exceeds design capacity during wet weather flows. As flooding risk and intensity of storm events increases, the need to address inflow and infiltration (I/I) in the City is critical.

1.3 Summary of Project Need

As described in the previous sections, a detailed inventory and condition assessment of the collection system and WWTP was recently performed and documented in the 2021 WSE (Appendix C). Results from the 2021 WWTP Capacity Analysis (Appendix E) and the 2021 Sewer Flow Study (Appendix D) were used in combination with the condition assessment results to develop the proposed project list. The projects described in this section were determined through the asset management process and represent the highest priority wastewater collection system needs.

1.3.1 Standards Compliance and Reliability

The WWTP faces challenges with flows above the designed treatment capacity. Usually the WWTP is in compliance with the National Pollutant Discharge Elimination System (NPDES) permit (Appendix J), based on the 2021 Capacity Analysis in Appendix E.

1.3.2 Orders of Enforcement Action

The City's system is under ACO 05505 with EGLE. To meet the ACO requirement, the City is applying for FY2024 CWSRF funding to address excessive I&I to meet the Remedial Design Standard (RDS), and ensuring that the expected average daily flow, maximum day flow, and peak hourly flow at the WWTP are consistent with the WWTP's Basis of Design. A copy of the ACO is included in Appendix B.

1.3.3 Wastewater Collection System

1.3.3.1 System-wide Sanitary Lining

Sanitary sewers that are structurally compromised were identified during the SAW closed-circuit television (CCTV) process. Structural reinforcement and repair is needed.

1.3.3.2 System-wide Sanitary Grouting

The City's system is experiencing significant increases in flows during wet weather events. Grouting of the collection system is needed to minimize I/I.

1.3.3.3 System-wide Manhole Work

The manholes are showing signs of age. They require lining, grouting, and casting replacement to maintain proper function.

1.3.3.4 Point Repairs

Some areas of the sewer have been identified as having an offset joint or broken pipe.

- Chicago Street Sanitary Point Repair
- W. Railroad Street Sanitary Point Repair
- Division Street Sanitary Point Repair

- Franklin Street Sanitary Point Repair

1.3.3.5 Utility Disconnection

Several storm catch basins have been noted as connecting to sanitary sewer. To minimize I/I, these catch basins need to be connected to storm sewer.

- 210 Industrial Avenue
- N. Douglas Street and Railroad Street

1.3.4 Lift Stations

1.3.4.1 Corey Street Lift Station and Force Main

Corey Street Lift station was constructed in 1968 and is generally in fair to poor condition. The pumps and can structure are corroding, and there are signs of leaks at the check valve shafts and force main wall penetration. There are possible signs of infiltration in the wet well. The steps are corroding, and there is concrete failure and exposed rebar at the lateral penetration. The cathodic protection of the can structure is inoperative, and there are signs that the exterior may be corroding. The main control panel is corroding and showing signs of electrical damage. The heater is out of operation.

The force main of Corey Street Lift Station is cast iron from 1968. The force main is expected to be at the end of its useful life, based on material and age. Lift station details are found in Table 3.

1.3.4.2 Walker Street Lift Station and Force Main

Walker Lift Station was constructed in 1957. The City has done their best to maintain it by rehabilitating it several times since; however, the station is generally in poor condition. Both pumps tend to shear their shafts and most of the equipment is corroding. The force main was leaking near the ceiling penetration during the time of the condition assessment. The isolation valves are difficult to actuate, and Pump No. 2 suction valve has no handwheel. The wet well casting is corroding, the dry well coating is failing, and the structure tends to accumulate rags and debris. The wet well and dry well are located below Walker Street while the controls are located along the curb, making entrance into

either structure or operation of the control panel unsafe. The control panel is corroding and no longer structurally supported.

The force main of Walker Street Lift Station is cast iron from 1956. Operators have expressed concern whether the force main is operating properly. Lift Station details are found in Table 3.

1.3.5 Wastewater Treatment System

1.3.5.1 WWTP Headworks Improvements

The influent wet well and pumps are undersized for current flows, there is no automatic screening in place, the existing grit removal system is functionally obsolete, and the heating, ventilation, and air conditioning (HVAC) system in the Grit Room is not working properly. The WWTP flow diagram is found in Figure 3.

1.3.5.2 WWTP UV Disinfection System

The UV disinfection system is manually adjusted for dose. The equipment is obsolete, and it is difficult to obtain spare parts. Replacement is anticipated due to the condition of the existing equipment.

1.3.5.3 WWTP RAS & WAS

The existing pumps are performing at 50% of their design capacity and have been rebuilt multiple times. The associated valves, flowmeters, VFDs, and bypass contactors are aging. Replacement is anticipated due to the condition of the existing equipment.

1.3.5.4 WWTP SCADA System

A supervisory control and data acquisition (SCADA) system will allow the WWTP equipment to operate efficiently as peak flows are reduced due to I/I removal efforts in the collection system. It is also expected that the increased automation capabilities would be leveraged to address operational challenges at the oxidation ditch during wet weather by maintaining biomass via real time adjustment of RAS pumping and chemical dosage rates.

1.3.5.5 WWTP PFAS Sludge Disposal

In 2021, sludge was sampled and tested for Per- and Poly- Fluoroalkyl Substances (PFAS) compounds. The results indicated the presence of PFOS at levels which required additional response activities to continue land application. Instead, dewatering bags were purchased and installed on an impermeable geomembrane liner at the WWTP. The PFAS-laden sludge was transferred into the dewatering bags and is currently stored on-site. Sludge disposal at a qualified landfill is anticipated to address the environmental risks and challenges associated with holding the sludge in temporary storage on-site.

1.3.5.6 WWTP Recirculation Pump Station

Two of the three recirculation pumps are no longer functioning. To ensure redundancy at this pump station, the pumps must be replaced. The recirculation flow meter was removed and replaced with an uncoated pipe. There is corrosion of the discharge piping.

1.3.5.7 WWTP Ferric Chloride Feed

The ferric chloride feed system was installed in 1974, and the pipes have passed their expected useful life. The exterior of the storage tank, the concrete spill containment area of feed pumps, and metal supports of the feed pumps are experiencing major corrosion.

1.3.5.8 WWTP Buildings and Facilities Improvements

- Administrative Building Electrical Improvements

  The low-voltage step down transformers and panelboards are original from the 1950's and have passed their expected useful life.

- Administrative Building Meter/Backflow Replacement

  The water meter and backflow preventer needs replacement.

- Lab Improvements

  The interior of the lab and sample room is showing signs of wear. The plumbing within the lab is in poor condition and the lab hood fan does not work.

- Grit Room Ventilation

  The ventilation in the grit room is not operational.

- Chemical Room Ventilation

  The ventilation in the chemical room is not operational.

- Chemical Room Water Heater and Tepid Valve

  The water heater and tepid water valve need replacement.

- Administrative Building Basement Level/Sludge Room Heat Exchanger

  There is a steam boiler in the Sludge Room of the Administration Building that appears to provide steam heat. It is in poor condition.

- Site SE Rated MTS/Portable Power Connection

  The main service manual transfer switch (MTS) does not meet code.

- WWTP Building Lighting Improvements

  Lighting fixtures are aging and not energy efficient.

- WWTP Building Envelope Improvements

  Signs of age and wear are clearly visible on the exterior of the Administration Building, Process Control Building, and Maintenance Building.

1.3.6 Future Environment without Proposed Projects

Without the construction of the proposed projects, the water quality in the area could be degraded or severely harmed. Public health could also be impacted by the escape of untreated wastewater.

1.3.7 Water Quality Problems

Without the construction of the proposed projects, the water quality of groundwater, local streams, creeks and rivers, and the buildings served by the wastewater system could be degraded or severely harmed.

1.3.7.1 On-site PFAS Storage

The WWTP has measurable concentrations of PFAS in the waste stream. Part of the proposed project will include removal and proper disposal of PFAS sludge to avoid accidental contamination.

1.3.7.2 Technical Considerations

The City is facing I/I challenges, which are discussed in the Sewer Flow Study and ACO. I/I has resulted in a capacity problem at the WWTP and an ACO with EGLE. The wastewater system is aging and several areas are compromised, which are shown in the Infiltration Observation Map in Appendix C. Structural integrity problems were discovered during CCTV inspections and are discussed in the WSE.

1.3.8 Projected Needs for the Next 20 Years

The WWTP and wastewater collection system have various projected needs over the 20-year design period. The following projected needs relied on the 2021 WSE for the most recent condition assessment. The CAP in Appendix A catalogues the critical projected needs. 20-year flow projections can be found in Table 2.

2 ANALYSIS OF ALTERNATIVES

The following is an evaluation of alternatives to fulfill the project need as identified above. The analyses are grouped by project type for efficiency.

2.1 No Action

Due to the essential nature of the existing wastewater collection and treatment system, this alternative was not considered. The proposed gravity sewer, force main, lift station, and WWTP projects are necessary for continued service, reliability, and to comply with permit requirements and enforcement action under the ACO.

2.2 Optimum Performance of Existing Facilities

Optimizing the performance of existing facilities will not address capacity and infiltration issues. For many projects, existing equipment is no longer functional and cannot be cost effectively repaired. The City already has an Industrial Pretreatment Program (IPP). Therefore, this option was not considered further.

2.3 Regionalization

The issues within the system are not regional issues, they are City of Bronson specific issues. The project areas are located within the City limits. Regional alternatives would not be cost-

effective due to distance as the nearest municipality, the City of Coldwater, is about 10 miles away. Therefore, regional alternatives were not considered further.

2.4 Collection System Alternatives

2.4.1 Sewer Structural Repair

2.4.1.1 System-wide Sanitary Lining

Use a cured-in-place lining to systematically repair the sanitary system and resolve operations and maintenance (O&M) and structural issues.

2.4.1.2 Sewer Replacement

Replacement is a much more invasive and costly method since it requires restoration of road and right-of-way. This alternative was not considered further.

2.4.2 I/I Minimization

2.4.2.1 System-wide Sanitary Grouting

Use chemical grout to systematically repair the sanitary system and resolve infiltration issues.

2.4.2.2 Sewer Replacement

Replacement is a much more invasive and costly method since it requires restoration of road and right-of-way. This alternative was not considered further.

2.4.3 System-wide Manhole Work

2.4.3.1 Lining, Grouting, and Casting Replacement

Address manhole deficiencies identified during the SAW assessments.

2.4.3.2 Manhole Replacement

Replacement will require excavation within the street and traffic redirection. Materials for new structures and labor to connect to existing sanitary sewer are expensive. This alternative was not considered further.

2.4.4 Point Repairs

Excavate and replace wye/joint offsets prior to lining the sewer pipe.

2.4.5 Utility Disconnection

Disconnect storm basins from sanitary sewer.

2.5 Lift Station Alternatives

2.5.1 Corey Street Lift Station and Force Main

2.5.1.1 Rehabilitation

Equipment replacement within the Corey Lift Station will not address concerns about the structure, including infiltration and corrosion of the can and wet well. This alternative was not considered further.

2.5.1.2 Eliminate Lift Station

This alternative was not considered further due to the downstream sewer profile, length of gravity sewer to replace, and depth of excavation required for construction, which make this option cost-prohibitive.

2.5.1.3 Replacement

Replacement and relocation of the existing lift station and force main.

2.5.2 Walker Street Lift Station and Force Main

2.5.2.1 Rehabilitation

Equipment replacement within the Walker Lift Station will not address safety concerns with accessing the station. The wet well and dry well are beneath the road and the control panel is along the curb, making access unsafe. This alternative was not considered further.

2.5.2.2 Eliminate Lift Station

This alternative was not considered further due to the downstream sewer profile, length of gravity sewer to replace, and depth of excavation required for construction, which make this option cost-prohibitive.

2.5.2.3 Replacement

Replacement and relocation of the existing lift station and force main.

2.6 Wastewater Treatment Plant Alternatives

2.6.1 WWTP Headworks Improvements

2.6.1.1 Replacement

Construct a new Headworks to accommodate the peak instantaneous flow and alleviate surcharging of the upstream gravity sewer and furnish new mechanical screening and grit removal equipment.

2.6.1.2 Rehabilitation

Replacing individual equipment may be the least capital-intensive option initially but will result in a greater overall cost. Risk associated with bypass pumping, project coordination, and making equipment fit into existing infrastructure will increase project costs. This alternative was not considered further.

2.6.2 WWTP UV Disinfection System

2.6.2.1 UV Equipment Replacement

Replace the obsolete UV system with current technology to automatically adjust UV dosing and improve accessibility to spare parts.

2.6.2.2 Chlorine Disinfection

The WWTP could achieve the required disinfection through chemical addition. This alternative would present operator safety concerns and risks associated with procurement and storage of the selected chemical(s). System maintenance requirements would likely increase if this alternative were implemented. Due to these factors, this alternative was not considered further.

2.6.3 WWTP RAS & WAS

2.6.3.1 Rehabilitation

The existing activated sludge pumps have been rehabilitated several times. Continued rehabilitation of the pumps and valves would have a diminishing return on investment. There is not a rehabilitation option for the associated VFDs, bypass contactors, and flow meters. Therefore, this alternative was not considered further.

2.6.3.2 Replacement

Replace the activated sludge pumps and associated VFDs, bypass contactors, valves, and flow meters.

2.6.4 WWTP SCADA System

Upgrade the SCADA system based on programmable logic controllers and computer interface software to operate the WWTP more efficiently, flow-pace the RAS and chemical feed systems, and adjust to wet weather peaks in real-time.

2.6.5 WWTP PFAS Sludge Disposal

2.6.5.1 Landfill

Dispose PFAS-laden sludge in an approved landfill. This option would eliminate the additional requirements under the ACO associated with land application and resolve the environmental risks for the City.

2.6.5.2 On-site

Continuing on-site storage with improved containment does not resolve the environmental risks for the City.

2.6.6 WWTP Recirculation Pump Station

Install new pumps at the recirculation pump station.

2.6.7 WWTP Ferric Chloride Feed

Replace the bulk storage tank, containment structure, chemical feed pumps, and feed piping.

2.6.8 WWTP Buildings and Facilities Improvements

- Replace the main motor control center (MCC-A), the low-voltage step down transformers, and panel boards in the Administrative Building.
- Replace the water meter and backflow preventer in the Administrative Building.
- Renovate the laboratory and sample room including replacement of lab counters, metal cabinets, drop ceiling system, plumbing fixtures and piping, fume hood, and electrical outlets.
- Install a new make-up air and exhaust system in the Grit Room.
- Install a new ventilation system, new water heater, and tepid water valve in the Chemical Room.
- Replace the heat exchanger in the Administrative Building.
- Install a fused service disconnect at the utility transformer.
- Upgrade lighting fixtures in all buildings.
- Selective replacement of fascia, cleaning, repairs, and maintenance at all buildings.

2.7 Pipe Material Alternatives

2.7.1 Polyvinyl Chloride (PVC) Pipe

PVC is resistant to corrosion and more cost effective than ductile iron. Wyes and laterals can be installed easily and cost effectively, especially when there are many laterals. PVC will be the preferred material for most applications.

2.7.2 Ductile Iron Pipe

Ductile iron is less dependent on surrounding soils for its strength than plastic pipes, which is important in areas subject to surge or settling pressures.

2.7.3 Polyethylene Pipe

High Density Polyethylene (HDPE) pipe is commonly used for directional drilling.

2.8 Methods of Construction Alternatives

2.8.1 Open Cut

In the City, the traffic volumes are generally no excessive enough to warrant the more expensive trenchless technologies currently available. Open cut will be preferred for most applications.

2.8.2 Directional Drill

Directional drilling is frequently used for minimizing environmental impact in sensitive areas, such as river crossings.

2.8.3 Bore & Jack

Bore and jack is used when surface disruption needs to be minimized, such as when crossing under railroads or highways.

2.8.4 Pipe Burst

Pipe bursting is most effective when there are few lateral connections, which is not the case in the City.

2.9 Monetary Evaluation

Preliminary cost estimates for each project are included in Appendix K, developed using standard engineering practices. Each project is also assessed using a present worth analysis, included in Appendix L. The present worth analysis follows updated EGLE guidance for PPD Preparation. Factors that are included in the analysis are:

- Capital Costs
- Capitalized Interest Costs
- Operation, Maintenance, and Replacement (OM&R) Costs
- Energy Cost Savings
- Salvage Value of Capital
- Discount Rate Set by the US EPA

Several of the factors above are fixed known costs (Capital, Interest, and Salvage Value). Other factors are variable and are estimated based on best available data (OM&R and Energy Cost Savings). It is anticipated that the overall OM&R will be reduced due to the proposed projects. Estimates are used but actual costs will not be known until the work has been completed and real data is available.

Only CWSRF eligible costs are included in the present worth analysis. The cost estimates include costs associated with engineering, construction, and mitigation cost if necessary. Detailed information on project cost estimates is included in Appendix K.

2.10 Environmental Evaluation

The environmental impacts of each alternative were considered. The proposed project to dispose of PFAS contaminated sludge was evaluated to minimize the risk of proliferation into the environment. There were no other projects with significant environmental concerns that affected the choice of alternative.

3 SELECTED ALTERNATIVES

3.1 Description of the Selected Alternatives

A summary of the selected alternatives including brief descriptions is included in Table 4. The proposed projects with their design bases are also described in the CAP in Appendix A.

3.2 Useful Life

The City intends to pay back the CWSRF loan on a 30-year amortization schedule. PPD guidance requires that the loan terms must not exceed the useful life of the project.

The collection system improvements include lining and grouting of the gravity sewer, catch basin disconnects, and spot repairs. The weighted useful life of these projects is 50 years; therefore, the useful life exceeds the length of the loan terms.

The lift station improvements include the construction of two lift stations and force main. The weighted useful life of these projects is 42 years; therefore, the useful life exceeds the length of the loan terms.

The WWTP improvements includes the construction of a new Headworks Building and installation of various WWTP equipment. The weighted useful life of these projects is 33 years; therefore, the useful life exceeds the length of the loan terms.

3.3 Project Maps

An overall project map indicating the location of each of the projects is included in Figure 1.

3.4 Water and Energy Efficiency

Green Project Reserve is important when considering alternatives for WWTP processes. The SCADA System upgrades within Project No. 3 may be eligible for Green Project Reserve Funding. A Business Case is included in Appendix M.

Water and energy efficiency was considered during the evaluation of alternatives. Energy-efficient lights and HVAC systems were proposed for the WWTP.

3.5 Schedule for Design and Construction

The table below is a schedule for the proposed improvement projects. The City anticipates funding in the fourth quarter of fiscal year 2024.

CWSRF Projects (4th Quarter FY2024)
Proposed Project Schedule

Milestone	Date
Hold Public Meeting	April 10, 2023
Submit Final PPD to EGLE	May 1, 2023

The milestone table will be updated once the FY2024 schedule is published.

3.6 Users Costs

The cost estimates for the proposed wastewater system improvements are included in Appendix K. The City is planning on funding the FY2024 projects with an estimated $24,006,000 CWSRF loan at a 1.875% interest rate for a 30-year period. Appendix N contains the annual cost summary. The expected annual debt service based on the CWSRF 30-year loan criteria will be approximately $1,054,000 per year for the FY2024 projects. Grants or principal forgiveness that may be awarded as part of the CWSRF program will offset the cost. Without grants, the average

user cost of the future projects is estimated at $57.92 per month per EDU. The total number of EDUs served is 1,021.5 based on billing data. There are no additional special fees or assessments.

3.6.1 Cost Estimates

Appendix K contains cost estimates for the proposed wastewater system improvements.

The project cost estimates include the following:

- Construction costs including labor and materials.
- Approximately 10% for construction contingencies and 20-30% for legal, administrative, and project engineering costs.
- Allowance for dewatering and contaminated materials handling.
- Restoration of construction area disturbances.

In the event principal forgiveness is awarded for the proposed projects, it is expected that the cost to the City will decrease.

3.6.2 Overburdened Community

The City currently qualifies as a significantly overburdened community under the CWSRF program. The median annual household income (MAHI) was $41,476 and a Taxable Value Per Capita of $14,623 according to the most recent Census Bureau and tax data. Overburdened Community documentation is included in Appendix O.

3.7 Implementability

If CWSRF funding is received, the City will have the necessary legal, institutional, financial, and managerial resources available to ensure the construction, operation and maintenance of the proposed facilities. The proposed work will be carried out on City-owned infrastructure, so Joint Agreements are not required.

3.7.1 Financials

The City currently has an outstanding 1993 USDA Unlimited Tax General Obligation Bond for its sewer system. It has a balance of $242,000 with an annual payment of $33,100 in 2022 and $31,050 in 2025.

The current rate schedule for wastewater system users is $1.51 per 1000 gallons, and a monthly wastewater operations rate billed quarterly as follows:

Meter Size	***Rate***
¾"	$47.60
1"	$119.00
1 1/2"	$238.00
2"	$380.80
3"	$714.00
4"	$1,190.00
6"	$2,380.00

Connections to the City's wastewater collection system have a meter equivalent billed of 1021.5. The billable flow is approximately 37,281,000 gallons from metered customers and 3,607,340 gallons from un-metered customers (based on 47,465 gal/year per un-metered customer). The proposed project does not anticipate adding additional connections to the system. Based on these rates and customers, the yearly income generated is approximately $645,222.

Payments on CWSRF loans are expected to be covered through rate adjustments. Future rate determinations are in process and will be made after financial aid is awarded.

3.7.2 Summary

The following is a summary of the annual operation, maintenance, and reserve information for projected year 2025:

O&M	$489,900
Existing Debt	$31,050
New Debt	$1,054,000
Total	$1,427,550

3.7.3 Design/Permits

Projects will be submitted for necessary permits prior to required deadlines during the design phase. The required Part 41 construction permits will be obtained. Permit applications for soil erosion and sedimentation control (SESC) will be submitted.

4 EVALUATION OF ENVIRONMENTAL IMPACTS

4.1 Analysis of Impacts

4.1.1 Direct Impacts

The proposed projects are unlikely to affect water quality, air quality, wetlands, endangered species, or wild and scenic rivers. Projects are unlikely to affect historical, archaeological, geographic, cultural, or recreational areas, as construction activities will be confined to existing, currently developed areas and roadways.

4.1.1.1 Construction Impacts

The main direct impact of the proposed project will be noise and dust at the WWTP and in areas of the collection system. The use of energy and natural resources in construction is unavoidable. The potential for effects on habitat and stormwater will be avoided as much as possible during earthmoving work.

4.1.1.1.1 Dewatering

Dewatering activity is likely to occur at the WWTP during Headworks construction. It will also occur during Walker Street and Corey Street Lift Station construction. Some point repairs within the collection system may also require dewatering. Detailed dewatering plan and depth determinations will be completed during detailed design and submitted to EGLE via the water withdrawal assessment tool.

4.1.1.2 Operational Impacts

The replacement of equipment will be planned in such a way that wastewater service can be maintained without interim discharges. The proposed projects will not significantly affect plant aesthetics.

4.1.1.3 Social Impacts

The proposed projects are required by the ACO. If CWSRF funding is not obtained, user rates will require a burdensome increase. See the Annual Cost Summary in Appendix N. Construction will be coordinated to allow residents to access their home and business.

4.1.2 Indirect Impacts

The proposed wastewater facilities are sized to provide service for 20 years of future growth in the study area, based on current trends. Future development will be subject to conformance with the land use and zoning plans for the service areas. No expansion of the service district is proposed.

4.1.3 Cumulative Impacts

Providing more reliable wastewater treatment with updated equipment and structures to the customers of the system will be the primary cumulative impact anticipated from the construction of the project.

5 MITIGATION

5.1 Mitigation of Potential Short-Term Impacts

Standard practices used in the construction industry will be included in the construction contract documents to mitigate construction activities. Standard traffic and safety control devices will be in place to warn and protect residents if construction activities affect roadway travel. Dust control methods such as water and/or brine will be used to keep dust to a minimum. Haul roads and public roadways will be swept and maintained to assure residents access to the area. Construction equipment will be maintained in good condition to decrease noise. Soil erosion and sedimentation control measures such as straw bales, sedimentation basins, and silt fence, will be part of the construction activities to prevent soil release and protect streams and wetlands. Catch basins will be protected where earth changing activities will take place. During construction of the wastewater projects, residents and businesses with existing sewer services must be transferred to the sewer mains. This typically will require the use of bypass pumping.

5.2 Mitigation of Potential Long-Term Impacts

General mitigation of construction activities will prohibit the disposal of soils in wetlands, floodplains, or other sensitive areas. The required Part 41 construction permits will be obtained. The proposed projects will be located within rights-of-way and previously developed property, which is unlikely to cause impacts to environmental, historical, and sensitive features. Safe practices will be utilized during operation.

5.3 Mitigation of Indirect Impacts

Since the proposed project alternatives are confined to the existing treatment plant site, significant or undirected new development is not likely to be facilitated by this project. Existing planning and zoning maps will not be affected. Ordinances are neither affected nor needed. Construction staging will be carefully planned to maintain functionality and operability of the wastewater system during the construction of proposed improvements.

Abbreviations

ACO	Administrative Consent Order
CAP	Corrective Action Plan
CCTV	Closed-circuit Television
City	City of Bronson
CWSRF	Clean Water State Revolving Fund
EDU	Equivalent Dwelling Unit
EGLE	Department of Environment, Great Lakes, and Energy
FEMA	Federal Emergency Management Agency
HVAC	Heating, Ventilation, and Air Conditioning
I/I	Inflow and Infiltration
IPaC	Information for Planning and Consultation
IPP	Industrial Pretreatment Program
LUST	Leaking Underground Storage Tank
MAHI	Median Annual Household Income
MGD	Million Gallons per Day
MTS	Manual Transfer Switch
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation System
O&M	Operations and Maintenance
OM&R	Operations, Maintenance, and Replacement

PFAS	Per- and Poly- Fluoroalkyl Substances
PPD	Project Planning Document
PVC	Polyvinyl Chloride
RAS	Return Activated Sludge
RDS	Remedial Design Standard
SAW	Stormwater, Asset Management, and Wastewater
SCADA	Supervisory Control and Data Acquisition
US EPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UV	Ultraviolet
VFD	Variable Frequency Drive
WAS	Waste Activated Sludge
WSE	Wastewater System Evaluation
WWTP	Wastewater Treatment Plant

Tables

CITY OF BRONSON
PROJECT PLAN

Table 1 - Historical and Projected Population

	Actual Census Figures			Forecasted Population*				
Location	**2000**	**2010**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**
City of Bronson	2,421	2,349	2,345	2,335	2,365	2,375	2,385	2,395

*Population Projections through 2045 are from the Southcentral Regional Planning Council.

**Historic population data from 2000 to 2020 is from the U.S. Census Bureau.

Table 2 - Average Daily Flow

Location	Existing Avg Daily Flow* MGD	Design Avg Day Flow MGD	Maximum Day Flow** MGD	Future Avg Daily Flow MGD	Future Max Daily Flow *** MGD
City of Bronson	0.73	0.5	0.32-2.02	0.5	1.0

*Existing Average Daily Flow is based on the 2021 WWTP Capacity Analysis.

**Maximum Day Flow is based on the 2021 WWTP Capacity Analysis, Instantaneous flow data is unknown.

***Maximum Daily Flow based on a peaking factor of 2.0 and I/I removal efforts.

Table 3 - Lift Station Capacities

LIFT STATION	YEAR BUILT	DESIGN FIRM CAPACITY (GPM)	DRAWDOWN TESTING			FORCEMAIN		MODELED PEAK HOUR FLOW RATE (GPM)
			DATE	PUMP #1 (GPM)	PUMP #2 (GPM)	SIZE/MATERIAL	LENGTH (FT)	
Walker Street	1957	300	8/15/2019	557	526	4/6" CI	15	410-505
Corey Street	1968	150	8/15/2019	238	310	8" CI	875	40-50

Table 4 - Summary of Selected Alternatives

Project ID	Year	Project Title	Project Description	Total Cost Estimate*
001	FY2024	Chicago Street	The utility penetration in the 8-inch clay sanitary sewer will be removed.	$ 52,710
050	FY2024	W. Railroad Street (Dig/Repair and Sanitary Full Liner)	The broken pipe 11' and 57' downstream of SNMH-121 will be removed. The joint offset will be repaired prior to lining.	$ 47,040
060	FY2024	Division Street (Dig/Repair and Sanitary Full Liner)	Repairs will be done on the joint offset and broken wye at 113'. The 8" clay sewer will be repaired with cure-in-place pipe.	$ 47,040
061	FY2024	Franklin Street (Dig/Repair and Sanitary Full Liner)	Broken areas is located on Franklin Street West of Shaffmaster Blvd. Two wye will be repaired and the broken 8-inch pipe will be repaired with cure-in-place pipe.	$ 47,040
090	FY2024	201 Industrial Avenue - disconnect CB behind DPW from sanitary (Inflow removal)	Two catch basins that are located on the back side of the DPW Building at 201 Industrial Drive will be disconnected from the sanitary sewer.	$ 47,880
091	FY2024	N. Douglas and Railroad Street - disconnect 3 storm structures from sanitary (Inflow removal)	Three storm structures will be disconnected from the sanitary system. The location of the catch basins are at the intersection of W. Railroad Street and N. Douglas Street.	$ 101,500
130	FY2024	System Wide - Sanitary Full Liner w/o laterals (ROF 4 and 5)	There are currently 29 pipes that have a ROF 4 or 5 that have numerous defect locations. These will be lined to resolve structural issues.	$ 1,199,540
150	FY2024	System wide grouting - I/I pipes (weepers, drippers, runners, and gushers)	There are 131 pipes that have documented infiltration. These will be chemically grouted to minimize infiltration.	$ 2,074,729
160	FY2024	MH Lining, Grouting, and Casting Replacement	System-wide there are 41 manholes that require some type of rehabilitation. Numerous deficiencies will be addressed. These manholes will be lined, grouted and have the castings replaced, if necessary.	$ 514,080
140	FY2024	Sanitary Lining (Surcharged Pipes)	12 surcharged pipes that were unable to be inspected during CCTV inspections will be lined.	$ 628,104
145	FY2024	Grouting - (Surcharge Pipes)	12 surcharged pipes that were unable to be inspected during CCTV inspections will be grouted.	$ 286,722
			Collection System Improvements Total	**$ 5,046,400**
410	FY2024	Corey LS - Forcemain Replacement	Replace the force main.	$ 198,800
505	FY2024	Corey Street LS Improvements (Replace)	Replace and relocate the existing lift station.	$ 805,315
510	FY2024	Walker Street LS & Force Main Replacement	Replace and relocate the existing lift station along with replacing the force main.	$ 1,059,500
			Lift Stations Improvements Total	**$ 2,063,600**
551	FY2024	Headworks Improvements	A new Headworks will be constructed including new mechanical screening equipment, grit removal equipment, with associated piping and appurtenances.	$ 4,875,000
553	FY2024	UV Disinfection System Improvements	The UV system will be replaced with current technology.	$ 501,800
554	FY2024	RAS/WAS Improvements	The activated sludge pumps, VFDs, bypass contactors, valves, and flow meters.	$ 513,500
555	FY2024	Admin Building Electrical Improvements	The main motor control center (MCC-A), the low-voltage step down transformers, and panel boards will be replaced.	$ 231,400
556	FY2024	Admin Building - Meter/Backflow - Replacement	The water meter and backflow preventer will be replaced.	$ 10,400
557	FY2024	Lab Improvements	The laboratory and sample room will be renovated including replacement of lab counters, metal cabinets, drop ceiling system, plumbing fixtures and piping, fume hood, and electrical outlets.	$ 517,400
558	FY2024	Grit Room - Ventilation	A new make-up air and exhaust system will be installed.	$ 50,700
559	FY2024	Chemical Room - Ventilation	A new ventilation system will be installed.	$ 26,000
560	FY2024	Chemical Room - water heater and tepid valve	A new water heater and tepid valve will be installed in the Chemical Room.	$ 9,100
561	FY2024	Basement Level/Sludge Room - heat exchanger	The heat exchanger will be replaced in the Basement Level/Sludge Room.	$ 20,800
562	FY2024	Site - SE Rated MTS / Portable Power Connection	A fused service disconnect will be installed at the utility transformer.	$ 31,200
563	FY2024	Building Lighting Improvements	All the lighting fixtures in all the buildings will be upgraded to energy efficient lights.	$ 91,000
564	FY2024	WWTP SCADA System	The SCADA system will be upgraded.	$ 700,700
565	FY2024	Building Envelope Improvements	Selective replacement of building fascia, cleaning, repairs, and maintenance will be conducted on the building exteriors.	$ 40,300
566	FY2024	PFAS Sludge Disposal	PFAS sludge that is currently stored on-site will be properly disposed in an approved landfill.	$ 577,200
567	FY2024	Recirculation Pump Replacements	New pumps will be installed at the recirculation pump station.	$ 157,300
568	FY2024	Ferric Chloride Feed Improvements	The bulk storage tank, chemical feed pumps, and chemical feed piping will be replaced.	$ 404,300
			WWTP Improvements Total	**$ 8,758,100**

*All costs are in 2022 dollars

Figures

BRONSON TOWNSHIP

BURR OAK RD

S MATTESON LAKE RD

WASTEWATER TREATMENT PLANT

INDUSTRIAL AVE

RAYMOND ST

MATILDA ST

E RAILROAD ST

W RAILROAD ST

MILL ST

STATE ST

UNION ST

ALBERS RD

DIVISION ST

SHAFFMASTER BLVD

N DOUGLAS ST

FRANKLIN ST

N MATTESON ST

BUCHANAN ST

WINONA ST

WASHINGTON ST

N LINCOLN ST

SHERMAN ST

FREMONT ST

E CHICAGO ST

S PARHAM RD

YORK ST

SOUTH ST

N RUGGLES ST

N WALKER ST

CYNTHIA ST

S LINCOLN ST

W CHICAGO ST

W CHICAGO RD

WALKER STREET L.S.

E COREY ST

W COREY ST

COMPTON ST

MCKINLEY ST

JACKSON ST

COREY STREET L.S.

CITY OF BRONSON

MOWRY AVE

S RUGGLES ST

S DOUGLAS ST

ROOSEVELT ST

S MATTESON ST

WAYNE ST

OAK DR

WALNUT ST

W GRANT ST

E GRANT ST

RUDD ST

S WALKER ST

ORLAND RD

CEMETERY RD

J:\GIS Client\Branch-GD\Bronson City\2220860 SRF\2220860 CWSRF 01 Existing Wastewater System.mxd - jferia - 2/20/2023 3:52:00 PM

CITY OF BRONSON
family. friends. neighbors.

BRANCH COUNTY, MICHIGAN
CLEAN WATER STATE REVOLVING FUND

FIGURE 1: SERVICE AREA

FEBRUARY 2023

Prein&Newhof

2220862

LEGEND

Gravity Sewer Diameter

- 6"
- 8"
- 10"
- 12"
- 15"
- 16"
- 18"

Force Main Diameter

- 6"
- 8"

- City of Bronson Lift Station
- City of Bronson Sanitary Manhole
- Private Manhole
- Private Gravity Sewer
- County Drain

SCALE: 1 " = 700 '

BRONSON TOWNSHIP

S MATTESON LAKE RD

INDUSTRIAL AVE

BURR OAK RD

WASTEWATER TREATMENT PLANT *(SEE INSET AT RIGHT)*

RAYMOND ST

MATILDA ST

MILL ST

W RAILROAD ST

STATE ST

N MATTESON ST

WINONA ST

WASHINGTON ST

N LINCOLN ST

SHERMAN ST

ALBERS RD

UNION ST

DIVISION ST

SHAFFMASTER BLVD

N RUGGLES ST

N DOUGLAS ST

FRANKLIN ST

FREMONT ST

W CHICAGO RD

W CENTRAL RD

E CHICAGO ST

S PARHAM RD

YORK ST

N WALKER ST

SOUTH ST

CIVIC VIA ST

S LINCOLN ST

W CHICAGO ST

WALKER STREET L.S.

E COREY ST

COREY STREET L.S.

COMPTON ST

MOWRY AVE

S RUGGLES ST

MCKINLEY ST

JACKSON ST

WAYNE ST

OAK DR

WALNUT ST

ROOSEVELT ST

S MATTESON ST

W GRANT ST

E GRANT ST

RUDD ST

S WALKER ST

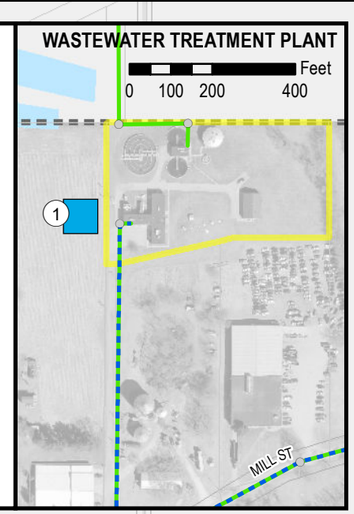
CITY OF BRONSON

ORLAND RD

CEMETERY RD

WWTP PROPOSED PROJECTS

1. New Headworks Building
2. Disinfection System
3. RAS/WAS
4. SCADA System
5. Final Clarifier Rehabilitation
6. Recirculation Pump Station
7. Ferric Chloride Feed
8. Administration Building Electrical Improvements
9. Administration Building Meter/Backflow Replacement
10. Lab Improvements
11. Grit Room Ventilation
12. Chemical Room Ventilation
13. Chemical Room Water Heater and Tepid Valve
14. Basement Level / Sludge Room Heat Exchanger
15. Site SE Rated MTS / Portable Power Connection
16. Building Lighting Improvements
17. Building Envelope Improvements
18. PFAS Sludge Disposal



CITY OF BRONSON
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BRANCH COUNTY, MICHIGAN
CLEAN WATER STATE REVOLVING FUND

FIGURE 2: PROJECT AREAS

FEBRUARY 2023

Prein&Newhof

2220862

LEGEND

Collection System Projects

- Utility Penetration Removal
- Point Repair
- Eliminate Storm Structures from Sanitary
- Lining
- Grouting
- Manhole Rehabilitation
- Force Main Replacement
- Surcharged Sewer (Lining and Grouting - TBD)

WWTP Projects (See Inset)

- Proposed Headworks

Wastewater System

- Gravity Sewer
- Force Main
- Lift Station
- Manhole
- Private Manhole
- Private Gravity Sewer
- County Drain

SCALE: 1 " = 700 '

J:\GIS Client\Branch-GD\Bronson City\2220860 SRF\2220860 CWSRF 02 Project Areas.mxd - jferia - 2/20/2023 4:09:31 PM

CITY OF BRONSON
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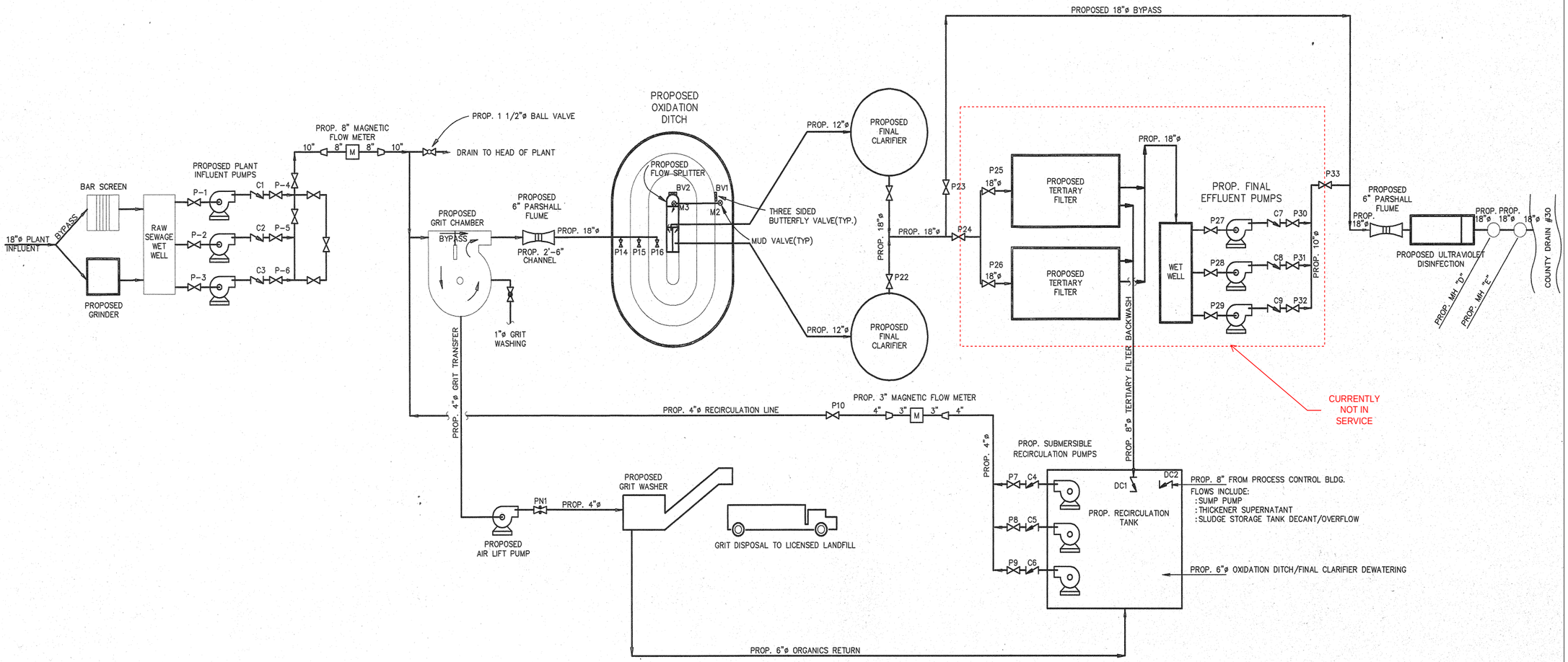
BRANCH COUNTY, MICHIGAN
CLEAN WATER STATE REVOLVING FUND

FIGURE 3:
WWTP FLOW DIAGRAM

FEBRUARY 2023
Prein&Newhof
2220860



SOURCE: 1993 WWTP IMPROVEMENTS PLANT FLOW DIAGRAM

CITY OF BRONSON
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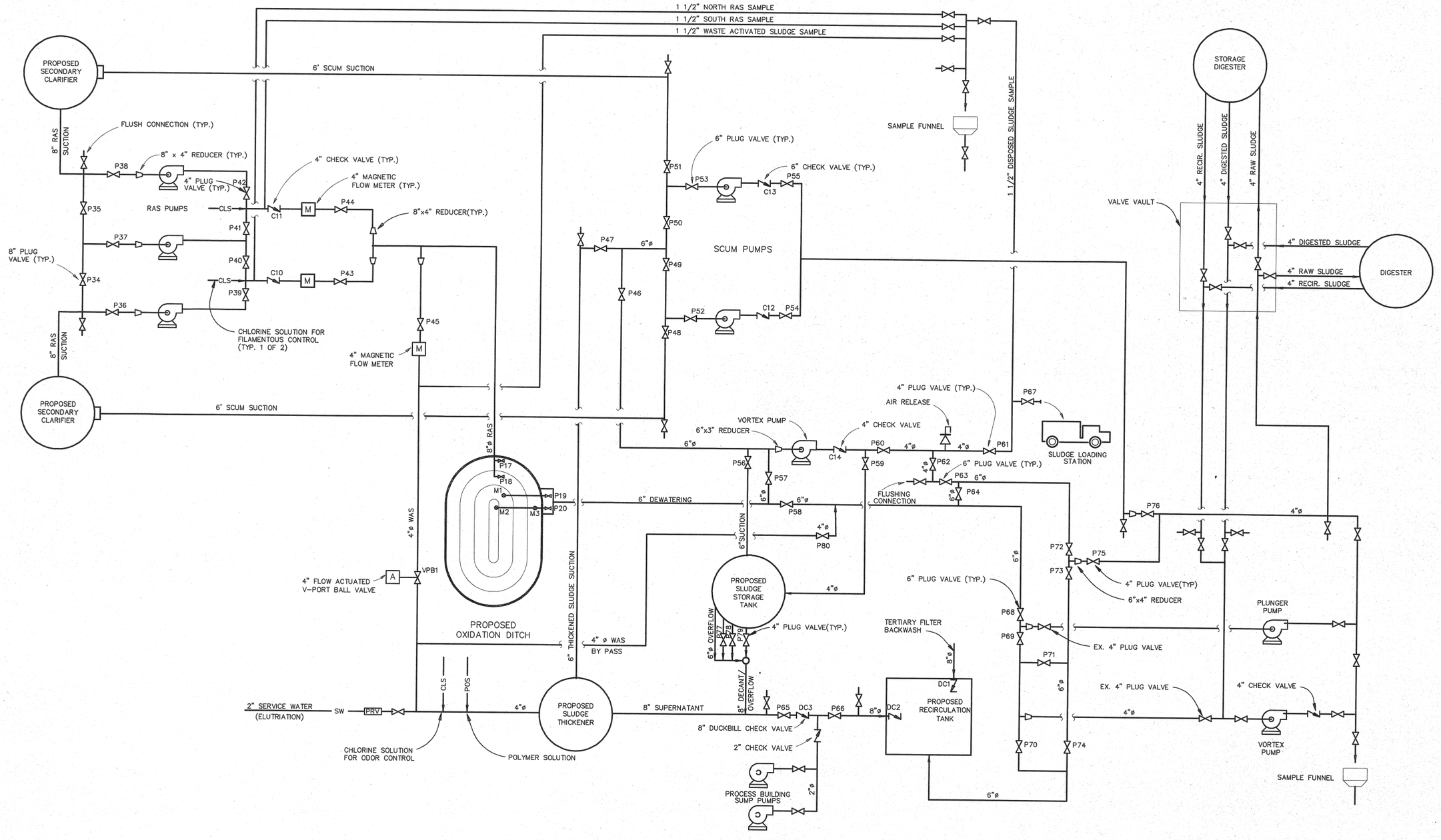
BRANCH COUNTY, MICHIGAN
CLEAN WATER STATE REVOLVING FUND

FIGURE 4:
SLUDGE FLOW DIAGRAM

MARCH 2023
Prein&Newhof
2220860



SOURCE: 1993 WWTP IMPROVEMENTS SLUDGE PROCESS FLOW DIAGRAM

Appendix A

Corrective Action Plan

Wastewater Corrective Action Plan

Administrative Consent Order 05505

Prepared for

City of Bronson

November 2022

2220859

Prein&Newhof

Contents

1 INTRODUCTION

The City of Bronson (City) is currently under an Administrative Consent Order (ACO) from the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division (WRD) for various violations of the National Pollutant Discharge Elimination System (NPDES) Permit at the wastewater treatment plant (WWTP). Many of the permit violations are associated with excessive amounts of inflow and infiltration (I/I) in the wastewater collection system.

This report has been prepared to address Section 3.3 of the ACO requirement for the City of Bronson, which states: "On or before January 15, 2023, the City shall develop and submit to the WRD for review and approval a Corrective Action Plan (CAP) that describes projects to address the issues identified in the approved studies referenced in Paragraph 2.8 of this Consent Order and sets a schedule for the proposed improvements. These issues include addressing excessive I&I to meet the Remedial Design Standard (RDS), and ensuring that the expected average daily flow, maximum day flow, and peak hourly flow at the WWTP are consistent with the WWTP's basis of design. When determining the excessive I&I, evaluate the cost of I&I reduction versus the cost to transport and treat flows at the WWTP that may be expanded. This may result in a need to expand capacity of the WWTP. The RDS is the flow generated by the 25-year, 24-hour storm event, using growth conditions from April through October, normal soil moisture, and rainfall based on Natural Resources Conservation Service Standard Type II distributions, Bratter-Sherill method, or equivalent. This shall include a written financial plan to pay for the projects identified in the CAP. If the WRD finds any deficiencies within the CAP, the City shall address those deficiencies within 30 days of notification from the WRD."

A copy of the ACO is included for reference in Appendix A.

2 BACKGROUND

Several reports were prepared by Prein&Newhof as part of the EGLE Stormwater, Asset Management, and Wastewater (SAW) Program, during which the City inventoried and evaluated the assets of its public wastewater system. The following reports and studies are referenced in section 2.8 of the ACO and were utilized in preparation of the CAP:

- Administrative Consent Order: Flow Study – Wastewater Collection System Capacity Assessment and Inflow/Infiltration Analysis, dated April 2021. (3.9" storm event)

- Flow Study – Wastewater Collection System Capacity Assessment and Inflow/Infiltration Analysis, dated April 2021. (4.48" storm event)
- Wastewater System Evaluation, dated April 2021
- Wastewater Treatment Plant Capacity Analysis, dated April 2021
- Smoke Testing Report, dated July 2019
- Hydrogeological Report, dated May 2021

A map of the existing wastewater system and WWTP are provided for reference in Figure 1 and 2, respectively. The previous reports described how excessive I/I was quantified and established a broad set of project recommendations based on an evaluation of the condition, capacity, and criticality of existing infrastructure in the wastewater collection and treatment system.

3 COST EFFECTIVE ANALYSIS

Although it would be ideal to remove all excess I/I, the investment required to do so must be justified. This section provides a comparison of the cost to remove versus the cost to transport and treat excessive I/I and describes the rationale underpinning the selection of projects for inclusion in the CAP.

3.1 Collection System

The most effective way to remove infiltration from sanitary sewer pipes is sewer reconstruction. Reconstruction is very costly and generally impacts other utilities and surface infrastructure. For example, the City could dig up and replace all sanitary sewer pipes, manholes, and laterals within the City. But this would also affect the replacement of storm sewers, roadways, curb and sidewalk, water main and service leads. With a cost in excess of $50 million, this approach is not financially feasible. Utility disconnections, point repairs, grouting, and trenchless rehabilitation of sewers and manholes are all cost-effective methods for removing I/I.

Addressing known I/I issues could raise groundwater levels and result in infiltration at new locations and/or introduce other issues. Hence, post-construction monitoring of flow and groundwater conditions will be a critical project success factor.

3.2 Lift Stations

The majority of the City's wastewater flows to the WWTP by gravity. There are two lift stations which pump wastewater to gravity sewers. Replacement of the existing Walker Lift Station is

planned based on the current condition and capacity deficiencies. The results of the Sewer Flow Study indicate that modeled peak flows to Walker Street Lift Station exceed the firm capacity of the station during a 24-hour, 25-year storm due to excessive I/I in the upstream collection system. Historical flow data confirms that the firm capacity has been exceeded as recently as May 2020. Despite not removing I/I, the additional cost to provide oversized equipment to address the capacity deficiencies is significantly more cost effective in comparison to collection system removal efforts. Similarly, the energy cost per unit volume to transport the excess I/I is minimal.

3.3 Wastewater Treatment Plant

Capacity of the WWTP is hydraulically limited by the raw influent pump station and by the oxidation ditch. Treatment capacity is limited by hydraulic retention time in the oxidation ditch. The WWTP is able to treat influent wastewater to the concentrations required by the NPDES permit. However, the quantity of flow results in exceedances of the allowable discharge loading limits.

A new Headworks at the WWTP including a raw influent pump station is planned due to the condition of existing equipment. The additional cost to oversize the pumps and equipment so that it can accommodate the excessive I/I is marginal compared to the overall project cost.

Adding a second oxidation ditch to increase the hydraulic capacity of this unit process is considered unfeasible/operationally challenging based on current loadings. Operation of a second oxidation ditch would only be required intermittently during periods of high flow. Given the difficulty in forecasting such events, it would be difficult to establish and sustain the population of microorganisms for the extended aeration activated sludge process with such intermittent operation. A method of treatment other than utilizing an oxidation ditch would be required to adequately accommodate all the I/I. The cost to modify the entire treatment train is cost prohibitive.

Additional projects at the WWTP include replacement of the Return Activated Sludge (RAS) pumps and replacement of the ultraviolet (UV) disinfection. Because these projects must be done due to the condition of these assets, it is most cost effective to furnish new equipment with an increased capacity and leverage a plant-wide investment in automation to optimize operations. Installation of a Supervisory Control and Data Acquisition (SCADA) system will allow the WWTP equipment to operate efficiently as peak flows are reduced due to I/I removal efforts in

the collection system. It is also expected that the increased automation capabilities would improve treatment efficiency of the oxidation ditch during wet weather by maintaining biomass via real-time adjustment of RAS pumping and chemical dosage rates.

Removal of known I/I may be feasible, but it will have little to no impact on the cost of treatment. The current cost to treat wastewater from the City varies based on influent flow, and has averaged about $1.72 per 1,000 gallons, as shown in Table 1. This is based on 250,000,000 gallons per year and an annual budget of $429,188. Table 2 provides a breakdown of the operating budget. Of this operating budget, I/I reduction would impact only electricity and chemicals. Electricity and chemicals account for approximately $49,000 per year; $34,000 electricity and $15,000 for chemicals. If 100% of I/I was removed from the collection system, the City would still have electrical and chemical costs of approximately $40,000 per year.

3.4 Summary

For I/I removal, wholesale replacement of underground sanitary infrastructure is the least cost-effective option. Removing I/I of known locations is not cost effective for the single purpose of reducing the cost of treatment, as the cost of treatment will remain nearly the same, regardless of flow to the WWTP. However, fixing known structural deficiencies and eliminating direct sources of inflow are cost effective as they will reduce the volume of I/I, improve collection system reliability, and reduce the risk to surface infrastructure posed by a pipe failure. A combination of point repairs, trenchless rehabilitation, and utility disconnections in the collection system, as well as capacity and treatment process improvements at the WWTP is determined to be the most cost-effective approach toward achieving the goals of the CAP.

4 PROJECTS

This section outlines the goals of the CAP and narrows down the list of recommended projects based on the projects that are most cost effective for meeting the goals. Detailed project summaries are provided in Appendix B. It is expected that additional projects not included in the CAP will be implemented concurrently. The CAP projects would be part of a more comprehensive Capital Improvement Plan to pursue funding opportunities more efficiently.

4.1 Project Goals

The goals of the I/I reduction efforts in the City are to reduce excessive I/I to meet the RDS, to achieve an annual average flow of 0.5 million gallons per day (mgd) or less to the WWTP as the current NPDES permit allows, and to limit the maximum day and peak hour flows to the WWTP to be within the Basis of Design. Based on the ACO Flow Study, a reduction in flow to the WWTP of approximately 523,000 gallons per day (gpd) during the design storm event is required to meet the RDS. Achieving these goals will maximize the lifecycle cost of the wastewater system infrastructure, address capacity limitations, and provide reliable treatment to meet permit limits and protect water quality.

4.2 Implementation Schedule

Project implementation is planned according to the timeline set forth in the ACO, which allows the proposed CAP projects to be designed and constructed in two phases. Part 41 applications for Phase I projects shall be submitted to EGLE by December 30, 2023. These projects are to be completed by December 29, 2025.

As each Phase I project is completed, a period of monitoring and evaluation will begin in order to assess the impact of the project against the goal of I/I removal. This evaluation is critical to confirm the approach in Phase II or adjust the CAP accordingly.

If additional work is required to achieve the CAP goals after completion of Phase I, the City may pursue modifications to the limits set forth in its NPDES Permit as an alternative to some of the proposed Phase II projects.

Part 41 applications for Phase II projects shall be submitted to EGLE by December 20, 2027. These projects are to be completed by December 29, 2029.

4.3 Phase I

The projects selected for implementation in Phase I are the most cost-effective interventions targeting the goals of the CAP. Included in the following sections is a list of the proposed Phase I projects, their associated construction costs, construction contingencies (10%), and estimated engineering, administration, and legal costs, based on 2022 dollars. These costs have been projected to a future year, projected at a 5% inflationary cost per year to develop the future cost

projections. Detailed cost estimates are provided in Appendix C. Projects are proposed to be constructed in 2024 and 2025. Figure 3 is a map of the proposed project locations.

4.3.1 Collection System

The collection system projects are grouped into three categories by type of work.

Point repair projects require excavation at a known location on a sewer main to repair a broken pipe or offset joint. The work typically requires road reconstruction and bypass pumping depending on the amount of flow in the sewer.

Utility disconnection projects involve removal of storm sewer utility connections from the sanitary sewer, laying new storm sewer, and making a new connection to an existing storm catch basin. These projects typically require excavation and surface pavement reconstruction.

Trenchless rehabilitation projects include chemical grouting for infiltration prevention and cure-in-place pipe liner installation. These projects do not require excavation or pavement reconstruction but do require bypass pumping. Manhole rehabilitation may be included with this type of project.

Locations of each type of recommended project and the associated cost are presented below:

Project Type	Location & Description	Today's Cost (2022)	Future Costs (2025)
Point Repair	Chicago Street – Utility Removal	$52,700	$61,000
	W. Railroad Street	$48,000	$55,000
	Division Street	$48,000	$55,000
	Franklin Street	$48,000	$55,000
Utility Disconnection	201 Industrial Avenue	$48,000	$56,000
	N. Douglas and Railroad Street	$102,000	$118,000
	System Wide Lining	$795,000	$920,000

Trenchless Rehabilitation	System Wide Grouting	$2,075,000	$2,402,000
	Manhole Rehabilitation	$515,000	$596,000

4.3.2 Lift Stations

A new duplex submersible lift station with increased firm capacity is recommended to address the condition and capacity of the existing Walker Street Lift Station. The project includes bypass pumping.

Description	Today's Cost (2022)	Future Costs (2025)
Walker Street LS Replacement	$1,060,000	$1,227,000

4.3.3 Wastewater Treatment Plant

Construction of a new headworks is recommended based on the condition assessment and to address the influent pump station capacity. The improvements will be sized to accommodate the peak instantaneous flow in order to meet the Ten States Standards recommendations. This project will likely be constructed during the same timeframe as projects to remove I/I in the collection system. The capacity of the raw influent pumps will be increased to alleviate surcharging of the upstream gravity sewer. The pumps will also operate using variable frequency drives to match the influent flow and minimize energy consumption. Mechanical screening and grit removal system upgrades will protect downstream equipment and minimize operation and maintenance costs.

Additional system upgrades to increase WWTP capacity include the activated sludge pumps, ferric chloride system, and ultraviolet disinfection system. A supervisory control and data acquisition (SCADA) system upgrade is also planned to operate the WWTP more efficiently, flow-pace the return activated sludge (RAS) and adjust to wet weather peaks.

Description	Today's Cost (2022)	Future Costs (2025)
Headworks Improvements	$4,875,000	$5,644,000
RAS/WAS Improvements	$502,000	$582,000
WWTP SCADA System	$701,000	$812,000
UV Disinfection System Improvements	$514,000	$595,000

4.4 Phase II

Below is a list of the proposed Phase II projects, their associated project costs along with future cost projections. Projects are proposed to be constructed in 2028 and 2029, if deemed necessary after monitoring and evaluation of Phase I projects. Figure 3 is a map of the proposed project locations. It is expected that additional projects not included in the CAP would be implemented concurrently.

4.4.1 Collection System

Phase II will include evaluation and addressing any infiltration found in the 12 submerged pipes near the WWTP. Additionally, it is anticipated that more grouting, lining, and manhole rehabilitation will be required; however, to a much less level of effort. For the purpose of estimating Phase II trenchless rehabilitation projects, it is assumed the scope will be approximately one-third of the scope of Phase I, with actual locations to be determined during the re-evaluation period.

Project Type	Location & Description	Today's Cost (2022)	Future Costs (2029)
Trenchless Rehabilitation	Grouting - (Surcharge Pipes)	$287,000	$404,000
	Sanitary Lining (Surcharge Pipes)	$629,000	$884,000
	Additional System Wide Lining	$317,000	$446,000
	Additional System Wide Grouting	$892,000	$1,256,000
	Additional Manhole Rehabilitation	$106,000	$150,000

4.4.2 Lift Stations

No Phase II projects associated with I/I are proposed for lift stations as part of the CAP.

4.4.3 Wastewater Treatment Plant

In order to better understand the options potentially available to the City, EGLE staff developed preliminary Effluent Limits Only (ELO) calculations for the streams receiving the treated WWTP effluent. The results of this effort suggest that the current discharge location at County Drain No. 30 may be able to accommodate an increased facility capacity rating. ELO calculations were also made to explore the possibility of relocating the discharge to Swan Creek. However, this would require the construction of an effluent pump station and force main and would be less cost effective. Review of permit limits after Phase I project implementation is recommended. At this time, no other Phase II projects associated with I/I are proposed for the WWTP as part of the CAP.

5 FINANCIAL IMPACTS

The ACO requires the City to prepare a financial plan for the CAP projects, including applying for all applicable state and federal grants and loans for which the City would qualify. Potential funding sources include the Clean Water State Revolving Fund loan program (CWSRF) and the United States Department of Agriculture, Rural Development, Rural Economic Development Loan & Grant Program in Michigan (USDA-RD).

5.1 Total Project Cost Estimate

The total project cost for Phase I is approximately $13,178,000 (2025 dollars) and Phase II is approximately $3,140,000 (2029 dollars). The detailed cost estimates include costs for construction, legal counsel, bond counsel, engineering, and contingencies.

5.2 Annual Operating Budget

Based on the City's audit for the fiscal year ending on June 30, 2021, the operating income for the wastewater system was approximately $514,200 and the operating expenses were approximately $448,600 (excluding depreciation).

5.2.1 Income

The current rate schedule, effective September 1, 2022, for wastewater system users is $1.51 per 1000 gallons, and a monthly Sewer Ready to Serve Charge of $47.60. Apartments monthly Sewer Ready to Serve Charge is charged at 75% of the residential rate and is equal to $35.70. These rates took effect September 12, 2022.

Connections to the City's wastewater collection system has a meter equivalent billed of 984. The billable flow is approximately 47,465,000 gallons. The proposed project does not anticipate adding additional connections to the system over time. Based on these rates and customers, the yearly income generated is approximately $633,733 which will be in full effect for the 2024 FY. FY 2023 is estimated at $608,733 as the new rate would only be in effect for 9 months from September 1, 2022, thru June 30, 2023.

5.2.2 Annual Operations and Maintenance Costs

The annual O&M costs for the existing City's wastewater system are approximately $423,200 in 2022. Projected O&M expenses for 2025 are $462,440 and in 2029 is estimated at $520,480 based on a 3% inflationary increase.

5.2.3 Debt Repayments

The City currently has an outstanding 1993 USDA Unlimited Tax General Obligation Bond for its sewer system. It has a balance of $242,000 with an annual payment of $33,100 in 2022, $31,500 in 2025, and $27,700 in 2029.

As a funding source is yet to be determined, along with the associated interest rate, term length or a loan, and if any grants are obtained, the debt repayment is based on the following assumptions:

Without any loan forgiveness or grant, a $13,178,000 loan at an interest rate of 2.125-percent amortized over 30 years is assumed for Phase I. The corresponding annual debt service including principal and interest will average approximately $598,560 over the life of the loan.

Without any loan forgiveness or grant, a $3,140,000 loan at an interest rate of 2.125-percent amortized over 30 years is assumed for Phase II. The corresponding annual debt service including principal and interest will average approximately $142,620 over the life of the loan.

5.2.4 Summary

The following is a summary of the annual operation, maintenance, and reserve information for projected year 2025:

O&M	$462,440
Existing Debt	$31,500
New Debt (Phase I)	$598,560
Total	$1,092,500

The following is a summary of the annual operation, maintenance, and reserve information for projected year 2029:

O&M	$520,480
Existing Debt	$27,700
New Debt (Phase I)	$598,560
New Debt (Phase II)	$142,620
Total	$1,289,360

Appendix D includes a financial plan and the rate impacts based on costs provided above for the two phases. Based on this plan, the City will need to significantly raise sewer rates for FY 2026 by approximately twenty-nine (29%) percent and forty-five (45%) percent in FY 27. Additional increase will be required in additional fiscal years, but to a lesser extent.

TABLE 1 - Cost to Treat and Transport

Fiscal Year	City Expense	Flow (gal/year)	Flow 1000 gal/year	Cost / 1000 gallons
2017/2018	$363,713.00	273,627,000	273,627	$1.33
2018/2019	$482,907.00	282,485,000	282,485	$1.71
2019/2020	$450,247.00	300,312,000	300,312	$1.50
2020/2021	$424,470.00	137,400,000	137,400	$3.09
Test Year	$429,188.00	250,000,000	250,000	$1.72

Test Year is "normal" year of expenses and flows.

CITY OF BRONSON (MICHIGAN) WASTEWATER FUND

COMPARATIVE DETAIL OF OPERATING EXPENSES

		Fiscal Year Ended						
		6/30/2018	6/30/2019	6/30/2020	6/30/2021	6/30/2022	Test Year	Multiplier
		(----------Per Client----------)						
Operating Expenses								
Dept 548 Wastewater								
590-548-703.000	Salaries - Full Time	$93,444	$102,537	$106,759	$104,305	$92,352	$92,352	2.0%
590-548-703.100	Salaries - Full Time DPW	7,216	5,797	6,759	2,869	9,435	9,435	2.0%
590-548-703.200	Salaries - Full Time Admin	70,111	71,331	51,378	50,987	37,961	37,961	2.0%
590-548-710.000	Overtime Wages	2,581	2,074	2,081	2,307	1,500	1,500	2.0%
590-548-710.100	Overtime D.P.W.	1,030	1,250	1,857	450	1,500	1,500	2.0%
590-548-715.000	Employer F.I.C.A.	12,864	16,412	12,472	11,828	10,920	10,920	1.0%
590-548-716.000	Group Insurance	20,790	22,200	23,708	26,200	30,800	30,800	1.0%
590-548-716.100	Group Insurance - DPW	1,007	1,342	2,577	2,369	1,267	1,267	1.0%
590-548-716.200	Group Insurance - Admin	10,989	16,250	14,871	14,629	15,026	15,026	1.0%
590-548-717.000	Act 125 Medical Fund	1,389	1,558	1,067	1,737	1,500	1,500	1.0%
590-548-717.100	Act 125 Medical Fund - DPW	75	175	127	128	200	200	1.0%
590-548-717.200	Act 125 Medical Fund - Admin	630	1,023	1,193	704	1,200	1,200	1.0%
590-548-718.000	Pension Plan	4,596	12,577	20,514	10,171	12,134	12,134	1.0%
590-548-721.000	Worker's Comp	928	951	950	427	705	705	1.0%
590-548-721.100	Worker's Comp - DPW	45	46	42	33	55	55	1.0%
590-548-721.200	Worker's Comp - Admin	72	79	81	40	65	65	1.0%
590-548-722.000	Vacation & Sick Pay Expense	1,849	-	(2,244)	-	-	-	0.0%
590-548-727.000	Office Supplies	152	161	118	151	100	100	1.0%
590-548-728.000	Postage	823	953	891	992	1,200	1,200	1.0%
590-548-729.000	Printing (Forms)	397	293	169	235	500	500	1.0%
590-548-743.000	Uniform/Clothing Purchase	329	463	84	644	300	300	1.0%
590-548-744.000	Tools & Supplies	2,633	926	336	1,120	1,000	1,000	1.0%
590-548-745.000	Chemicals/Testing Supplies	8,468	19,356	12,111	18,474	18,000	18,000	1.0%
590-548-760.000	First Aid, Safety Supplies	73	125	147	75	500	500	1.0%
590-548-776.000	Building Maintenance	1,127	1,305	1,296	557	1,300	1,300	1.0%
590-548-777.000	Custodial Supplies	27	67	10	-	200	200	1.0%
590-548-778.000	Machine & Equipment	5,625	903	2,224	5,152	3,000	3,000	1.0%
590-548-803.000	Engr / Consulting Services	-	-	-	-	- [1]	-	0.0%
590-548-805.000	Legal Fees	-	3,920	610	3,000	10,000	10,000	1.0%
590-548-808.000	Refuse/Hauling Contract	4,765	6,048	53,693	30,000	30,000	30,000	1.0%
590-548-809.000	Maintenance & Service Contracts	11,734	32,215	5,060	8,621	12,000	12,000	1.0%
590-548-810.000	I.P.P.	20		-	-	1,000	1,000	1.0%
590-548-811.000	State License Fees	3,227	2,838	2,045	1,950	12,500	12,500	1.0%
590-548-812.000	Training	987	558	415	307	1,200	1,200	1.0%
590-548-820.000	Miscellaneous	-	10	5	-	1,500	1,500	1.0%
590-548-851.000	Telephone Services	2,352	2,746	3,215	2,405	3,500	3,500	1.0%
590-548-861.000	Travel Expense	-	-	10	-	100	100	1.0%
590-548-862.000	Lodging & Meals	51	100	-	25	100	100	1.0%
590-548-903.000	Legal Notice	-	1,085	244	-	500	500	1.0%
590-548-913.000	Property & Liability Insurance	8,606	8,209	8,029	9,548	11,047	11,047	1.0%
590-548-922.000	Electricity	33,336	40,620	39,002	39,507	34,000	34,000	1.0%
590-548-923.000	Gas-Heating	4,054	4,253	3,153	4,399	4,500	4,500	1.0%
590-548-931.000	Buildings	34	-	5,493	-	1,000	1,000	1.0%
590-548-934.000	Equipment Repairs	3,042	15,924	16,965	35,068	20,000	20,000	1.0%
590-548-936.000	Sanitary Sewer System	19,781	60,000	13,302	2,449	15,000	15,000	1.0%
590-548-945.000	Vehicle, Equip Rental	21,696	24,227	24,222	27,540	28,021	28,021	1.0%
590-548-968.000	Depreciation Expense	-	-	-	-	- [2]	-	0.0%
590-548-977.000	Radio Equipment	425	-	13,206	-	-	-	1.0%
590-548-979.000	Computer Hardware & Software	333	-	-	3,067	500	500	1.0%
	Total Wastewater Operating Expenses	$363,713	$482,907	$450,247	$424,470	$429,188	$429,188	

[1] Engr / Consulting Services expense is removed from the report because this is a SAW grant related pass-through expense.
[2] Depreciation is removed from this report as this study is performed on the cash basis.

WWTP PROPOSED PROJECTS
1. NEW HEADWORKS BUILDING
2. RAS/WAS
3. SCADA

WASTEWATER TREATMENT PLANT
Feet
0 50 100 200

WASTEWATER TREATMENT PLANT *(SEE INSET ABOVE)*

BURR OAK RD
ALBERS RD
DIVISION ST
SHAFFMASTER BLVD
MILL ST
W RAILROAD ST
STATE ST
UNION ST
N RUGGLES ST
N DOUGLAS ST
FRANKLIN ST
YORK ST
SOUTH ST
W CHICAGO ST
COMPTON ST
MOWRY AVE
S RUGGLES ST
S DOUGLAS ST
N MATTESON ST
WINONA ST
WASHINGTON ST
SHERMAN ST
FILLMORE ST
FREMONT ST
INDUSTRIAL AVE
RAYMOND ST
N LINCOLN ST
MATILDA ST
BUCHANAN ST
E CHICAGO ST
S LINCOLN ST
CYNTHIA ST
E COREY ST
MCKINLEY ST
JACKSON ST
ROOSEVELT ST
S MATTESON ST
WAYNE ST
OAK DR
WALNUT ST
W GRANT ST
E GRANT ST
RUDD ST
S WALKER ST
PARK ST
ORLAND RD

WALKER STREET L.S.
COREY STREET L.S.

CITY OF BRONSON
BRONSON TOWNSHIP

J:\GIS_Client\Branch-GD\Bronson_City\2220859_CAP\2220859_CAP_Figure_3_Proposed_Projects.mxd - jfleita - 11/21/2022 3:09:23 PM

LEGEND

Collection System Projects
- Utility Penetration Removal
- Point Repair
- Eliminate Storm Structures from Sanitary
- Lining
- Grouting
- Manhole Rehabilitation
- Lift Station Replacement
- Force Main Replacement
- Surcharged Sewer

WWTP Projects (See Inset)
- Proposed Headworks

Wastewater System
- Gravity Sewer
- Force Main
- Lift Station
- Manhole
- Private Manhole
- Private Gravity Sewer
- County Drain

N
Feet
0 250 500 1,000

CITY OF BRONSON
family. friends. neighbors.
BRANCH COUNTY, MICHIGAN
CORRECTIVE ACTION PLAN

FIGURE 3:
PROPOSED PROJECTS

NOVEMBER 2022

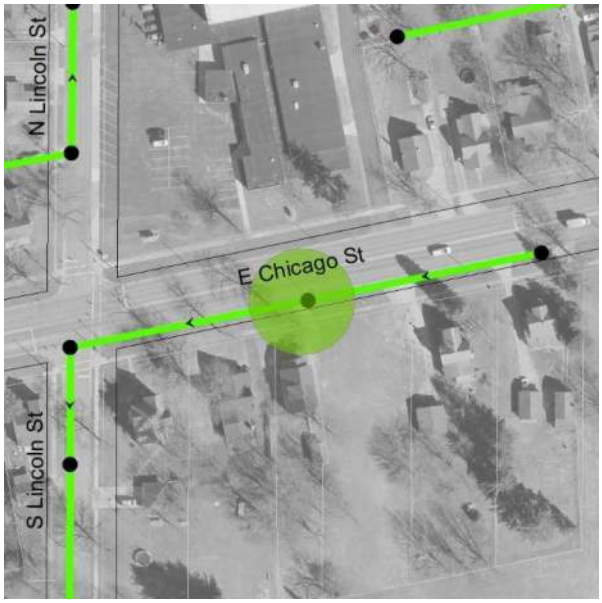
Prein&Newhof
2220859

Project Summary: Chicago Street (Sanitary Point – External Utility Removal)

Project Number: 001

Project Description: A sanitary sewer located on E. Chicago Street has a utility penetration 6’ upstream of SNMH-236 per CCTV. The proposed project will require the excavation and repair of a section of 8” sanitary sewer once the utility is removed. This will also require open cutting the roadway to repair the storm pipe and necessary road patching. The project should be coordinated with the utility company and MDOT.

Pipe(s) That Require Repair: SNGM-265

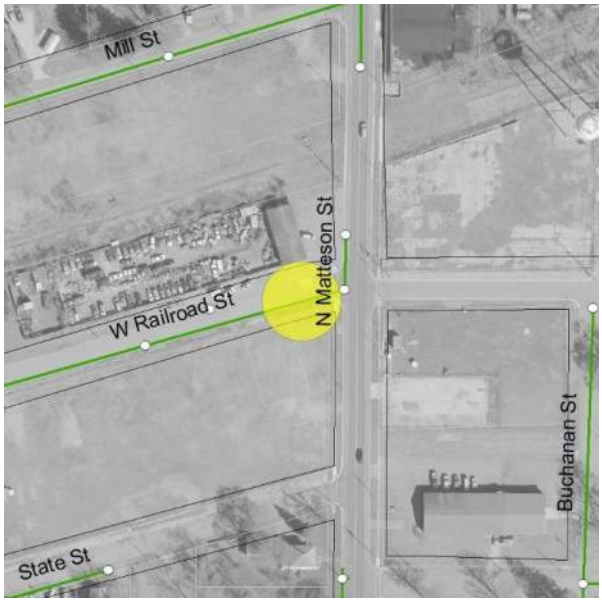


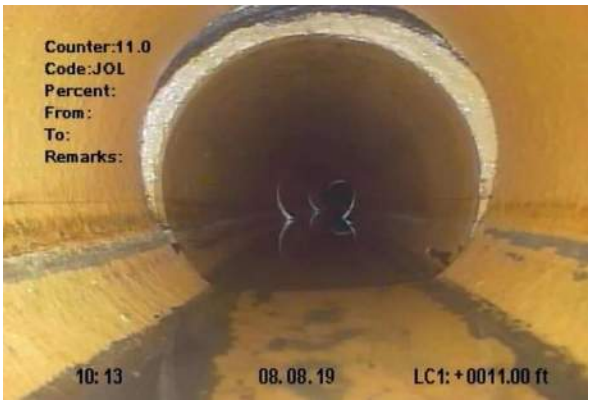
Project Summary: W. Railroad Street (Dig/Repair and Sanitary Full Liner)

Project Number: 050

Project Description: A sanitary sewer located on W. Railroad Street shows a broken pipe 11’ and 57’ downstream of SNMH-121 per CCTV. The proposed project will require the excavation and repair of a section of 8” sanitary sewer. This will also require open cutting the roadway to repair the sanitary pipe and necessary road patching. Depending on the amount of flow in the sewer bypass pumping may be necessary. Following the fixing the joint offset, the pipe should be lined.

Pipe(s) That Require Repair: SNGM-176





Project Summary: Division Street (Dig/Repair and Sanitary Full Liner)

Project Number: 060

Project Description: Repair using dig and replace for joint offset and broken wye and use cure-in-place pipe on broken 8" sanitary sewer. Sewer is located on Division Street between South and Chicago Streets. Install 280 feet of liner between manholes 020 and 021.

Pipe(s) That Require Repair: SNGM-001

Project Summary: Franklin Street (Dig/Repair and Sanitary Full Liner)

Project Number: 061

Project Description: Two wye needs repaired with an opencut to repair location. Following repair of wye, the entire pipe using Cure-in-place pipe on broken 8" sanitary sewer. Sewer is located on Franklin Street West of Shaffmaster Blvd. Defects located 218' and 245' downstream of SNMH-167 per CCTV.

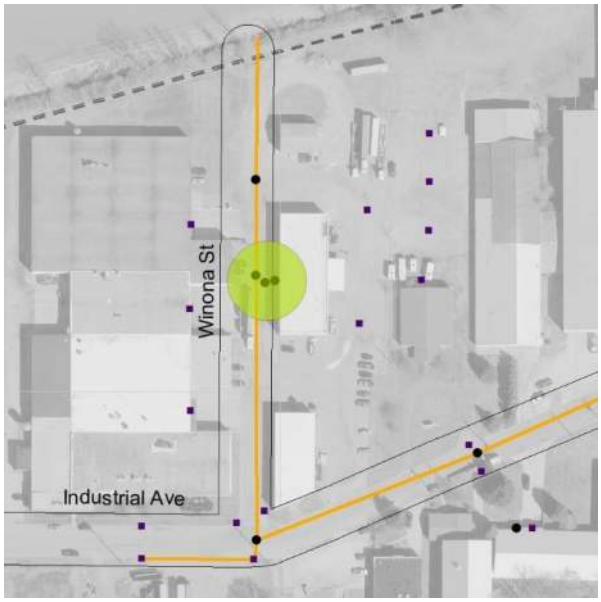
Pipe(s) That Require Repair: SNGM- 186

Project Summary: Industrial Avenue - disconnect CB behind DPW from sanitary (Inflow removal)

Project Number: 090

Project Description: City shall reconstruct the 2 storm structurers along the backside of the DPW building and core the nearby existing storm structure to connect this area to this storm network. Connection was found during 2019 smoke testing.

Pipe(s) That Require Repair: N/A



Project Summary: N. Douglas and Railroad Street - disconnect 3 storm structures from sanitary (Inflow removal)

Project Number: 091

Project Description: City shall reconstruct the intersection of N. Douglas and Railroad Street to re-configure the storm manhole and storm inlets to disconnect from the sanitary system. Connection was found during 2019 smoke testing.

Pipe(s) That Require Repair: N/A

Project Summary: System Wide – Sanitary Lining, Grouting, MH Lining, Castings, Etc.

Project Number: various

Project Description: Numerous sewers within the city were constructed in the 1950's and are clay pipes. There are currently 29 pipes that are rated with a RoF score of 4 or 5 and the ratings are general caused by cracks, fractures, minor breaks, or other issues. The pipes are still holding their shape; however, they do have numerous infiltrations at the joints and numerous root intrusions that cause an ongoing O&M issue. The proposed project would be to utilize grout and cured-in-place lining program to systematically repair the sanitary system to resolve O&M and structural issues.

Project 130 – System Wide – Sanitary Full Liner w/o laterals (ROF 4 & ROF 5)

Project 140 – System Wide – Sanitary Full Liner (surcharged pipes) – phase II

Project 150 – System wide grouting - I/I pipes

Project 160 – Sanitary Manhole Rehabilitation

Project Summary: Walker Street Lift Station Improvements

Project Number: #510

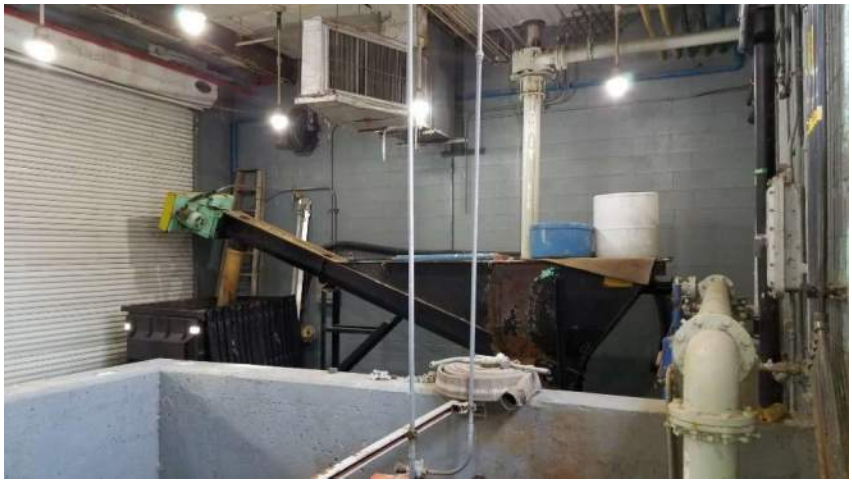
Project Description: Walker Street Lift Station is a below-grade dry well-wet well station that was constructed in 1957. The pumps, valves, and discharge piping have been replaced more recently, but the station is generally in poor condition. Issues include failing pump shafts, corroding or original equipment, difficulty actuating valves, spalling concrete, and accumulation of excessive rags and debris. The wet well and dry well are located below Walker Street while the controls are located along the curb, making entrance into either structure or operation of the control panel unsafe. The results of the Sewer Flow Study and historical flow data indicate that the firm capacity of the station cannot accommodate peak flows due to I/I.

Due to its age, location, poor condition, and capacity concerns, it is recommended that Walker Street Lift Station be replaced with a new submersible lift station. The firm capacity of the station should be increased to approximately 500 gpm to accommodate current and future peak flows. The proposed firm capacity should be reevaluated based on the effectiveness and timing of I/I removal efforts in the collection system.

Project Summary: WWTP – Headworks Improvements

Project Number: #551

Project Description: It is recommended that a new Headworks be constructed to address capacity, reliability, and operational concerns. The new Headworks will include an appropriately sized influent wet well and new influent pumps, mechanically cleaned screening, and grit removal system. These improvements will minimize the risk of backing up the collection system, protect downstream equipment, and minimize operation and maintenance costs.



Project Summary: WWTP – Ultraviolet Disinfection System Improvements

Project Number: #553

Project Description: It is recommended that a new ultraviolet (UV) disinfection system be installed to replace the existing equipment which is in poor condition and requires manual control. The new system will allow for automated UV dosing and increased availability of spare parts.

Project Summary: WWTP – RAS/WAS Improvements

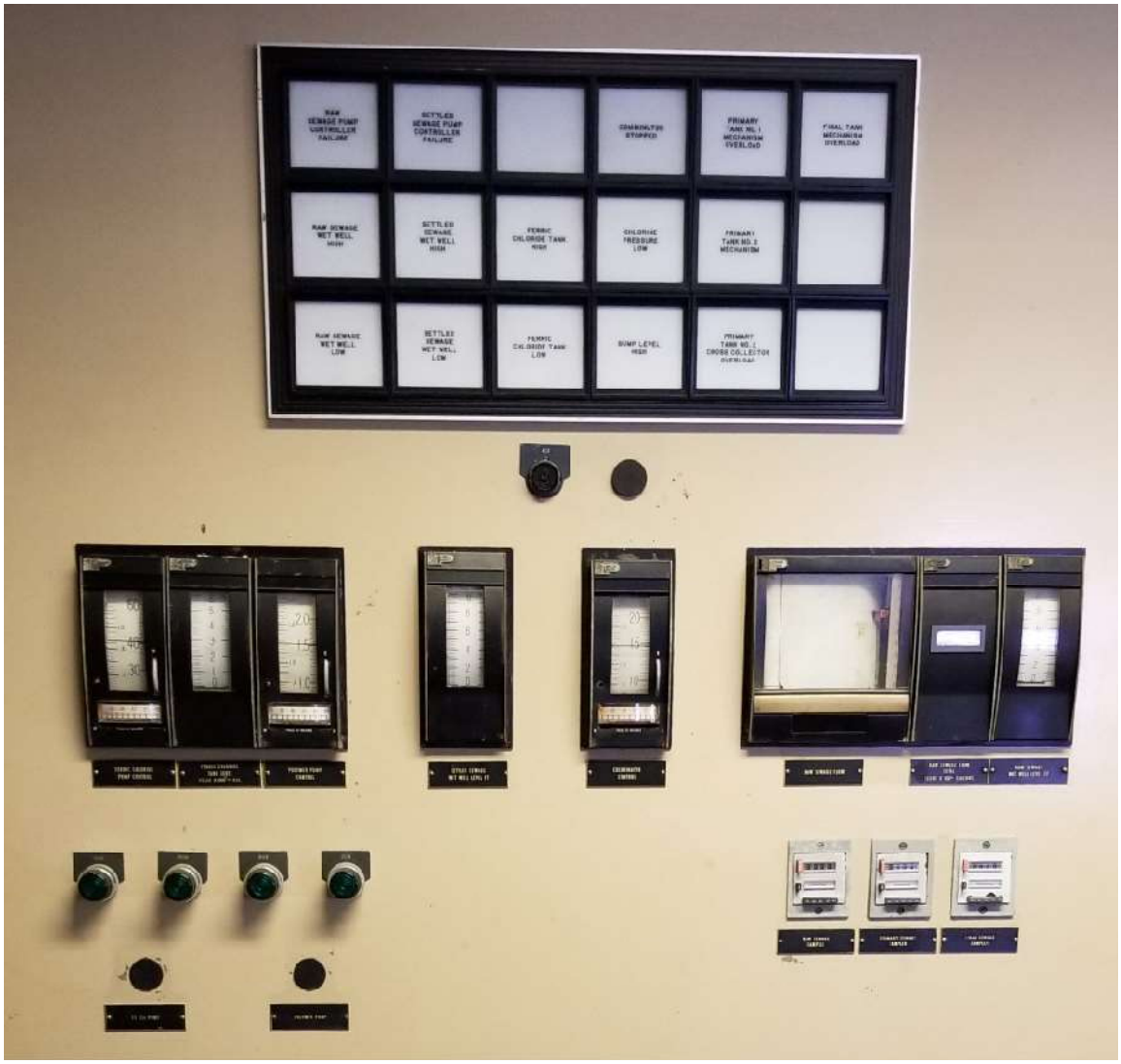
Project Number: #554

Project Description: It is recommended that the return activated sludge (RAS) pumps and associated variable frequency drives (VFDs), bypass contactors, valves, and flow meters be replaced. The existing pumps are performing at about 50% capacity and have been rebuilt multiple times.

Project Summary: WWTP – SCADA System

Project Number: #564

Project Description: It is recommended that a Supervisory Control and Data Acquisition (SCADA) System be installed at the WWTP to provide automation of critical operations such as maintaining mixed liquor suspended solids (MLSS) concentrations and waste activated sludge (WAS) flow rates. A SCADA system based on programmable logic controllers and computer interface software will allow for better monitoring of critical WWTP operations and provide an ongoing record of historical trends. It is expected that an investment in automation will also result in increased treatment and energy efficiencies.



City of Bronson, Michigan

Historical and Projected Sewer System Operating Cash Flow
Fiscal Years Ended or Ending June 30, 2019 Through 2028

	2019 (1)	2020 (1)	2021 (1)	Projected 2022 (2)	Budgeted 2023 (2)	Projected 2024 (3)	Projected 2025 (3)	Projected 2026 (3)	Projected 2027 (3)	Projected 2028 (3)	Projected 2029 (3)
Operating Revenues											
Charges for Services	$ 417,724	$ 451,026	$ 514,166	$ 580,223	$ 608,733	$ 633,733	$ 633,733	$ 633,733	$ 633,733	$ 633,733	$ 633,733
Other	-	6,492	-	10,823	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Total Operating Revenues	$ 417,724	$ 457,518	$ 514,166	$ 580,223	$ 614,733	$ 639,733	$ 639,733	$ 639,733	$ 639,733	$ 639,733	$ 639,733
Operating Expenses (4)											
Personnel	$ -	$ 244,192	$ 215,177	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operating Expenses	419,439	156,812	233,419	-	-	-	-	-	-	-	-
Depreciation	137,977	119,030	119,739	-	-	-	-	-	-	-	-
Total Operating Expenses	$ 557,416	$ 520,034	$ 568,335	$ 426,442	$ 423,195	$ 435,891	$ 448,968	$ 462,437	$ 476,310	$ 490,599	$ 505,317
Operating Income (Loss)	$ (139,692)	$ (62,516)	$ (54,169)	$ 153,781	$ 191,538	$ 203,842	$ 190,765	$ 177,296	$ 163,423	$ 149,134	$ 134,416
Non-Operating Revenues (Expenses) and Transfers (5)											
Investment Income	$ 12,937	$ 22,482	$ 11,319	$ 1,114	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500
Property Taxes	33,901	34,062	32,904	34,464	32,100	32,100	32,100	32,100	32,100	32,100	32,100
Operating Grants	216,492	760,696	295,190	-	-	-	-	-	-	-	-
Capital Grants	-	-	49,763	-	-	-	-	-	-	-	-
Other Revenue	7,964	-	1,355	-	-	-	-	-	-	-	-
Interest Expense	-	-	-	-	-	-	-	-	-	-	-
Operating Grant Expense	(219,959)	(772,590)	(361,292)	-	-	-	-	-	-	-	-
Engineering/Consulting	-	-	-	-	-	-	-	-	-	-	-
Depreciation	137,977	119,030	119,739	-	-	-	-	-	-	-	-
Total Non-Operating Revenues (Expenses)	$ 189,312	$ 163,680	$ 148,978	$ 35,578	$ 32,600	$ 32,600	$ 32,600	$ 32,600	$ 32,600	$ 32,600	$ 32,600
AVAILABLE FOR DEBT SERVICE / REPAIR AND REPLACEMENT / PAYGO CAPITAL	$ 49,620	$ 101,164	$ 94,809	$ 189,359	$ 224,138	$ 236,442	$ 223,365	$ 209,896	$ 196,023	$ 181,734	$ 167,016
Funding Requirements											
Series 1993 - USDA Water and Sewer	$ 33,900	$ 34,000	$ 33,050	$ 33,100	$ 32,100	$ 32,100	$ 31,500	$ 31,000	$ 29,900	$ 28,800	$ 27,700
2022 BAN 20-Month $1,500,000 4.0% Interest Only	-	-	-	-	-	60,000	40,000	-	-	-	-
2024 CWSRF 30-Year $13,178,000 2.125% 8/2024	-	-	-	-	-	-	140,016	280,033	598,558	598,558	598,558
2024 BAN 20-Month $500,000 4.0% Interest Only	-	-	-	-	-	-	-	60,000	40,000	-	-
2026 CWSRF 30-Year $3,140,000 2.125% 8/2026	-	-	-	-	-	-	-	-	33,363	66,725	142,622
Total	$ 33,900	$ 34,000	$ 33,050	$ 33,100	$ 32,100	$ 92,100	$ 211,516	$ 371,033	$ 701,821	$ 694,083	$ 768,880
Excess (Shortfall)	$ 15,720	$ 67,164	$ 61,759	$ 156,259	$ 192,038	$ 144,342	$ 11,849	$ (161,137)	$ (505,798)	$ (512,349)	$ (601,864)
Coverage Ratio	**1.46x**	**2.98x**	**2.87x**	**5.72x**	**6.98x**	**2.57x**	**1.06x**	**0.57x**	**0.28x**	**0.26x**	**0.22x**
Annual Increase in Revenue Necessary for 1.05x Coverage						**$0**	**$0**	**$179,688**	**$361,200**	**$6,164**	**$93,255**
Annual Increase Necessary to Produce 1.05x Coverage.						**0.00%**	**0.00%**	**28.35%**	**44.41%**	**0.52%**	**7.90%**

(1) Actual.
(2) Approved FY 2022 and 2023 operating budgets.
(3) Consumption and operating revenues are not assumed to change in the years 2024 to 2029.
(4) Assumes 3% growth per annum for the fiscal years ending June 30, 2024 and thereafter.
(5) Non-Operating Revenues are not assumed to change.

Source: City of Bronson

City of Bronson
Statement of Revenues, Expenses, and Changes in Net Position
Proprietary Funds
For the year Ended June 30, 2020

	Business-type Activities - Enterprise Funds			Governmental Activities
	Wastewater	Water	Total Enterprise Funds	Internal Service Fund
Operating Revenues				
Charges for Services	$ 451,026	$ 267,062	$ 718,088	$ 123,135
Other Revenues	6,492	--	6,492	7,052
Total Operating Revenues	457,518	267,062	724,580	130,187
Operating Expenses				
Personnel	244,192	115,030	359,222	5,557
Operating Expenses	156,812	90,851	247,663	59,141
Depreciation	119,030	67,491	186,521	54,187
Total Operating Expenses	520,034	273,372	793,406	118,885
Operating Income (Loss)	(62,516)	(6,310)	(68,826)	11,302
Non-Operating Revenues (Expenses)				
Interest Income	22,482	14,619	37,101	6,438
Property Taxes	34,062	--	34,062	--
Operating Grants	760,696	2,058	762,754	--
Interest Expense	(15,000)	--	(15,000)	--
Operating Grant Expenses	(772,590)	--	(772,590)	--
Net Non-Operating Revenues (Expenses)	29,650	16,677	46,327	6,438
Change In Net Position	**(32,866)**	**10,367**	**(22,499)**	**17,740**
Net Position at Beginning of Period	2,284,750	1,529,285	3,814,035	578,596
Net Position at End of Period	$ **2,251,884**	$ **1,539,652**	$ **3,791,536**	$ **596,336**

The Notes to the Financial Statements are an integral part of these financial statements.

City of Bronson
Statement of Revenues, Expenses, and Changes in Net Position
Proprietary Funds
For the year Ended June 30, 2021

	Business-type Activities - Enterprise Funds			Governmental Activities Internal Service Fund
	Wastewater	Water	Total Enterprise Funds	
Operating Revenues				
Charges for Services	$ 514,166	$ 291,763	$ 805,929	$ 129,714
Total Operating Revenues	514,166	291,763	805,929	129,714
Operating Expenses				
Personnel	215,177	91,600	306,777	11,196
Operating Expenses	233,419	121,354	354,773	58,647
Depreciation	119,739	67,016	186,755	59,195
Total Operating Expenses	568,335	279,970	848,305	129,038
Operating Income (Loss)	(54,169)	11,793	(42,376)	676
Non-Operating Revenues (Expenses)				
Investment Income	11,319	6,210	17,529	2,952
Property Taxes	32,904	--	32,904	--
Operating Grants	295,190	5,084	300,274	
Capital Grants	49,763	49,764	99,527	--
Other Revenue	1,355	967	2,322	--
Interest Expense	(14,050)	--	(14,050)	--
Operating Grant Expenses	(361,292)	(5,301)	(366,593)	--
Net Non-Operating Revenues (Expenses)	15,189	56,724	71,913	2,952
Change In Net Position	**(38,980)**	**68,517**	**29,537**	**3,628**
Net Position at Beginning of Period	2,251,884	1,539,652	3,791,536	596,336
Net Position at End of Period	$ **2,212,904**	$ **1,608,169**	$ **3,821,073**	$ **599,964**

The Notes to the Financial Statements are an integral part of these Financial Statements

Fiscal Year 2023 Budget

Wastewater Fund	2019-2020 Actual	2020/2021 Actual	2021/2022 Budget	2021/2022 Projected	2022/2023 Proposed
Gross Revenue					
Services Charges	605,865	553,359	519,062	580,223	535,598
Penalties	6,000	3,000	5,000	9,377	7,000
Industrial Pretreatment Program Fees	500	-		-	-
Interest	8,000	14,000	5,025	1,114	500
New Service Hookups		0	-	-	-
Grants	900,000	639,000	420,570	231,774	-
Miscellaneous	2,000	1,000	100	1,446	100
Capital Contributions			118,840	-	-
Total Fund Revenue	**1,522,365**	***1,210,359***	***1,068,597***	***823,934***	***543,198***
Operational Expenses					
Wages & Benefits	229,457	211,676	216,619	248,377	224,655
Office & Printing Costs	5,550	5,900	5,800	3,724	5,800
Tools, Chemicals, Supplies & Equipment	29,700	29,200	42,700	25,654	37,750
Professional Development	1,400	1,400	1,400	913	1,400
Building Maintenance	2,200	2,300	2,300	566	2,300
Utilities	38,500	38,500	38,500	48,982	40,000
Uniforms	700	300	300	185	300
Engineering/Consulting	~~1,000,000~~	~~710,000~~	~~539,410~~	~~62,096~~	~~20,000~~
Land Application of Waste	30,000	30,000	30,000	11,915	15,000
Maintenance & Service Contracts	15,000	12,000	12,000	8,926	12,260
Industrial Pretreatment Program Expenses	1,000	1,000	1,000	-	1,000
State License Fees	3,500	3,500	12,500	3,214	12,500
Miscellaneous	1,500	1,500	1,500	18,500	1,500
Property & Liability Insurance	9,130	10,043	11,047	11,164	11,044
Sanitary Sewer System Maintenance	15,000	15,000	15,000	1,102	10,000
Legal Fees & Legal Notices	15,500	10,500	10,500	15,200	17,500
Vehicles & Equipment	24,227	27,540	28,021	28,020	30,188
Total Operational Expenses	~~***1,422,365***~~	~~***1,110,359***~~	~~***968,598***~~	~~***488,538***~~	~~***443,198***~~
	$422,365	$400,359	$429,188	$426,442	$423,195
Funded Depreciation					
Capital Depreciation	***100,000***	***100,000***	***100,000***	***124,000***	***100,000***
Total Expenses & Depreciation	**1,522,365**	***1,210,359***	***1,068,598***	***612,538***	***543,198***
Net Fund Revenue	**0**	**0**	**0**	**211,396**	**0**
Net Fund Balance (Cash on Hand)	**925,717**	**1,021,272**	**1,021,272**	**1,071,859**	**1,071,859**

The Wastewater Treatment Plant has a maximum capacity of 1.8 million gallons per day. During rainy spring weather, the plant routinely sees flows of around 1 million gallons per day while average operation is around 250,000 gallons per day.

Effluent from the plant is monitored for a variety of substances and testing is conducted pursuant to regulations set by the Michigan Department of Environmental Quality (MDEQ).

Debt Service Report

Local Unit Name:	City of Bronson
Local Unit Code:	122010
Current Fiscal Year End Date:	6/30/2021
Debt Name:	Improvements
Issuance Date:	10/1/1993
Issuance Amount:	$590,000
Debt Instrument (or Type):	GO Bonds
Repayment Source(s):	GO Bond Fund

Years Ending	Principal	Interest	Total
2020	$ 19,000	$ 15,000	$ 34,000
2021	$ 19,000	$ 14,050	$ 33,050
2022	$ 20,000	$ 13,100	$ 33,100
2023	$ 20,000	$ 12,100	$ 32,100
2024	$ 21,000	$ 11,100	$ 32,100
2025	$ 21,000	$ 10,500	$ 31,500
2026	$ 22,000	$ 9,000	$ 31,000
2027	$ 22,000	$ 7,900	$ 29,900
2028	$ 22,000	$ 6,800	$ 28,800
2029	$ 22,000	$ 5,700	$ 27,700
2030	$ 23,000	$ 4,600	$ 27,600
2031	$ 23,000	$ 3,450	$ 26,450
2032	$ 23,000	$ 2,300	$ 25,300
2033	$ 23,000	$ 1,150	$ 24,150
Totals	**$ 300,000**	**$ 116,750**	**$ 416,750**

Commentary: The City was able to pay off the 2001 Pierce Fire Truck early from the revenue from the Fire Protection Special Assessment

Bond Schedule (without Grant)

Date: ***11/21/22***

Borrower Name:	**City of Bronson**
Interest Rate:	2.125%
Yrs Deferred Principle	0
Principal:	**$13,178,000** (round to nearest $1000)
Ammort. Factor	0.0000
Ammortized Payment:	$598,558

Year	1st Interest	2nd Interest	Principal Paid	Total Year Payment	Loan Balance
					13,178,000
1	140,016	140,016	319,000	599,033	12,859,000
2	136,627	136,627	325,000	598,254	12,534,000
3	133,174	133,174	332,000	598,348	12,202,000
4	129,646	129,646	339,000	598,293	11,863,000
5	126,044	126,044	346,000	598,089	11,517,000
6	122,368	122,368	354,000	598,736	11,163,000
7	118,607	118,607	361,000	598,214	10,802,000
8	114,771	114,771	369,000	598,543	10,433,000
9	110,851	110,851	377,000	598,701	10,056,000
10	106,845	106,845	385,000	598,690	9,671,000
11	102,754	102,754	393,000	598,509	9,278,000
12	98,579	98,579	401,000	598,158	8,877,000
13	94,318	94,318	410,000	598,636	8,467,000
14	89,962	89,962	419,000	598,924	8,048,000
15	85,510	85,510	428,000	599,020	7,620,000
16	80,963	80,963	437,000	598,925	7,183,000
17	76,319	76,319	446,000	598,639	6,737,000
18	71,581	71,581	455,000	598,161	6,282,000
19	66,746	66,746	465,000	598,493	5,817,000
20	61,806	61,806	475,000	598,611	5,342,000
21	56,759	56,759	485,000	598,518	4,857,000
22	51,606	51,606	495,000	598,211	4,362,000
23	46,346	46,346	506,000	598,693	3,856,000
24	40,970	40,970	517,000	598,940	3,339,000
25	35,477	35,477	528,000	598,954	2,811,000
26	29,867	29,867	539,000	598,734	2,272,000
27	24,140	24,140	550,000	598,280	1,722,000
28	18,296	18,296	562,000	598,593	1,160,000
29	12,325	12,325	574,000	598,650	586,000
30	6,226	6,226	586,000	598,453	0

Bond Schedule (without Grant)

Date: ***11/21/22***

Borrower Name:	**City of Bronson**
Interest Rate:	2.125%
Yrs Deferred Principle	0
Principal:	**$3,140,000** (round to nearest $1000)
Ammort. Factor	0.0000
Ammortized Payment:	$142,622

Year	1st Interest	2nd Interest	Principal Paid	Total Year Payment	Loan Balance
					3,140,000
1	33,363	33,363	76,000	142,725	3,064,000
2	32,555	32,555	78,000	143,110	2,986,000
3	31,726	31,726	79,000	142,453	2,907,000
4	30,887	30,887	81,000	142,774	2,826,000
5	30,026	30,026	83,000	143,053	2,743,000
6	29,144	29,144	84,000	142,289	2,659,000
7	28,252	28,252	86,000	142,504	2,573,000
8	27,338	27,338	88,000	142,676	2,485,000
9	26,403	26,403	90,000	142,806	2,395,000
10	25,447	25,447	92,000	142,894	2,303,000
11	24,469	24,469	94,000	142,939	2,209,000
12	23,471	23,471	96,000	142,941	2,113,000
13	22,451	22,451	98,000	142,901	2,015,000
14	21,409	21,409	100,000	142,819	1,915,000
15	20,347	20,347	102,000	142,694	1,813,000
16	19,263	19,263	104,000	142,526	1,709,000
17	18,158	18,158	106,000	142,316	1,603,000
18	17,032	17,032	109,000	143,064	1,494,000
19	15,874	15,874	111,000	142,748	1,383,000
20	14,694	14,694	113,000	142,389	1,270,000
21	13,494	13,494	116,000	142,988	1,154,000
22	12,261	12,261	118,000	142,523	1,036,000
23	11,008	11,008	121,000	143,015	915,000
24	9,722	9,722	123,000	142,444	792,000
25	8,415	8,415	126,000	142,830	666,000
26	7,076	7,076	128,000	142,153	538,000
27	5,716	5,716	131,000	142,433	407,000
28	4,324	4,324	134,000	142,649	273,000
29	2,901	2,901	137,000	142,801	136,000
30	1,445	1,445	140,000	142,890	-4,000

Appendix B

Administrative Consent Order

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
WATER RESOURCES DIVISION

In the matter of:

ACO-05505
Date Entered: 2022-07-25 14:30:29 UTC

City of Bronson
141 South Matteson Street
Bronson, Michigan 49028
_____/

ADMINISTRATIVE CONSENT ORDER

This document results from allegations by the Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division (WRD). EGLE alleges the City of Bronson (City), which owns and operates a Wastewater Treatment Plant (WWTP) located at 408 Mill Street, Bronson, Branch County, Michigan (referred to herein as the City WWTP or Facility), is in violation of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.3101 *et seq.* (Part 31); Part 41, Sewerage Systems, of the NREPA, MCL 324.4101 *et seq.* (Part 41); and the associated administrative rules. The City is a person, as defined by Section 301 of the NREPA, MCL 324.301. The City and EGLE agree to resolve the violations set forth herein through entry of this Administrative Consent Order (Consent Order).

I. STIPULATIONS

The City and EGLE stipulate as follows:

1.1 The NREPA, MCL 324.101 *et seq.*, is an act that controls pollution to protect the environment and natural resources in the state.

1.2 Part 31 and the rules promulgated pursuant thereto provide for the protection, conservation, and the control of pollution of the water resources of the state.

1.3 Part 41 and the rules promulgated pursuant thereto provide for the proper planning, construction, and operation of sewerage facilities to prevent unlawful pollution of the water resources of the state.

1.4 EGLE is authorized by Sections 3106 and 3112(4) of Part 31, MCL 324.3106 and MCL 324.3112(4), and Section 4111 of Part 41, MCL 324.4111, to enter orders requiring persons to abate pollution or otherwise cease or correct activities in violation of a specific part. The Director of EGLE may delegate this authority to a designee under Section 301(b) of the NREPA, MCL 324.301(b).

1.5 The City consents to the issuance and entry of this Consent Order and stipulates that the entry of this Consent Order constitutes a final order of EGLE and is enforceable as such under Section 3112(4) of Part 31 and Section 4111 of Part 41. The City agrees not to contest the issuance of this Consent Order and that the resolution of this matter by the entry of this Consent Order is appropriate and acceptable. It is also agreed that this Consent Order shall become effective on the date it is signed by the Director of the WRD, delegate of the Director of EGLE, pursuant to Section 301(b) of the NREPA.

1.6 The City and EGLE agree that the signing of this Consent Order is for settlement purposes only and does not constitute an admission by the City that the law has been violated.

1.7 The signatory to this Consent Order certifies that they are fully authorized by the City to enter into the terms and conditions of this Consent Order and to execute and legally bind the City to this document. The City hereby agrees to comply with the requirements of this Consent Order to resolve the violations stated in Section II of this Consent Order and agrees to achieve compliance with Part 31, Part 41, and their administrative rules by fulfilling the terms of Section III of this Consent Order.

II. FINDINGS

2.1 The City WWTP services the Bronson area. The City is authorized to discharge from the City WWTP to County Drain #30 in accordance with National Pollutant Discharge Elimination System (NPDES) Permit No. MI0020729 (Permit), issued by EGLE on May 31, 2019.

2.2 On October 14, 2019, the WRD issued the City Violation Notice (VN) No. VN-009990. The VN identified the following violations:

a. In 2018 the City reported one effluent limit violation of Total Suspended Solids (TSS) percent removal and three effluent limit violations of Carbonaceous Oxygen Demand (CBOD5) maximum monthly average in the monthly Discharge Monitoring Reports (DMRs) as required by the NPDES Permit.

b. In 2019 the City reported three effluent limit violations of CBOD5 maximum monthly average, one effluent limit violation of CBOD5 seven-day average, and three effluent limit violations of Dissolved Oxygen daily minimum in the DMRs.

c. On February 13, 2020, the City reported one (1) effluent limit violation of TSS in the January 2020 DMR.

d. The City WWTP is designed to treat a design average flow of 0.5 million gallons per day (MGD) of sanitary sewage. Due to excessive amounts of Inflow and Infiltration (I&I), the City WWTP receives more than 0.5 MGD of sewage on a regular basis, which exceeds the WWTP's basis of design. This is a violation of Rule 55(1) of the Part 41 administrative rules, Mich Admin Code, R 299.2955(1), which states: "Sewerage systems shall be operated and maintained at all times as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants."

2.3 On October 24, 2019, the City submitted a response to VN-099900. Several of the actions within the VN response have already begun and the remainder will be completed with supervision of EGLE as outlined in Section III of this Consent Order.

2.4 On April 22, 2020, the WRD issued an Enforcement Notice (EN) to the City for its violations of Part 31 and the rules promulgated thereunder.

2.5 On May 20, 2020, the WRD and the City had a meeting to discuss the EN that was issued on April 22, 2020, and to discuss resolution through this Consent Order.

2.6 On November 17, 2020, the WRD issued the City VN-011230. The VN identified the following additional violations:

a. On June 8, 2020, the City reported in the May 2020 DMR one effluent limit violation of CBOD5 seven-day average and effluent limit violation of CBDO5 maximum monthly average.

b. On July 9, 2020, the City reported in the June 2020 DMR one effluent limit violation of CBOD5 maximum monthly average.

2.7 On March 31, 2021, the WRD issued Compliance Communication (CC) No. CC-003173 to the City regarding an inspection conducted on August 12, 2020, and items related to the City's Industrial Pretreatment Program (IPP) including improper sampling methods and inadequate IPP Procedures.

2.8 On May 25, 2021, the City submitted a capacity analysis, hydrogeological study, flow study, wastewater system evaluation, and smoke testing results.

2.9 On November 12, 2021, the WRD sent a letter to the City regarding biosolids and per- and polyfluroalkyl substances (PFAS) monitoring results at the WWTP. This letter is included as Exhibit A of this Consent Order.

2.10 On January 3, 2022, the WRD issued the City VN-01613 for the violation of discharges above the design average and peak daily flows that occurred during the months of October and November 2021. On January 14, 2022, the City submitted a written response to VN-01613.

2.11 On January 5, 2022, the City reported in the December 2021 DMR one effluent limit violation of TSS minimum monthly percent removal of 85 percent while the reported value was 83 percent. The City also notified the WRD that the WWTP had discharges exceeding the design average and peak daily flows for December 2021.

2.12 On February 18, 2022, the City reported that the WWTP had discharges exceeding the design average and peak daily flows for January 2022.

2.13 On April 14, 2022, the City reported that the WWTP had discharges exceeding the design average and peak daily flows for February 2022 and March 2022.

2.14 On June 21, 2022, the WRD met with the City to discuss the timeline for the City's two-phased approach of addressing the issues at the WWTP through entry of this Consent Order.

III. COMPLIANCE PROGRAM

IT IS THEREFORE AGREED AND ORDERED THAT The City shall take the following actions to comply with and prevent further violations of Parts 31 and 41:

3.1 The City shall remain compliant with the response activities outlined in the letter from the WRD dated November 12, 2021, included as Exhibit A of this Consent Order.

3.2 Upon the effective date of this Consent Order, the City shall submit bi-annual status report updates to the WRD of the projects related to Section II of this Consent Order starting on September 30, 2022, and ending when the Project Performance Certification (PPC) report required in Paragraph 3.10 of this Consent Order is approved by the WRD.

3.3 On or before January 15, 2023, the City Shall develop and submit to the WRD for review and approval a Corrective Action Plan (CAP) that describes projects to address the issues identified in the approved studies referenced in Paragraph 2.8 of this Consent Order and sets a schedule for the proposed improvements. These issues include addressing excessive I&I to meet the Remedial Design Standard (RDS), and ensuring that the expected average daily flow, maximum day flow, and peak hourly flow at the WWTP are consistent with the WWTP's basis of design. When determining the excessive I&I, evaluate the cost of I&I reduction versus the cost to transport and treat flows at the WWTP that may be expanded. This may result in a need to expand capacity of the WWTP. The RDS is the flow generated by the 25-year, 24-hour storm event, using growth conditions from April through October, normal soil moisture, and rainfall based Natural Resources Conservation Service Standard Type II distributions, Bratter-Sherill method, or equivalent. This shall include a written financial plan to pay for the projects identified in the CAP. If the WRD finds any deficiencies within the CAP, the City shall address those deficiencies within 30 days of notification from the WRD.

3.4 The City shall apply for all applicable state and federal funding opportunities including financial grants and loans for which the City would qualify for to implement projects identified in this Consent Order. The City shall notify the WRD that it has applied for each funding source within 14 days of an application submittal and shall notify the WRD of the determination of the application within 14 days of receiving the application decision.

a. The City shall submit an Intent To Apply (ITA) form for the Clean Water State Revolving Fund loan program by November 1, 2022, or the due date specified for ITAs for Fiscal Year 2024 (FY2024) consideration and shall submit the associated final project plans by June 1, 2023, or the due date specified for final project plans for FY2024 consideration.

b. The City shall apply for the United States Department of Agriculture, Rural Development, Rural Economic Development Loan & Grant Program in Michigan by June 1, 2023.

c. The City shall apply for any new state and federal funding opportunities as they become available prior to the application deadlines.

3.5 If funding is secured to cover the costs of the projects identified in this Consent Order, EGLE and the City shall amend this Consent Order to expedite the compliance schedule to be completed sooner than the due date of January 31, 2032, identified for the PPC to be submitted in Paragraph 3.10 of this Consent Order.

3.6 If the WRD finds any deficiencies or needs further action from the City upon review of the reports referenced in Paragraph 2.8 of this Consent Order, the City shall address those deficiencies within 30 days of the WRD's notification unless otherwise stated.

3.7 On or before December 30, 2023, the City shall submit a Part 41 permit application or applications for review and approval for the projects identified in the CAP and phase one of its approach. If at any time during the effective period of this Consent Order it is determined by the WRD or the City that additional Part 41 permits are needed to complete the projects identified in the CAP, phase two of its approach, or to address the excessive I&I, the City shall apply for the necessary additional Part 41 permit(s) by

December 20, 2027, or otherwise, as necessary to meet the compliance dates as required in this Consent Order.

3.8 Upon EGLE's approval of the Part 41 permit application, the City shall begin to implement the projects identified in the CAP. The City shall complete the projects identified in the CAP by December 29, 2025, for Phase One projects and by December 29, 2029, for Phase Two projects.

3.9 On or before October 1, 2030, the City shall submit a project performance certification work plan to the WRD for review and approval that includes proposed flow monitoring locations, and flow monitoring conducted during April 1 through October 31, 2031. The PPC shall evaluate if the City's sewer system will be in compliance with the RDS after the City completes construction of the EGLE-approved sanitary sewer projects required by this Consent Order, and the EGLE-issued Part 41 permit(s) plans and specifications to ensure that the average daily flow, maximum daily flow, and peak hour flows are consistent with the wastewater collection and WWTP basis of design.

3.10 On or before January 31, 2032, the City shall submit a report to the WRD for review and approval that documents if the PPC, conducted consistently with the approved work plan, was successful or not successful according to the conditions outlined in Paragraph 3.9 of this Consent Order.

3.11 If the PPC was not successful, then on or before April 1, 2032, the City shall submit to the WRD for review and approval a PPC CAP with an implementation schedule to meet the criteria detailed in Paragraph 3.9 of this Consent Order. If the WRD finds any deficiencies within the PPC CAP, the City shall address the deficiencies within 30 days of notification from the WRD. Once approved, the City shall implement the PPC CAP according to the approved schedule.

3.12 The City shall submit all reports, work plans, specifications, schedules, or any other writing required by this section to their MiWaters account and, if required, to the WRD, Kalamazoo District Office supervisor, at EGLE, 7953 Adobe Road, Kalamazoo, Michigan 49009-5025. The cover letter with each submittal shall identify the specific paragraph and requirement of this Consent Order that the submittal is intended to satisfy.

IV. EGLE APPROVAL OF SUBMITTALS

4.1 For any work plan, proposal, or other document, excluding applications for permits or licenses, that are required by this Consent Order to be submitted to EGLE by the City the following process and terms of approval shall apply.

4.2 All work plans, proposals, and other documents required to be submitted by this Consent Order shall include all the information required by the applicable statute and/or rule, and all the information required by the applicable paragraph(s) of this Consent Order.

4.3 In the event EGLE disapproves a work plan, proposal, or other document, it will notify the City, in writing, specifying the reasons for such disapproval. The City shall submit, within 30 days of receipt of such disapproval, a revised work plan, proposal, or other document which adequately addresses the reasons for EGLE's disapproval. If the revised work plan, proposal, or other document is still not acceptable to EGLE, EGLE will notify the City of this disapproval.

4.4 In the event EGLE approves with specific modifications a work plan, proposal, or other document, it will notify the City, in writing, specifying the modifications required to be made to such work plan, proposal, or other document prior to its implementation and the specific reasons for such modifications. EGLE may require the City to submit, prior to implementation and within 30 days of receipt of such approval with specific modifications, a revised work plan, proposal, or other document which adequately addresses such modifications. If the revised work plan, proposal, or other document is still not acceptable to EGLE, EGLE will notify the City of this disapproval.

4.5 Upon EGLE approval, or approval with modifications, of a work plan, proposal, or other document, such work plan, proposal, or other document shall be incorporated by reference into this Consent Order and shall be enforceable in accordance with the provisions of this Consent Order.

4.6 Failure by the City to submit an approvable work plan, proposal, or other document, within the applicable time periods specified above, constitutes a violation of this Consent Order

and shall subject the City to the enforcement provisions of this Consent Order, including the stipulated penalty provisions specified in Paragraph 9.3 of this Consent Order.

4.7 Any delays caused by the City's failure to submit an approvable work plan, proposal, or other document when due shall in no way affect or alter the City's responsibility to comply with any other deadline(s) specified in this Consent Order.

4.8 No informal advice, guidance, suggestions, or comments by EGLE regarding reports, work plans, plans, specifications, schedules, or any other writing submitted by the City will be construed as relieving the City of its obligation to obtain written approval, if and when required by this Consent Order.

V. EXTENSIONS

5.1 The City and EGLE agree that EGLE may grant the City a reasonable extension of the specified deadlines set forth in this Consent Order. Any extension shall be preceded by a written request in duplicate to WRD, Water Quality Enforcement Unit supervisor, at EGLE, P.O. Box 30458, Lansing, Michigan 48909-7958, and the WRD, Kalamazoo District Office supervisor at the address provided in Paragraph 3.12 of this Consent Order, no later than ten business days prior to the pertinent deadline, and shall include:

a. Identification of the specific deadline(s) of this Consent Order that will not be met.

b. A detailed description of the circumstances that will prevent the City from meeting the deadline(s).

c. A description of the measures the City has taken and/or intends to take to meet the required deadline.

d. The length of the extension requested and the specific date on which the obligation will be met.

The WRD, Kalamazoo District Office supervisor or a designee, in consultation with the WRD, Water Quality Enforcement Unit supervisor, shall respond in writing to such

requests. No change or modification to this Consent Order shall be valid unless in writing from EGLE, and if applicable, signed by both parties.

VI. REPORTING

6.1 The City shall verbally report any violation(s) of the terms and conditions of this Consent Order to the WRD, Kalamazoo District Office supervisor by no later than the close of the next business day following detection of such violation(s) and shall follow such notification with a written report within five business days following detection of such violation(s). The written report shall include a detailed description of the violation(s), as well as a description of any actions proposed or taken to correct the violation(s). The City shall report any anticipated violation(s) of this Consent Order to the above-referenced individual in advance of the relevant deadlines whenever possible.

VII. RETENTION OF RECORDS

7.1 Upon request by an authorized representative of EGLE, the City shall make available to EGLE all records, plans, logs, and other documents required to be maintained under this Consent Order or pursuant to the NREPA or its rules. All such documents shall be retained by the City for at least a period of five years from the date of generation of the record unless a longer period of record retention is required by the NREPA or its rules.

VIII. RIGHT OF ENTRY

8.1 The City shall allow any authorized representative or contractor of EGLE, upon presentation of proper credentials, to enter upon the premises of the Facility at all reasonable times for the purpose of monitoring compliance with the provisions of this Consent Order. This paragraph in no way limits the authority of EGLE to conduct tests and inspections pursuant to the NREPA and the rules promulgated thereunder, or any other applicable statutory provision.

IX. PENALTIES

9.1 Within 30 days after the effective date of this Consent Order, the City shall pay to the State of Michigan $1,868.61 as partial compensation for the cost of investigations and

enforcement activities arising from the violations specified in Section II of this Consent Order. Payment shall be made in accordance with Paragraph 9.5 of this Consent Order.

9.2 Within 30 days after the effective date of this Consent Order, the City shall pay to the State of Michigan a civil fine of $7,000 for the violations specified in Section II of this Consent Order. Payment shall be made in accordance with Paragraph 9.5 of this Consent Order.

9.3 For each failure to comply with a provision contained in Section III of this Consent Order, the City shall pay a stipulated penalty of $5,000. If, after 30 days from the original deadline, the City has not fully corrected the violation, the City shall pay stipulated penalties of $200 per violation per day for one to seven days of violation, $300 per violation per day for eight to 14 days of violation, and $500 per violation per day for each day of violation thereafter. Payments shall be made in accordance with Paragraph 9.5 of this Consent Order.

9.4 For each failure to comply with any provision of this Consent Order other than the provisions contained in Section III of this Consent Order, the City shall pay stipulated penalties of $200 per violation per day for one to seven days of violation, $300 per violation per day for eight to 14 days of violation, and $500 per violation per day for each day of violation thereafter. Payments shall be made in accordance with Paragraph 9.5 of this Consent Order.

9.5 The City shall pay all stipulated penalties within 30 days after receipt of the demand for payment of stipulated penalties from EGLE. The City agrees to pay all funds due pursuant to this Consent Order by check made payable to the State of Michigan and delivered to the Michigan Department of Transportation, Accounting Services Division, Cashier's Office for EGLE, P.O. Box 30657, Lansing, Michigan 48909-8157, or hand delivered to the Michigan Department of Transportation, Accounting Services Division, Cashier's Office for EGLE, 425 West Ottawa Street, Lansing, Michigan 48933. To ensure proper credit, all payments made pursuant to this Consent Order must include the **Payment Identification No. WRD60103**.

9.6 The City agrees not to contest the legality of the civil fine or costs paid pursuant to Paragraphs 9.1, and 9.2, above. The City further agrees not to contest the legality of any

stipulated penalties assessed pursuant to Paragraphs 9.3 or 9.4, above, but reserves the right to dispute the factual basis upon which a demand by EGLE for stipulated penalties is made.

9.7 EGLE reserves its rights to seek interest on any unpaid sums due pursuant to the terms of the Consent Order. Subject to the other provisions of this Section IX, EGLE may waive, in its unreviewable discretion, any portion of stipulated penalties and interest that has accrued pursuant to this Consent Order. This interest penalty shall be based on the rate set forth at MCL 600.6013(8), using the full increment of amount due as principal, and calculated from the due date for the payment until the delinquent payment is finally made in full.

X. FORCE MAJEURE

10.1 The City shall perform the requirements of this Consent Order within the time limits established herein, unless performance is prevented or delayed by events that constitute a "Force Majeure." Any delay in the performance attributable to a "Force Majeure" shall not be deemed a violation of the City's obligations under this Consent Order in accordance with this section.

10.2 For the purpose of this Consent Order, "Force Majeure" means an occurrence or nonoccurrence arising from causes not foreseeable, beyond the control of, and without the fault of the City, such as: an Act of God, untimely review of permit applications or submissions by EGLE or other applicable authority, and acts or omissions of third parties that could not have been avoided or overcome by the City's diligence and that delay the performance of an obligation under this Consent Order. "Force Majeure" does not include, among other things, unanticipated or increased costs, changed financial circumstances, or failure to obtain a permit or license as a result of the City's actions or omissions.

10.3 The City shall notify EGLE, by telephone, within 48 hours of discovering any event that may cause a delay in its compliance with any provision of this Consent Order. Verbal notice shall be followed by written notice within ten calendar days and shall describe, in detail, the anticipated length of delay, the precise cause or causes of delay, the measures taken by the City prevent or minimize the delay, and the timetable by which those

measures shall be implemented. The City shall adopt all reasonable measures to avoid or minimize any such delay. Nothing in this paragraph obviates the need to report violations as required by Paragraph 6.1 of this Consent Order.

10.4 Failure of the City to comply with the notice requirements and time provisions under Paragraph 10.3 shall render this Section X void and of no force and effect as to the particular incident involved. EGLE may, at its sole discretion and in appropriate circumstances, waive in writing the notice requirements of Paragraph 10.3, above.

10.5 If the parties agree that the delay or anticipated delay was beyond the control of the City, this may be so stipulated, and the parties to this Consent Order may agree upon an appropriate modification of this Consent Order. However, EGLE is the final decision-maker on whether or not the matter at issue constitutes a force majeure. The burden of proving that any delay was beyond the reasonable control of the City, and that all the requirements of this Section X have been met by the City, rests with the City.

10.6 An extension of one compliance date based upon a particular incident does not necessarily mean that the City qualifies for an extension of a subsequent compliance date without providing proof regarding each incremental step or other requirement for which an extension is sought.

XI. GENERAL PROVISIONS

11.1 With respect to any violations not specifically addressed and resolved by this Consent Order, EGLE reserves the right to pursue any remedies to which it is entitled for any failure on the part of the City to comply with the requirements of the NREPA and its rules.

11.2 EGLE and the City consent to enforcement of this Consent Order in the same manner and by the same procedures for all final orders entered pursuant to Parts 31 and 41.

11.3 This Consent Order in no way affects the City's responsibility to comply with any other applicable state, federal, or local laws or regulations.

11.4 The WRD reserves its right to pursue appropriate action, including injunctive relief to enforce the provisions of this Consent Order, and at its discretion, may also seek stipulated

fines or statutory fines for any violation of this Consent Order. However, the WRD is precluded from seeking both a stipulated fine under this Consent Order and a statutory fine for the same violation.

11.5 The parties agree to diligently and in good faith pursue informal negotiations to resolve any disputes arising out of this Consent Order prior to resorting to judicial enforcement. Such negotiations shall proceed in a timely manner.

11.6 Nothing in this Consent Order is or shall be considered to affect any liability the City may have for natural resource damages caused by the City's ownership and/or operation of the Facility. The State of Michigan does not waive any rights to bring an appropriate action to recover such damages to the natural resources.

11.7 In the event the City sells or transfers the Facility, it shall advise any purchaser or transferee of the existence of this Consent Order in connection with such sale or transfer. Within 30 calendar days, The City shall also notify the WRD, Kalamazoo District Office supervisor, in writing, of such sale or transfer, the identity and address of any purchaser or transferee, and confirm the fact that notice of this Consent Order has been given to the purchaser and/or transferee. The purchaser and/or transferee of this Consent Order must agree, in writing, to assume all the obligations of this Consent Order. A copy of that agreement shall be forwarded to the WRD, Kalamazoo District Office supervisor within 30 days of assuming the obligations of this Consent Order.

11.8 The provisions of this Consent Order shall apply to and be binding upon the parties to this action, and their successors and assigns.

11.9 This Consent Order constitutes a civil settlement and satisfaction as to the resolution of the violations specifically addressed herein; however, it does not resolve any criminal action that may result from these same violations.

11.10 The effective date of this Consent Order is the date it is signed by the Director of the WRD.

XII. TERMINATION

12.1 This Consent Order shall remain in full force and effect until terminated by a written Termination Notice (TN) issued by EGLE. Prior to issuance of a written TN, the City shall submit a request consisting of a written certification that the City has fully complied with the requirements of this Consent Order and has made payment of any fines, including stipulated penalties, required in this Consent Order. A suggested form for providing the required written certification is appended as Exhibit B of this Consent Order. Specifically, an acceptable certification shall include:

a. The date of compliance with each provision of the compliance program in Section III of this Consent Order, and the date any fines or penalties were paid.

b. A statement that all required information has been reported to the WRD, Kalamazoo District Office supervisor.

c. Confirmation that all records required to be maintained pursuant to this Consent Order are being maintained at the Facility.

EGLE may also request additional relevant information. EGLE shall not unreasonably withhold issuance of a TN.

Signatories

The undersigned CERTIFY they are fully authorized by the party they represent to enter into this Consent Order to comply by consent and to EXECUTE and LEGALLY BIND that party to it.

DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

E-SIGNED by Teresa Seidel
on 2022-07-25 14:30:29 EDT

Teresa Seidel, Director
Water Resources Division

2022-07-25 14:30:29 UTC
Date

CITY OF BRONSON

E-SIGNED by Brandon M. Mersman
on 2022-07-25 08:44:54 EDT

By: Brandon M. Mersman
Title: City Manager

2022-07-25 08:44:54 UTC
Date

APPROVED AS TO FORM:

E-SIGNED by Margaret A. Bettenhausen
on 2022-07-25 13:12:49 EDT

By: Margaret A. Bettenhausen, Assistant Attorney General
For: Robert P. Reichel, Division Chief
Environment, Natural Resources, and Agriculture Division
Michigan Department of Attorney General

2022-07-25 13:12:49 UTC
Date

GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
KALAMAZOO DISTRICT OFFICE

LIESL EICHLER CLARK
DIRECTOR

November 12, 2021

Mr. Charles Buckley, Wastewater Treatment Plant Supervisor
City of Bronson
141 South Matteson Street
Bronson, Michigan 49028

Dear Mr. Buckley:

SUBJECT: Biosolids and Per- and Polyfluoroalkyl Substances (PFAS) Monitoring Results
National Pollutant Discharge Elimination System (NPDES) Permit No. MI0020729
Designated Name: Bronson WWTP

On April 28, 2021, and October 13, 2021, the Bronson Wastewater Treatment Plant (WWTP) notified the Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division (WRD), that biosolids samples collected from the Bronson WWTP were analyzed for PFAS. This is in accordance with the requirements set forth in the WRD's *Interim Strategy for Land Application of Biosolids Containing PFAS* and the Residuals Management Program (RMP) Modification letter dated April 5, 2021, which became part of the WWTP's approved RMP.

The April 5, 2021, laboratory results indicated that the PFAS analyte, Perfluorooctanoic Sulfonate (PFOS), concentrations in biosolids were 35 micrograms per kilogram (ug/kg) or parts per billion (ppb). Additional samples were collected on September 8, 2021, with laboratory results indicating PFOS concentrations at 120 ppb. These analytical results suggest the WWTP is likely receiving wastewater from one or more sources that are discharging elevated concentrations of PFOS, which is concentrating in the facility's biosolids.

Based on variability of the WWTP PFAS results, the facility shall undertake the following activities should land application occur:

With the WWTP's current PFOS result in biosolids between 51 ug/kg and 149 ug/kg, the facility shall undertake the following response activities should land application occur:

- Land application rates shall be no more than 1.5 dry tons per acre to reduce overall loading to the site or submit an Alternative Risk Mitigation Strategy (ARMS). When submitting an ARMS, please do so through the Biosolids PFAS Monitoring Report located on the facility's Dashboard in MiWaters under the "As Needed" tab.

- Provide the most current PFOS analytical results and additional information specific to PFAS and biosolids in Michigan to landowners and farmers prior to the land application of biosolids. Information on notification requirements and sample templates can be obtained from Michigan Biosolids PFAS-related information and links.

- Beginning in calendar year 2022, collect a minimum of one (1) annual biosolids PFAS sample prior to initial land application each year, unless otherwise notified by the WRD's Biosolids Program staff.

- Continue sampling final effluent for PFAS, investigating potential sources (historical and/or active) to the WWTP, and submitting the information in MiWaters as previously directed by the WRD.

When submitting the biosolids PFAS results, Bronson WWTP notified EGLE WRD that the facility would land apply no more than 1.5 dry tons per acre to reduce overall loading to the site. On November 1, 2021, EGLE WRD met with Bronson WWTP to discuss the PFAS results and confirmed the reduced land application rate, and additional source investigation.

Please note that depending on the results of all samples collected and investigation findings, further sampling in other areas of the facility and collection system may be required; if sources are found, you may need to develop a Source Reduction Program (SRP).

Information on sampling PFAS in the final effluent, investigating potential sources, and developing an SRP can be obtained at IPP PFAS Initiative. This link contains numerous documents, including Frequently Asked Questions, Wastewater PFAS Sampling Guidance, and Recommended PFAS Screening and Evaluation Guidance. The WRD's IPP PFAS staff (copied on this letter) can assist the WWTP in PFAS source identification and reduction. This effort may also require further sampling in other areas of the facility and collection system. The IPP PFAS Staff Map shows regional staff contact information.

This Biosolids PFAS Monitoring Report acknowledgment does not constitute a release or waiver of liability for compliance with your NPDES Permit; your NPDES Permit Application; or Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). Please be advised that if new PFAS information becomes available or new standards or requirements are implemented, the WRD may require additional actions in accordance with the NREPA and its administrative rules.

Thank you for protecting Michigan's public health and environment from these emerging pollutants. Should you need further information, please contact me or Ms. Cindy Sneller at SnellerC@michigan.gov; 616-401-2471; or EGLE, WRD, Kalamazoo District Office, 7953 Adobe Road, Kalamazoo, Michigan 49009-5025.

Sincerely,

Jennifer Klang, District Supervisor
Kalamazoo District Office
Water Resources Division
269-568-2697
KlangJ@michigan.gov

JK:CS:DMM

cc: Mr. Mike Person, EGLE
Ms. Jennifer Bush, EGLE
Ms. Anne Tavalire, EGLE
Ms. Terri Shattuck, EGLE

Ms. Cindy Sneller, EGLE

EXHIBIT B

Michigan Department of Environment, Great Lakes, and Energy
Water Resources Division

ADMINISTRATIVE CONSENT ORDER TERMINATION REQUEST

The completion of this form is voluntary and is intended to be used as guidance for persons that are eligible to request EGLE to issue a Termination Notice of their Administrative Consent Order (ACO). However, it may not be relied upon as being legally sufficient to cover all potential issues related to the specific requirements of the ACO. EGLE does not assume any liability for the use of this document and encourages the user to seek independent legal advice before using this form to draft its certification and request for Termination of its ACO.

PLEASE TYPE OR PRINT

1.ACO	ADMINISTRATIVE CONSENT ORDER NUMBER:		
2. Facility Owner or Legally Authorized Representative	Facility Owner/Legally Authorized Representative Who Signed the ACO:		
	Address:		Address 2 or P.O. Box:
	City:	State:	Zip Code:
	Telephone:	Fax:	E-mail address:
3. Compliance Section	*Summarize each completed requirement in the Compliance Section of the ACO give the completion date. Please use additional sheets if necessary:*		

Michigan Department of Environment, Great Lakes, and Energy
Water Resources Division

ADMINISTRATIVE CONSENT ORDER TERMINATION REQUEST

3.Certification	I, enter the name of owner or legally authorized representative, hereby certify that each requirement of the ACO that was entered into with the Department of Environment, Great Lakes, and Energy (EGLE) on enter the date has been complied with and completed including paying all money required by the ACO including but not limited to costs, civil fines, stipulated fines and fees. I also certify that all information that I am required to report to EGLE, enter District Office District Office Supervisor has been reported and that all records I am required to maintain pursuant to the ACO are being maintained at the facility (or other location as specified in Section 12 of the ACO). I hereby request that EGLE issue a Termination Notice, formally terminating the ACO in recognition of the resolution of the matters therein. I certify under penalty of law that this certification is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of a fine for having knowledge of violations and certifying that there are none. Print Name _____ Title _____ Signature _____ Date _____

Please mail this completed form to EGLE, Water Resources Division, District Office that is listed in Section III of the ACO the Owner/Legally Responsible Representative entered into with EGLE. Addresses for the district offices are listed below.

Bay City District Office
401 Ketchum Street, Suite B
Bay City, Michigan 48708

Cadillac District Office
120 West Chapin Street
Cadillac, Michigan 49601-2158

Gaylord District Office
2100 West M-32
Gaylord, Michigan 49735-9282

Grand Rapids District Office
State Office Building, 5th Floor
350 Ottawa Avenue NW, Unit 10
Grand Rapids, Michigan 49503-2341

Jackson District Office
301 E. Louis Glick Highway
Jackson, Michigan 49201-1556

Kalamazoo District Office
7953 Adobe Road
Kalamazoo, Michigan 49009-5026

Lansing District Office
525 West Allegan Street (Constitution Hall, 1S)
P.O. Box 30242
Lansing, Michigan 48909-7742

Marquette District Office
1504 West Washington Street
Marquette, Michigan 49855

Warren District Office
27700 Donald Court
Warren, Michigan 48092-2793

Appendix C

Wastewater System Evaluation

Wastewater System Evaluation

City of Bronson

Branch County, Michigan

April 2021

2130268

Prein&Newhof

Contents

2 SEWERS AND FORCE MAINS

The City's wastewater system includes gravity sewers and force mains serving most of the developed lands within the City's municipal limits as shown on Map 1.

2.1 Inventory

An inventory of manholes, gravity sewer pipes, and force mains was prepared for the asset management plan. The inventory contains information on the size, material, and installation year of manholes, sewer pipes, and force mains. The inventory also includes rim and invert elevations for manholes as well as length and slope for gravity sewer pipes.

2.1.1 Mapping System

The inventory was compiled using a Geographic Information System (GIS). The GIS serves as a repository of data from which information about each asset can be accessed through maps. The maps enable data-driven decision making.

An initial inventory was compiled from available documentation including prior system maps and record plans. Original documentation was scanned to create electronic images, which were hyperlinked to the GIS for convenient access.

2.1.2 Field Verification

The initial system inventory was verified by physically locating manholes, opening the lids, visually confirming the number and orientation of connecting pipes, and exploring previously unmapped sewers. Rim and invert elevations were surveyed, and Global Positioning System (GPS) coordinates were saved for all manholes. The GPS coordinates increase the accuracy of the GIS, making it a more useful tool for utility locating, capital improvement planning, and routine maintenance operations.

2.1.3 Summary of Sewer and Force Main Inventory

The wastewater system within the City includes approximately 66,600 lineal feet of gravity sewer pipes ranging from 8 to 18 inches in diameter and 253 manholes. There are also 2 lift stations with 890 feet of force main pipes ranging from 6-inch to 8-inch diameter. Figure 1

shows a summary of the pipe age and material inventory. Figures 2 and 3 provide further details of the ages and materials of gravity sewer pipe and force main, respectively. The gravity sewer pipe materials are primarily clay and concrete pipe installed in 1957 and 1968 and PVC pipe installed from 1993 to the present. The manholes are primarily brick structures for the older manholes and precast concrete structures for the newer manhole structures. The force mains are cast iron pipe material. The inventory details for gravity sewer pipes and force mains are displayed on a series of maps. Map 2 shows the pipe diameters, Map 3 indicates the pipe installation years, and Map 4 documents the pipe materials.

2.2 Condition Assessment

2.2.1 Manholes

An assessment of the physical condition of manholes was made. Descriptions of the assessment methods and condition observations are provided below.

2.2.1.1 Visual Inspection

The primary method to assess the majority of manholes was visual inspection from above ground. Condition assessments were made on the structure, steps, casting, and observable infiltration. Approximately 98 percent of manholes were inspected and assessed with this method; the remaining manholes were omitted due to access limitations.

2.2.1.2 Summary of Manhole Conditions

Manholes were found to be in good condition overall, with occasional minor deficiencies that can be addressed as part of system operations and maintenance efforts. Six of the 253 manholes were identified as “poor” or “failed”. Of these 6 structures rate in poor or failed, 1 was for casting condition, 3 were for infiltration, and 2 for structural conditions Further details including locations of these individual manholes are available in the GIS.

2.2.2 Gravity Sewer Pipes

An assessment of the physical condition of gravity sewer pipes was made. Descriptions of the assessment methods and condition observations are provided below.

2.2.2.1 Zoom Camera Inspections

Inspections were made from inside manholes using a pole mounted video camera equipped with a spotlight and an optical zoom lens. An assessment of the condition of any observed offset joints, roots, debris, infiltration, corrosion, or other structural defects was made. Condition ratings of 1-5 were assigned to gravity sewer pipes, where 5 represents the most severe defect and 1 indicates no noted defect.

Zoom camera inspections have limitations for longer distances between manholes but provide a clear view of the ends of the pipe near the manhole. The observable distance varies, typically between 50 and 150 feet, and is affected by factors such as pipe alignment, roots, debris, and steam.

Zoom camera inspections provide an efficient way to identify pipes with severe problems and were used as a low-cost screening tool to identify pipes that required more detailed inspections.

2.2.2.2 Closed Circuit Televising with PACP Assessment

Closed Circuit Televising (CCTV) inspections were completed using remotely operated video cameras that travel through the sewer. CCTV inspection provides up-close visual detail through the entire length of pipe from manhole to manhole.

The National Association of Sewer Service Companies defines a set of standards for documenting sewer pipe conditions with its Pipeline Assessment and Certification Program (PACP). PACP provides a standard method for documenting the location, type, and severity of sewer defects. The type of each defect is categorized as either structural or operations and maintenance. Structural defects include cracks, holes, sags, and corrosion. Operations and maintenance observations include roots, deposits, infiltration, and grease. Each defect is assigned a condition rating of 1-5, with 5 being the most severe defect.

The PACP standard was followed for sewer pipe condition assessments from CCTV inspections. The details of each CCTV inspection are available for reference in the GIS.

2.2.2.3 Summary of Gravity Sewer Pipe Conditions

Map 5 shows the method by which gravity sewer pipes were inspected. Of those inspected, approximately 5 percent of the total gravity sewer pipes were inspected with the zoom camera method, and 90 percent were inspected with the CCTV method. Less than 5 percent of the gravity sewer pipes were given an estimated condition rating because the pipes were full of water due to surcharging conditions.

Structural Conditions

The gravity sewer pipes were found to be in generally good structural condition. The most noteworthy observations were broken pipes with soil visible, cracked/broken pipes, holes visible and joint displacement of the pipe. Structural defects are shown on Map 6, and Appendix A shows photos of these defects.

Infiltration Observations

Infiltration was observed at numerous locations as shown on Map 7. The high amount of infiltration is due to the age of existing sewer pipes and shallow depth of the water table. Photos of these defects are included in Appendix A. The impact of infiltration is discussed in the 2020 Sewer Flow Study report by Prein&Newhof. CCTV Inspections identified 16 infiltration “gushers”, 347 infiltration “runners” and 170 infiltration “weepers”.

Roots and Debris

Roots were observed throughout the system as shown on Map 8, and debris typical for sewer systems was observed in many locations. The most significant observations are shown on photos in Appendix A. Sewers with roots and the most severe debris were cleaned and inspected with the CCTV method. Any roots removed during cleaning and root cutting should be expected to regrow and will need to be managed to avoid eventual backups.

External Utility Penetrations

Inspections revealed one location with an external utility penetrating the sanitary sewers. Suspected utility penetrations were encountered with zoom camera inspections, and in

most cases, they were subsequently confirmed by CCTV inspection. The City has already been working with the utility companies to correct this problem. The status of the utility penetration observation is shown in Table 1.

2.2.3 Force Mains

Inspections to assess the condition of force mains were not conducted because current inspection technology is generally regarded to be not cost effective for most force mains. Operators stated that the Walker Street Lift Station force main is in very poor condition and in need of replacement.

2.2.4 Smoke Testing

Smoke testing was performed to identify deficiencies where storm water may enter the sanitary sewer system. The findings of the smoke testing program are presented in a separate 2019 Smoke Testing Report prepared by Prein&Newhof. General findings are as follows:

- Four (4) storm structures connected to the sanitary system (City owned)
- Twenty-four (24) low sanitary manholes that receives storm water when it rains (City responsibility); 2 are private.
- One (1) lift station wetwell cover that receives storm water when it rains (City responsibility)
- One (1) roof drain connected (private responsibility)
- Thirty-eight (38) broken cleanouts (private responsibility)
- Three (3) misc. issues (private responsibility)

2.3 Risk of Failure

A Risk of Failure (RoF) rating system was developed and used to rate the approximate likelihood of structural failures based on the condition assessments. Each manhole, gravity sewer pipe, and force main was assigned an RoF rating of 1-5, with 5 being the worst condition or highest RoF.

The RoF ratings for gravity sewer pipes assessed with the CCTV method are based on the PACP standard condition ratings. In general, the PACP operations and maintenance type observations were considered sewer cleaning needs. Sewer cleaning needs were not included in the RoF rating. However, some PACP operations and maintenance type observations, including possible

cases of multiple root intrusions or severe infiltration, were considered a repair need rather than a cleaning need and were included in the RoF rating.

The RoF rating system for force mains is based on pipe age, material, and any history of pipe breaks. The RoF for City force mains that have not experienced any pipe breaks are based solely on pipe age and material.

2.3.1 Risk of Failure Summary

RoF ratings for manholes, gravity sewer pipes, and force mains are shown on Map 9 and summarized in Figure 4. Most of these assets have a relatively low RoF in their current condition.

The highest RoF rating among the gravity sewer pipes is for the utility penetration, broken and cracked pipes. These defects should be repaired as soon as possible and are detailed in the Capital Improvement Plan (CIP).

The highest RoF rating among the force mains is for the Walker Street Lift Station force main. The actual condition of the pipe and the likelihood that it may break are unknown. Further discussion is provided in Section 2.7.7.

2.4 Consequence of Failure

A Consequence of Failure (CoF) rating system was developed and used to rate the social, economic, and environmental impacts of potential sewer and force main failures. Each pipe was assigned a rating of 1-5, with 5 representing the most severe consequences.

Sewers under major roads were given high CoF ratings because of the financial cost and impact on the public to make emergency repairs. Sewers below other infrastructure, such as railroad and large water, gas, or electric transmission lines were given high CoF ratings because a sinkhole or a repair excavation may damage these other critical infrastructure systems. Sewers serving densely populated areas were given high CoF ratings because more people would be affected by their failure. Sewers which carry relatively large amounts of wastewater were given high CoF ratings because of their potential for significant release to the environment. All of these factors were considered, and the resulting values were adjusted to ensure a useful distribution of ratings across the system.

The CoF ratings were reviewed with City staff and are shown on Map 10.

2.5 Criticality

The RoF ratings and the CoF ratings were combined into a third rating system known as criticality. The criticality rating is the result of multiplying the RoF by the CoF, producing ratings ranging from 1-25, with 25 representing the most urgent need. The criticality ratings, shown on Map 11, should be considered when establishing the order or priorities for system improvements.

2.6 Capacity Analysis

Long-term capacity needs should always be considered before making system improvements. If a pipe in need of repair also requires increased capacity to convey peak flows, this may affect the decision on how to make repairs. For example, an interior lining may be considered as a repair option in some cases, but if the capacity needs to be increased, then open excavation to replace the sewer may be the more financially appropriate decision.

The flows within the City's sanitary system were evaluated using flow meters to determine a baseline flow for potential capacity needs. A detailed review of the flow and capacity analysis is presented in the Sewer Flow Study by Prein&Newhof. No additional capacity is needed currently or in the foreseeable future.

However, the Sewer Flow Study shows most of the sanitary sewers north of US-12 (Chicago Avenue) will surcharge during a 25-year, 24-hour storm with the current infiltration entering the system. Also, the 18-inch pipes from Mill Street to the wastewater treatment plant and the sewer pipes in Union Street from Ruggles to Walker are at 100% capacity due to infiltration, minimal pipe slopes and flow restriction at the treatment plant. Reduction of infiltration may help resolve the capacity of these pipes without the need to upsize these pipes.

2.7 Capital Improvement Recommendations

Considering the condition assessments and criticality analysis described above, as well as the findings of the Sewer Flow Study and Smoke Testing Report, the following sewer and force main improvements should be incorporated into the City's CIP. Map 12 shows the location of each needed improvement.

2.7.1 Remove Existing Utility Obstructions

The condition assessments found that there is currently an obstruction in one of the wastewater pipes caused by another utility conflict and is a localized defect which can be remedied with a point repair are shown on Map 12. This should be removed as soon as possible, as the penetration restricts flow and can cause significant problems if the sewer pipe requires cleaning or root cutting, as this penetrating utility could be significantly damaged. Distances from manholes to the repair location can be determined in the GIS mapping system. The current status of the utility penetration observation is shown in Table 1.

2.7.2 Repair and/or Replace Pipes with RoF's of 5

The condition assessments show 8 pipes with an RoF rating of 5. Issues include significant infiltration, utility intrusion, holes with soil visible, and concrete with reinforcement visible. The locations and associated defects in the pipes are as follows:

- Chicago Street, utility penetration
- Union Street, hole soil visible
- W. Railroad Street, broken pipe and joint offset
- Union and Division Street, hole soil visible
- Fremont Street, broken pipe
- Shaffmaster Boulevard, broken pipe
- N. Ruggles and South Street, broken pipe
- Roosevelt Street, hole soil visible

2.7.3 Repair and/or Replace Pipes with RoF's of 4

The condition assessments show 21 pipes with an RoF rating of 4, due primarily to pipe cracking, deformation, and corrosion. The locations and associated issues with the pipes are as follows:

- North Street, multiple fractures
- S. Matteson Street, broken pipe
- E. Chicago Street, broken pipe
- E. Chicago and N. Douglas Street, multiple fractures
- E. Chicago and Cynthia Street, multiple fractures
- Division Street, multiple fractures
- S. Matteson Street, multiple fractures
- N. Ruggles Street, broken pipe
- E. Corey Street and Oak Drive, multiple fractures
- E. Corey Street, multiple fractures
- Mowry Avenue, hole in pipe
- S. Ruggles and Compton Street, multiple fractures

- S. Ruggles Street, multiple fractures
- Shaffmaster Boulevard, multiple fractures
- Franklin Street, multiple fractures
- N. Walker Street, multiple fractures
- Oak Drive, multiple fractures
- Walnut Street, multiple fractures
- Franklin Street, joint offset
- Buchanan Street, multiple fractures

2.7.4 Remove Storm Connections to Sanitary System (City Responsibility)

The City should consider replacing sanitary castings in low lying areas identified via smoke testing with watertight castings. The City should also correct the 4 storm basins that are directly connected to the sanitary system. These catch basins were found to be connected during smoke testing and can be found in the smoke testing report dated July 16, 2019 and their locations are as follows:

- Industrial Avenue, catch basin
- N. Douglas and W. Railroad Street, catch basin at NE & SE corner
- N. Douglas and W. Railroad Street, storm manhole

2.7.5 Remove Storm Connections to Sanitary System (Private Responsibility)

Recommend using the City's ordinances to enforce the removal of private storm connection to the City's wastewater system. Forty-two (42) issues throughout the city were found during smoke testing. These include roof drains and broken cleanouts. These locations can be found in the smoke testing report dated July 16, 2019.

2.7.6 Manhole Rehabilitation

Condition assessment and smoke testing indicate that 41 structures require some form of rehabilitation for structural defects, infiltration, or casting replacements to help minimize inflow during storm events. These locations can be found in the smoke testing report and within the GIS system.

2.7.7 Inflow and Infiltration (I/I) Removal

The CCTV inspections and flow meters showed excessive I/I throughout the entire system. Areas of inflow identified should be eliminated to the extent practical. Infiltration "gushers" identified thru CCTV that should be fixed as soon as possible, along with the infiltration

"runners". Other infiltration locations, such as "weepers" should be monitored and addressed with grouting, cured-in-place pipe, or dig and replace projects as funding becomes available. These infiltration locations and types can be found on Map 7.

The Sewer Flow Study shows excessive I/I in multiple areas of the City and a resulting capacity concern downstream. The Smoke Testing Report shows numerous storm water drains (both private and public) connected to the sanitary sewer along with several roof drains. Additionally, many manholes and broken sanitary cleanouts are located in low lying areas and allow water to infiltrate. Footing drains and sump pumps may also contribute I/I. Sources of I/I should be disconnected to reclaim base flow sewer capacity.

2.7.8 Force Main Replacement – Walker Street and Corey Street Lift Stations

The force main of the Walker Street Lift Station is cast iron from 1956 and Corey Street Lift Station is cast iron from 1968. The force mains are expected to be at the end of their useful life, based on material and age. Replacement of some force mains may be deferred until a break history develops, but financial planning for replacement is recommended. Due to operator concerns about the Walker Street force main, it is recommended that its replacement be prioritized.

2.7.9 Sewer Cleaning, Root Cutting and Televising

A planned cleaning and root cutting schedule for sewers should be implemented to reduce the risk of backups. Data collected during CCTV and zoom camera inspections can be used when developing a cleaning and root cutting schedule along with prior cleaning records and other maintenance history.

Condition assessments should be kept current by scheduling recurring CCTV inspections of the system. Future inspections of gravity sewer pipes should be planned considering the most recent pipe condition information and pipe life cycle expectations.

Initial cleaning, root cutting, and televising schedules were developed as part of this evaluation and provided to the City for review and implementation.

3 LIFT STATIONS

The wastewater collection system has two lift stations. Corey Street Lift Station serves a small residential area on the east side of the City, and Walker Street Lift Station serves the majority of the area south of Chicago Street (US Highway 12). The station locations are shown in Map 1.

3.1 Inventory

An inventory of the functionally and financially significant assets of the lift stations was prepared for the asset management plan. The inventory contains the location and firm capacity for each lift station as well as pertinent information regarding the pumps, valves, piping, structures, electrical equipment, instrumentation, and controls. The information was compiled from site visits and all available documentation including record plans and operations and maintenance manuals. Original documentation was scanned to create electronic images, which were hyperlinked to the GIS for convenient access.

3.1.1 Asset Classification

The inventoried lift station assets are grouped into the following asset classes: Mechanical, Electrical, Structural, Instrumentation and Controls, and Other. The Other asset class includes miscellaneous assets that are not essential to the operation of the station. Equipment/assets found in each asset class generally have a similar expected service or useful life.

3.1.2 Field Verification

Lift station inventory information was verified by visual observation during site visits and discussion with the operators.

3.1.3 Summary of Lift Station Inventory

A general summary for each lift station and respective force main is found in Figure 5. A complete inventory of lift station assets is found in Appendix B.

3.2 Condition Assessment

In order to evaluate the overall RoF for each lift station, condition assessments were performed, when possible, on each lift station asset. The assessments were not meant to determine potential maintenance activities, but rather to assess the current physical condition of each asset and its

ability to perform as intended. To keep the assessments objective and provide a relative comparison between lift stations, common observable modes of failure were generated for each type of asset. The methods used to determine if an asset showed signs of the various failure modes are described below.

3.2.1 Visual Observation

Each lift station was visited, and the assets were photo documented. The photos allowed for post-visit assessments and verification of field observations. The photos also provide a point of reference for future condition assessments and are included in the GIS.

3.2.2 Performance Testing

Performance testing was completed, when possible, on the pumps and valves at each lift station at the time of the site visit. Pump testing included determining actual pumping capacity and listening for cavitation or vibration. The pumping capacity was determined by monitoring wet well levels during fill and draw cycles using a static level tape and stopwatch. Valve testing included actuating each isolation valve and monitoring check valves to confirm proper seating.

3.2.3 Operations & Maintenance

Operations and maintenance issues were discussed with the operators to reveal any recurring problems at the stations that may not have been present or easily observed at the time of the visit.

3.2.4 Summary of Lift Station Conditions

The complete condition assessment for each lift station is provided in Appendix C. The lift station condition summaries were reviewed by the City to confirm their general agreement with the assessments. A summary of the condition deficiencies for each lift station is provided below. Photos of some of the lift station deficiencies are provided in Appendix D.

3.2.4.1 Corey Street Lift Station

Corey Street Lift Station is a can type station that was constructed in 1968 and is generally in fair to poor condition. The pumps and can structure are corroding, and there are signs of leaks at the check valve shafts and force main wall penetration. There are

possible signs of infiltration in the wet well. The steps are corroding, and there is concrete failure and exposed rebar at the lateral penetration.

The results of a cathodic protection system survey performed by Corrpro, which is provided in Appendix E, indicate that the system is inoperative and not adequately protecting the can from corrosion. The survey also revealed possible signs of exterior corrosion of the can based on measurements of the wall thickness. The main control panel is corroding and showing signs of electrical damage and wear. The main electrical service and distribution equipment appear to be original, and the lighting is incandescent. The heater is corroding and is out of operation.

3.2.4.2 Walker Street Lift Station

Walker Street Lift Station is a below-grade dry well-wet well station that was constructed in 1957 and rehabilitated with new pumps, valves, and piping in 2001, and controls in 2002. The dry well discharge piping, pump motors, and Pump No. 1 check valve have been replaced again as recently as the summer of 2020. The station is generally in poor condition. According to operators, both pumps tend to shear their shafts, which need to be replaced every 4 – 5 years. Most of the equipment is corroding, including the pumps, valves, piping, sump pump, vents, wet well ladder, conduit, and transducer stilling well. At the time of the condition assessment, the force main was leaking near the ceiling penetration. The isolation valves are difficult to actuate, and the Pump No. 2 suction valve has no handwheel. The wet well casting is corroding, and the dry well coating is failing. There is spalling concrete and exposed rebar at one of the conduit penetrations in the wet well, and the structure accumulates excessive rags and debris.

The wet well and dry well are located below Walker Street while the controls are located along the curb, making entrance into either structure or operation of the control panel unsafe. The wooden control panel support is rotted and is no longer supporting the panel. The control panel is corroding and in poor condition. The main electrical service and distribution equipment appear to be original, and the lighting is incandescent. The exhaust fan blower is corroding and appears out of operation. There is exposed abandoned wiring in the wet well.

3.3 Risk of Failure

The overall RoF of each lift station was determined based on the condition assessment of the inventoried assets. Each observable mode of failure was assigned a 1-5 rating based on the following general rating guidelines:

Risk of Failure Rating Guidelines

RoF Rating	General Condition	Repair Required*	Maintenance
1	no issues	0%	none
2	minor defects	5%	cosmetic
3	minor issues	10% - 20%	some
4	major issues	20% - 40%	rehabilitation
5	complete failure	> 50%	unserviceable

* Repair required to return asset to a condition rating of 1.

The RoF rating for the individual asset is based on the worst-case rating of any observed mode of failure for the asset. Assets that could not be observed were rated based on a comparison of their age and estimated service life. The RoF rating for the asset class is in turn based on the worst-case rating of any asset within the respective asset class. The overall lift station RoF is determined by multiplying the asset class RoF by a weighting factor that correlates to the importance of the asset class function on the overall operation of the lift station.

3.3.1 Risk of Failure Summary

Map 8 shows overall RoF ratings for each lift station, as well as the RoF ratings for each asset class within the lift stations. Figure 4 shows a graphical representation of lift station RoF ratings in terms of percent of all stations. Appendix F provides a tabular summary of all the lift station RoF ratings.

3.4 Consequence of Failure

Consequence of Failure (CoF) is an analysis of social, economic, and environmental impacts associated with a failure. For lift stations, the impact of failure is a wastewater overflow. Wastewater can overflow directly to the environment through the top of the wet well or out an upstream manhole cover. Overflows can also occur at an upstream connection causing flooding to a home or building. The lift station CoF rating is based on two factors as described below.

3.4.1 Response Time

The primary factor influencing the CoF is the time available for the operators to respond to a station failure prior to an overflow occurring in the system. No historical data was available regarding system overflows; therefore, approximate response times were estimated using the best available information. Record plans of the collection system upstream of the lift stations were analyzed to determine the lowest connection or manhole rim elevation. The approximate dry weather response time for each lift station was then determined by using the average daily flow and the storage volume in the collection system below the elevation of the overflow point.

A 1-5 rating was assigned to each lift station based on the estimated response time, with 1 indicating a long available response time and 5 indicating a short response time.

3.4.2 Average Daily Flow

The second factor influencing CoF is the average daily influent flow to each lift station. Average daily flows were determined based on the best available information from pump run times and drawdown test results. Flow data were analyzed for September 2019 through August 2020 to obtain a 12-month average daily flow. The average daily flows for the lift stations were then assigned a relative 1-5 rating, with 1 being low flow and 5 being high flow.

3.4.3 Summary of Consequence of Failure

A weighting factor was applied to both the response time rating and flow rating. The resulting ratings were then added together to calculate the CoF for each lift station. The overall CoF ratings for the lift stations are shown in Map 9. A summary of the overall CoF rating for each lift station is provided in Appendix F. The response time and flow ratings for each lift station are provided in Appendix G.

3.5 Criticality

The criticality rating of each lift station was determined by multiplying the overall RoF rating by the CoF rating. The resulting criticality rating can be used to prioritize asset replacement if financial resources are not available to address all the current system needs. Map 10 shows the criticality of each lift station and respective force main. A lift station criticality matrix has been

prepared to graphically show the RoF and CoF impact on the criticality rating and is provided in Figure 6.

3.6 Capacity Analysis

When evaluating lift station assets, it is important to consider long term capacity needs in addition to physical condition. Descriptions of the lift station capacity considerations are described below.

3.6.1 Pumping Capacity

Per the design criteria expressed in Section 42.31 of the "Recommended Standards for Wastewater Facilities," 2014 edition (Ten States Standards), lift stations should be designed with at least two pumping units. Where only two pumps are provided, the pumps must have identical pumping capacity. At a minimum, pumps must be able to handle the peak hourly flow with the largest pump out of service. The available capacity of the station with the largest pump out of service is known as the firm capacity of a lift station. Therefore, for duplex lift stations, the firm capacity is the rated capacity of the individual pump.

Flow metering and modeling was completed on the collection system in order to evaluate sewer capacity. The results are provided in the 2021 Sewer Flow Study prepared by Prein&Newhof. The study provides insight as to what the firm capacity of the lift stations should be based on actual and projected flow data.

3.6.2 Piping Capacity

The capacities of lift station and force main piping are dictated by the capabilities of the pump and design standards. The higher the flow in the pipe, the higher the friction losses, and therefore the greater the pump requirements. The Ten States Standards (Section 42.38) recommend the velocity through a pipe be greater than 2 ft/s, which is required to prevent solids in the wastewater from settling out in the pipe. Velocities greater than 8 ft/s can cause excessive turbulence that can lead to energy inefficiency and possibly increased wear from cavitation.

3.6.3 Wet Well Capacity

The working volume of the wet well is the volume available between the pump on and pump off elevations. For constant speed pumps, the wet well volume directly impacts the frequency at which the pumps are required to cycle. The Ten States Standards (Section 42.62) require that pump cycle time not exceed pump manufacturer recommendations. Typically, a lift station should not be allowed to cycle more than approximately 4 times per hour. The maximum number of cycles occurs when influent flows are equal to half the pumping capacity. High pump cycle frequencies increase wear on the pumps and motors and increase energy usage. The Ten States Standards (Section 42.62) also recommend that the wet well be sized such that fill time at average daily flows does not exceed 30 minutes. Long periods of pumping inactivity can lead to anaerobic wastewater conditions which can cause odors and damage associated with hydrogen sulfide.

3.6.4 Summary of Capacity Analysis

A summary of the capacity analysis for each lift station is provided in Appendix H. Given that all of the pumps are operating at a capacity significantly higher than the firm capacity, Appendix H contains a summary for both the firm pump capacity and the actual current pump capacity. Where actual capacity is analyzed, only the higher of the two tested pump capacities is considered. Brief explanations of capacity concerns are provided below.

3.6.4.1 Corey Street Lift Station

The velocity in the 8-inch force main is only 1 ft/s when Corey Street Lift Station is operating at firm capacity. Actual velocity through the 4-inch valves is nearly 8 ft/s. The maximum station cycle frequency exceeds 10 cycles per hour. Field measurements indicate that there may be additional working volume available in the wet well, which would decrease the cycle frequency.

3.6.4.2 Walker Street Lift Station

The results of the Sewer Flow Study indicate that modeled peak flows to Walker Street Lift Station exceed the firm capacity of the station during a 24-hour, 25-year storm due to excessive I/I in the upstream collection system. Historical flow data confirms that the firm capacity has been exceeded as recently as May 2020.

It appears that the station normally operates with the pump on elevation above the influent invert, which increases the likelihood of settled solids in the influent pipe and decreases response time in the event of a backup. Even with this additional working volume, the average station cycle frequency exceeds the recommended number of cycles per hour. If the pump on elevation was brought below the invert, the average cycle frequency would be 19 cycles per hour at firm capacity and more than 30 cycles per hour at tested pump capacities. Although record plans indicate that there may be additional working volume available in the wet well, the structure appears to be undersized for current flows.

3.7 Capital Improvement Recommendations

The following capital improvement recommendations are based on the lift station condition assessments, the criticality analysis, and the results of the Sewer Flow Study, and should be incorporated into the City CIP.

3.7.1 Corey Street Lift Station

It is recommended that Corey Street Lift Station be completely replaced or rehabilitated. The firm capacity of the station should remain 150 gpm based on the results of the Sewer Flow Study.

If the station is rehabilitated, new pumps, valves, piping, electrical, HVAC, and controls should be installed. An impressed current cathodic protection system should be added to protect the can from corrosion, and the can should be recoated. It is recommended that the entrance tube hatch be lowered to facilitate easier access. It is also recommended that the control panel be replaced and located above grade. A concrete slab should be poured around the can and control panel.

3.7.2 Walker Street Lift Station

Due to its age, location, poor condition, and capacity concerns, it is recommended that Walker Street Lift Station be replaced with a new submersible lift station. The firm capacity of the station should be increased to approximately 500 gpm to accommodate current and future peak flows. The proposed firm capacity should be reevaluated based on the effectiveness and timing of I/I removal efforts in the collection system.

4 TREATMENT PLANT

The City of Bronson Wastewater Treatment Plant (WWTP) generally consists of influent screening, grit removal, activated sludge treatment, secondary clarification, and ultraviolet (UV) disinfection prior to discharging final effluent to Drain #30. Primary sludge is thickened before being pumped to storage tanks until the biosolids can be hauled off site for land application.

The WWTP was originally constructed in 1958 as a trickling filter treatment plant. In 1974, the WWTP was improved to include influent screening, grit removal, an additional primary settling tank, and storage digester. In 1993, much of the WWTP equipment was upgraded, removed, or retrofitted, and the oxidation ditch, final clarifiers, tertiary traveling bridge filters, gravity thickener, sludge storage tank, and UV disinfection system were installed. Currently, the grit chamber, tertiary filters, digesters, and effluent pump station are not used. The WWTP process schematic from the 1993 improvements is provided in Figure 7.

4.1 Inventory

An inventory of the functionally and financially significant assets within the WWTP was prepared for the asset management plan. The asset inventory was compiled from site visits and all available documentation including record plans and maintenance records. Original documentation was scanned to create electronic images, which were hyperlinked to the GIS for convenient access.

Assets are categorized by process, asset class, asset type, and location as described below.

4.1.1 Processes

The inventoried WWTP assets are first grouped by treatment process. Treatment processes that were either partially or completely evaluated include Influent Pump Station, Grit Removal, Oxidation Ditch, Final Clarifiers, Tertiary Filters, Effluent Pump Station, Disinfection, Recirculation Pump Station, Scum Pump Station, RAS/WAS, Sludge Handling, Sludge Thickening, Sludge Storage, Digesters, and Ferric Chloride Feed. Site and building assets, while not necessary for treatment, are financially significant and therefore are included as a separate “process”. A brief summary of each evaluated process is provided below.

4.1.1.1 Influent Pump Station

Wastewater flows by gravity to the WWTP in an 18-inch vitrified clay pipe (VCP). The wastewater first passes through a grinder or through the adjacent manual bar screen when the grinder requires service. There is a sluice gate and a removable overflow weir used to control water into the channels. The grinder has dual shafts with cutters that grind solids to minimize fouling of the downstream equipment. The influent wastewater is pumped through the influent flow meter and up to the remaining treatment process by a triplex pump station. The wet well is under the Administration Building and most of the pump station assets are inside the building on the basement level. The influent meter is in the Grit Removal Room. The Influent Pump Station process includes the grinder, end suction pumps, flow meter, valves, piping and associated electrical and controls assets.

4.1.1.2 Grit Removal

The influent pump station discharge flows outside of the Administration Building to a vortex-type grit tank to settle out grit particles to protect the downstream equipment. A blower installed in the Administration Building Grit Room sends air to the grit tank to assist with grit removal. A grit air lift pump installed on top of the grit tank sends the grit laden wastewater to a grit washer/classifier, which dewaters the grit before pushing it into a waste container for disposal. The grit tank effluent passes through a Parshall flume with a level sensor before flowing to oxidation ditch. There are three stop plates that can be used to bypass the grit tank. The grit removal process includes the tank, stop plates, grit air lift pump, grit blower, Parshall flume valves, and piping, washer/classifier and associated electrical and controls assets.

4.1.1.3 Oxidation Ditch

The oxidation ditch is an activated sludge biological treatment process that is currently used for nutrient removal, especially nitrogen as ammonia and phosphorus. The oxidation ditch has outer, middle, and inside rings. There are six rotary aerators that provide adequate aeration to achieve biological treatment. The aeration tank process includes the tanks, aerators, railing, grating and stairs.

4.1.1.4 Final Clarifiers

The mixed liquor from the oxidation ditch flows by gravity to one of the two Final Clarifiers. Flow enters the influent well of each clarifier and is directed out to the perimeter of the clarifier. The flow passes under the scum baffle and over the effluent weir into the effluent launder. The launder collected the flow and sends it to the effluent chamber where it bypasses the Tertiary Filters and flows to the UV channel. Solids are settled, collected with sludge rakes, and sent to the return activated sludge (RAS) pumps. Scum is collected when the scum blades direct the scum into the scum trough, where it then flows to the scum well. The Final Clarifiers process includes the tanks, sludge rakes, scum blades, influent well, scum trough, scum baffle, effluent weir, effluent launder, effluent chamber, valves, piping, railing, grating, stairs, and associated electrical and controls assets.

4.1.1.5 Disinfection

UV disinfection is currently used to inactivate harmful organisms before discharging effluent. Flow enters the UV channel and passes through a Parshall flume with a level sensor. It then passes through two banks of UV bulbs. The Disinfection process includes the channel, Parshall flume, UV bulbs, power distribution centers, and grating.

4.1.1.6 Recirculation Pump Station

Flows from the Sludge Thickener supernatant, Sludge Storage Tank decant/overflow, Process Control Building sump pump discharge, and oxidation ditch drain flow to the recirculation tank. The Recirculation pumps returns the flow to the Influent Pump Station discharge pipe. The Recirculation Pump Station process includes a tank, submersible pumps, access hatches, valves, piping, and associated electrical and controls assets.

4.1.1.7 Return Activated Sludge & Waste Activated Sludge

Settled activated sludge from Final Clarifiers flows to RAS pumps and is pumped to the Oxidation Ditch. The wasting valve is opened to transfer RAS to the Sludge Thickener as waste activated sludge (WAS). The RAS/WAS process includes RAS pumps, RAS flow meters, WAS flow meter, piping, valves, and associated electrical and control assets.

4.1.1.8 Sludge Handling

The Sludge Handling process consists of the solids loading pump located in the Process Control Building, the digester feed plunger pump, located on the intermediate floor of the Administration Building, the sludge loading station, and associated pipes, valves, electrical, and control assets. The solids loading pump is used to feed the Sludge Storage Tank, Sludge Loading Station, and send the oxidation ditch drain to the recirculation tank. The plunger pump, although not in use, is intended to feed and remove solids from the digester and storage digester.

4.1.1.9 Sludge Thickening

WAS is sent to the Sludge Thickener where solids condense and settle. Sludge scraper blades bring the settled sludge to the solids loading pump suction line. Supernatant flows over the weir and collects in the effluent launder. The supernatant combines with the Sludge Storage Tank decant/overflow line and the Process Control Building sump pumps before flowing into the Recirculation Tank. The Sludge Thickening process includes concrete tank, sludge scraper blades, influent well, weir and baffle, supernatant launder, drive unit, stairs, bridge, railing, grates, and associated electrical and controls.

4.1.1.10 Sludge Storage

Solids are sent to the Sludge Storage Tank via the solids loading pump for storage and additional thickening. There is an overflow pipe and three decant pipes at different elevations. The overflow/decant lines combine with the sludge thickener supernatant to flow to the Recirculation Tank. The Sludge Storage process includes the tank, overflow/decant manhole, piping, valves, and associated electrical and controls.

4.1.1.11 Digesters

There are two anaerobic digesters on site: digester and storage digester. They are currently used as additional sludge storage and not their intended used of decomposing organic matter because the sludge volume reduction did not justify the cost to operate. The Digesters process includes tanks, valve vault, waste gas burner, supernatant chambers, access hatches, railings, piping, valves, and associated electrical, heating, and controls.

4.1.1.12 Ferric Chloride Feed

Ferric chloride is added to the treatment system to promote chemical phosphorus removal. Ferric chloride reacts with soluble phosphate to form solid precipitates that settle and can be removed in the final clarifiers. Ferric chloride is stored on site in a tank and pumped to the grit tank effluent and oxidation tank effluent chamber. The feed pumps are located in the Administration Building Chemical Room. The ferric chloride feed process includes the storage tank, chemical feed pumps, piping, and valves.

4.1.1.13 Processes No Longer In Use

Several processes at the WWTP are no longer in use while the physical assets remain in place and have not been repurposed.

4.1.1.13.1 Tertiary Filters

The Tertiary Filters are traveling bridge filters which are continuous downflow, automatic backwash, low head filters. The filters contain many individual filter cells that are backwashed sequentially by a backwash pump on the traveling bridge. The process utilizes a sand media to filter out residual suspended solids. The process is currently not in use because it is not needed to meet NDPES effluent limits. The Tertiary Filters process includes tanks, sand media, traveling bridges, valves, piping, railing, grating, and associated electrical and controls assets.

4.1.1.13.2 Effluent Pump Station

The Effluent Pump Station is intended to pump the tertiary effluent to the UV channel. Because the Tertiary filters are no longer used, the effluent pumps are not necessary. The Effluent Pump Station process includes pumps, piping, valves, and associated electrical and control assets.

4.1.1.13.3 Scum Pump Station

The Scum Pump Station is intended to pull the Final Clarifier scum from the respective scum wells and pump scum to the digesters. The Scum Pumps have never been used according to the Operators because their function can be more easily accomplished using the loading pump. The Scum Pump Station process

includes scum pumps, piping, valves, and associated electrical and control assets.

4.1.1.13.4 Polymer Feed

Polymer was intended to be added to the treatment system to act as a coagulate and precipitate suspended solids out of the wastewater. Dry polymer was mixed with water in tanks and pumped to the oxidation ditch from the Administration Building Chemical Room. A polymer solution blended in the Process Control Building was pumped to the North and South Final Clarifiers. The Polymer Feed process including mixing tanks, mixers, pumps, valves, piping, and buried piping. The Polymer Feed process is not in service because it is no longer needed to achieve treatment objectives.

4.1.1.13.5 Defoamer Feed

Defoamer was at one time added to control Nocardioform foam in the oxidation ditches. Defoamer was stored in the Process Control Building in drums where it was pumped to the oxidation ditch. The Defoamer process includes piping and buried piping. The process in no longer in service because it is no longer needed to achieve treatment objectives and the pumps have been removed.

4.1.1.14 Buildings

The buildings at the WWTP are each their own respective process since they include structural, mechanical, electrical, instrumentation and controls, and other type assets.

Assets included in each building process are related to the building envelope, building access, heating, ventilation, air conditioning, plumbing, and electrical equipment.

Administration Building

The Administration Building includes the Chemical Feed Room, Chlorine Room, Grit Removal Room, Laboratory, Intermediate Floor, Basement Floor, and the Tertiary Filter Room. The Administration Building houses the screening, grit removal equipment, Influent Pump Station, Effluent Pump Station, portions of Sludge Handling equipment, Recirculation piping and valves, and Tertiary Filters, as well as the influent and

secondary influent, secondary effluent and final effluent samplers. The building process includes the building envelope, roof, doors, windows, HVAC, and electrical assets.

Process Control Building

The Process Control Building contains the RAS/WAS and Scum pumps, valves, and piping and portion of sludge handling equipment. The building process includes the building envelope, roof, doors, windows, HVAC, and electrical assets.

Maintenance Building

The Maintenance Building currently houses the non-fixed assets including a front end loader, the backup generators process and is also used for storage. The building process includes the building envelope, roof, doors, windows, and electrical assets.

4.1.1.15 Site

The Site process includes the paved access drives, concrete sidewalks, storm sewer, water service lines, lighting, yard hydrants, access gate, and perimeter fencing.

4.1.1.16 Non-Fixed Assets

The City owns several non-fixed assets that are utilized throughout the WWTP but are not associated with a specific process listed above. Financially significant non-fixed assets are included in the inventory.

4.1.2 Asset Classification

The next level in asset categorization is the asset class, which includes the same classes as described for the lift stations: Mechanical, Electrical, Structural, Instrumentation and Controls, and Other. The WWTP assets are further broken down into asset types, each with a unique useful life. In addition to asset classification the assets have a location and sub-location designation to allow for ease of locating. Assets were also given unique descriptions as necessary for differentiating from other assets with similar function.

4.1.3 Summary of WWTP Inventory

A spreadsheet summary of the inventoried WWTP assets was provided to the Owner.

4.2 Condition Assessment

In order to evaluate the RoF for each asset, condition assessments were performed where possible. The assessments are not meant to determine necessary maintenance, but rather to assess the current physical condition of the asset and its ability to perform as intended.

4.2.1 Visual Observation

Visual observation was used to determine if the assets showed signs of wear or failure. The WWTP was visited and the majority of the assets were photo documented and compiled by process. Several vaults, manholes, and storm sewers on site were observed via zoom camera due to limited access. The photos allowed for post-visit assessments and verification of field observations. The photos also provide a point of reference for future condition assessments and are included in the GIS.

4.2.2 Operations & Maintenance

Operations and maintenance issues were discussed with the operators in an effort to reveal any recurring problems that may not have been present at the time of the visit.

4.2.3 Summary of WWTP Conditions

A general condition assessment summary is provided below for each process. Specific notes from the condition assessment are included in Appendix I. Photos of some of the observed deficiencies are included in Appendix J.

4.2.3.1 Influent Pump Station

The influent pump station process has been modified several times over the years. The grinder channel, manual bar screen bypass channel, and wet well were constructed in 1974. The grinder, stop plates, manual bar screen, pumps, some piping, and some valves were replaced in 1993.

The grinder is currently out of service due to frequent plugging and is in need of new cutters. The existing control panel was damaged when the basement flooded in the past and needs to be replaced. There is no bypass around the flow meter to allow for maintenance or replacement. The three variable frequency drives (VFDs) dedicated to the Influent Pumps in motor control center (MCC) B are not working and thus, the pumps are

always on the bypass contactors. Several valves are leaking including Influent Pump No. 2 discharge isolation, Influent Pump No. 3 discharge isolation, and two other influent pump station isolation valves. The piping from the pumps to the grit tank has failed coating and significant corrosion.

4.2.3.2 Grit Removal

The grit removal process was constructed in 1974 and replaced in 1993 with a vortex style grit removal system. There is major corrosion of the grit effluent channel. The blower, grit pump, and washer/classifier are not currently in use as they do not efficiently capture grit. The grit classifier motor, grit removal blower motor, and monorail and hoist are not functional.

4.2.3.3 Oxidation Ditch

The oxidation ditch process was constructed in 1993 and all the assets are in good condition. New center drives, motors, and bearings were installed in 2016.

4.2.3.4 Final Clarifiers

The Final Clarifiers process was constructed in 1993 and most of the assets are in good condition. Both the south and north final clarifiers have minor cracking and spalling. The south clarifier's baffle is warped. There is also corrosion of the stairs leading to the south final clarifier.

4.2.3.5 Disinfection

The UV disinfection system was installed in 1993. It is an older Trojan 3000 System and parts are difficult to get. The control panel was struck by lightning and does not work. The Owner operates the process manually based on fecal coliform counts.

4.2.3.6 Recirculation Pump Station

The Recirculation Pump Station was constructed in 1993. The recirculation tank was initially a primary settling tank in 1974. Two of the three recirculation pumps are no longer functioning. The recirculation flow meter was removed and replaced with an uncoated pipe. There is corrosion of the discharge piping.

4.2.3.7 Return Activated Sludge & Waste Activated Sludge

The RAS/WAS process was constructed in 1993. There are three RAS pumps but only RAS Pump No. 1 and No. 3 are in service. The pumps were rebuilt in 2014 but are not operating near their design capacity. Pump No.1 is operating at 50% and Pump No. 3 is operating at 58%. There are three VFDs dedicated to the RAS Pumps in MCC-C in the Process Control Building. They are not working thus always on the bypass contactors. All RAS/WAS piping, valves, and flow meters are in good condition.

4.2.3.8 Sludge Handling

The current Sludge Handling process was constructed in 1993. Eight of the plug valves are hard to actuate. The rest of the assets are in good condition.

4.2.3.9 Sludge Thickening

The Sludge Thickening process include the gravity thickener constructed in 1993. The assets are generally in good condition. There is minor corrosion of the center pier, influent well, and weir.

4.2.3.10 Sludge Storage

The storage tank was constructed in 1993. Some assets are in poor condition. There is significant corrosion of the decant/overflow well. There is also corrosion of the manway door and of the tank below the manway door. The manway door is also missing several screws. Water is getting into the storage tank via gaps in the cover. The solids loadings pump discharge to storage tank valve is loose.

4.2.3.11 Digesters

The anaerobic digester was constructed in 1958 and the storage digester was constructed in 1974. The condition ratings for the digesters are based on age due to lack of access and visibility.

4.2.3.12 Ferric Chloride Feed

The Ferric Chloride Feed system was installed in 1974. The buried piping that conveys the ferric chloride to the grit tank and oxidation ditch could not be observed so it is assumed in poor condition based on the age of the pipes. There is major corrosion of the

exterior of the storage tank, the concrete spill containment area of the feed pumps, and the metal supports of the feed pumps.

4.2.3.13 Tertiary Filters

The Tertiary Filters are traveling bridge filters which were constructed in 1993. They are in poor condition. The filters are not required to meet the plant's effluent requirements. The filters would not function if the Owner desired to use them. There is significant corrosion of the backwash pumps, and solids built up in the east and west influent channels.

4.2.3.14 Effluent Pump Station

The Effluent Pump Station was constructed in 1958. All piping, valves, and pumps were replaced in 1993. The suction and discharge isolation valves are hard to actuate. The suction piping in the effluent wet well has significant corrosion. The three VFDs dedicated to the Effluent Pumps in MCC-B are not working and thus, always on the bypass contactors.

4.2.3.15 Scum Pump Station

The Scum Pump Station was constructed in 1993 but has never been used. Three influent isolation valves and one discharge isolation valve are hard to actuate. All other assets are in good condition.

4.2.3.16 Polymer Feed

The Polymer Feed process was constructed in 1974. All assets are in good condition.

4.2.3.17 Defoamer Feed

The Defoamer Feed process was constructed in 1993. The assets are in good condition.

4.2.3.18 Administration Building

The Administration Building was originally constructed in 1958. The grit removal, chemical feed, and chlorine rooms were added in 1974. The tertiary filter room was added in 1993. The existing exterior façade of the building show signs of age and wear. Window and door lintels and the antenna pole are rusted. There is brick discoloration,

loose metal panel fasteners, damaged brick, open junction boxes, loose fascia, cracked sealant, unused paint stenciling, and loose window and door head mortar. The coiling door channel also jams. The laboratory as a whole is showing signs of age and deterioration. Counters show excessive wear around sinks, and epoxy sink basins are heavily worn. The cabinets are corroding on the inside of several areas.

4.2.3.19 Process Control Building

The Process Control Building was constructed in 1993 and is showing signs of its age. The roof walkway pads are loose, paint is peeling off doors, and there is corrosion of the doors and their frames. In general, brick cleaning and grout repair is needed and portions of the building fascia need to be replaced.

4.2.3.20 Maintenance Building

The Maintenance Building was constructed in 1993 and is showing signs of its age on its exterior. There is missing rake at the south elevation, corrosion of the doors and faded paint, missing door weatherstrippings, and loose foam inserts at top of siding, clouded and cracked window glass, and the wood trim around louver is peeling.

4.2.3.21 Site

The Site assets are generally in good condition. There is some corrosion of the perimeter fence north of the WWTP site.

4.2.3.22 Non-Fixed Assets

The non-fixed assets included in the WWTP condition assessment are in good condition.

4.3 Risk of Failure

4.3.1 Asset Risk of Failure

The RoF of each asset was determined based on the condition assessment. The asset RoF ratings are more subjective in nature than the lift station RoF ratings. Determining modes of failure for every possible type of WWTP asset would result in a rating system that would be too complex to maintain. Each asset was assigned a RoF rating from 1-5 based on the following general rating guidelines:

CITY OF BRONSON
WASTEWATER SYSTEM EVALUATION

FIGURE 5
COREY STREET LIFT STATION

Lift Station Summary

Corey Street

Address:	E. Corey St and Wayne St	Year Constructed:	1968

Station Type:	Can	Pump Control:	4052 Pump-Down Controller
Number of Pumps:	2	Motor Control:	ATL Starter
Design Firm Capacity:	150 gpm @ 45 ft TDH	Level Control:	Transducer
		Alarm Comm:	Mission
		Portable Gen. Rcpt.:	100A, 4P, 4W

Force Main:	Diameter:	8 in.
	Material:	CI
	Length:	875 ft
	Discharge:	MH 275 ft south of intersection of Wayne Street and E. Chicago Street

Comments:

CITY OF BRONSON
WASTEWATER SYSTEM EVALUATION

FIGURE 5
WALKER STREET LIFT STATION

Lift Station Summary

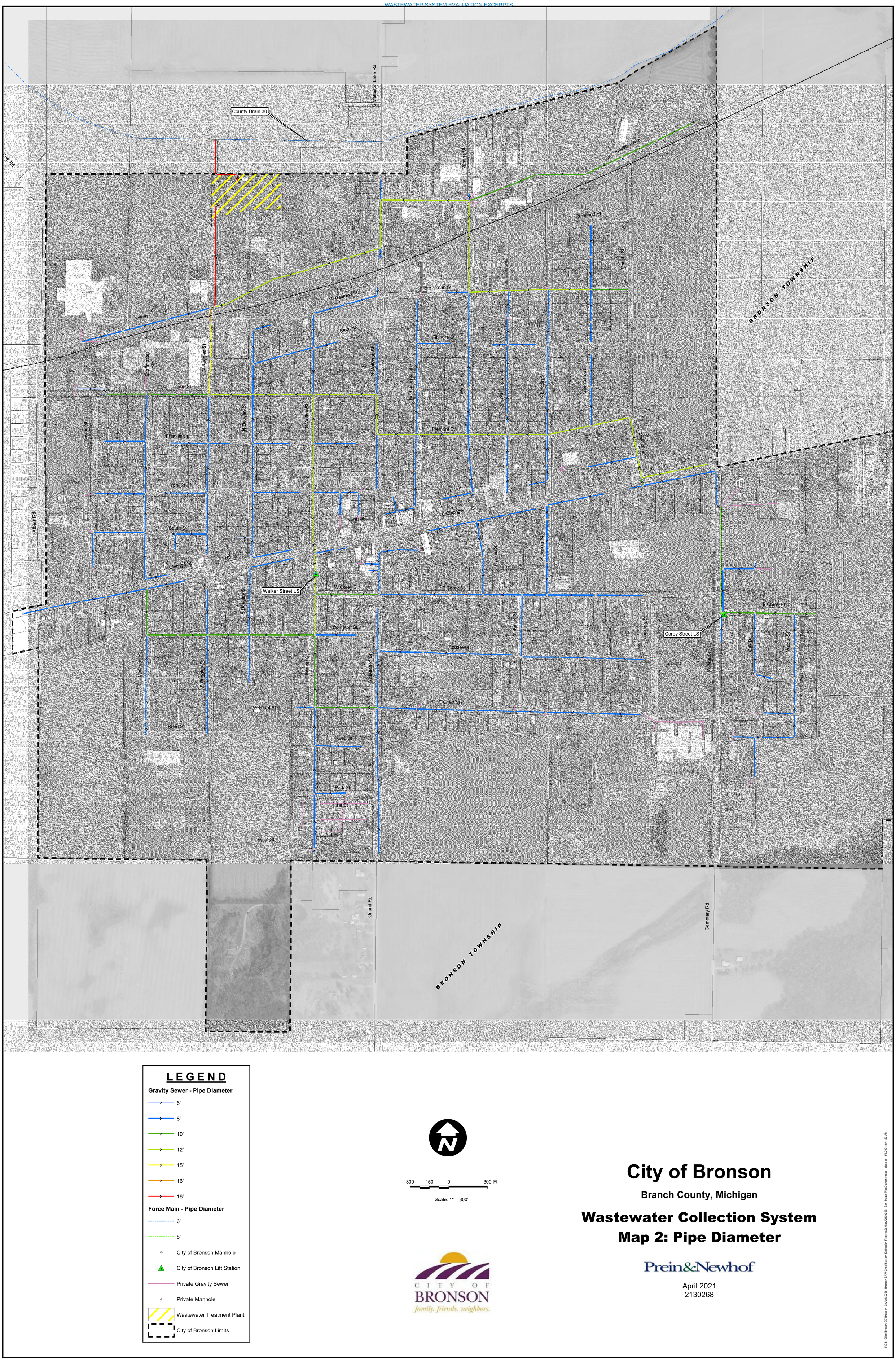
Walker Street

Address:	S. Walker St b/w Corey St and Chicago St	Year Constructed:	1957

Station Type:	DW-WW Below Grd	Pump Control:	4052 Pump-Down Controller
Number of Pumps:	2	Motor Control:	ATL Starter
Design Firm Capacity:	300 gpm @ 15 ft TDH	Level Control:	Transducer
		Alarm Comm:	Mission
		Portable Gen. Rcpt.:	100A, 4P, 4W

Force Main:	Diameter:	4/6 in.
	Material:	CI
	Length:	15 ft
	Discharge:	MH 10 ft northwest of lift station

Comments: Force main is 4-inch inside dry well and 6-inch outside dry well.



LEGEND

Gravity Sewer - Pipe Diameter

- 6"
- 8"
- 10"
- 12"
- 15"
- 16"
- 18"

Force Main - Pipe Diameter

- 6"
- 8"
- City of Bronson Manhole
- City of Bronson Lift Station
- Private Gravity Sewer
- Private Manhole
- Wastewater Treatment Plant
- City of Bronson Limits

300 150 0 300 Ft

Scale: 1" = 300'

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City of Bronson

Branch County, Michigan

Wastewater Collection System
Map 2: Pipe Diameter

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April 2021
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LEGEND

Gravity Sewer - Year Installed

- 1950-1959
- 1960-1969
- 1970-1979
- 1980-1989
- 1990-1999

Force Main - Year Installed

- 1957
- 1968

Lift Station - Year Installed

- 1957
- 1968
- City of Bronson Manhole
- Private Gravity Sewer
- Private Manhole
- Wastewater Treatment Plant
- City of Bronson Limits

300 150 0 300 Ft

Scale: 1" = 300'

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Branch County, Michigan

Wastewater Collection System
Map 3: Installation Year

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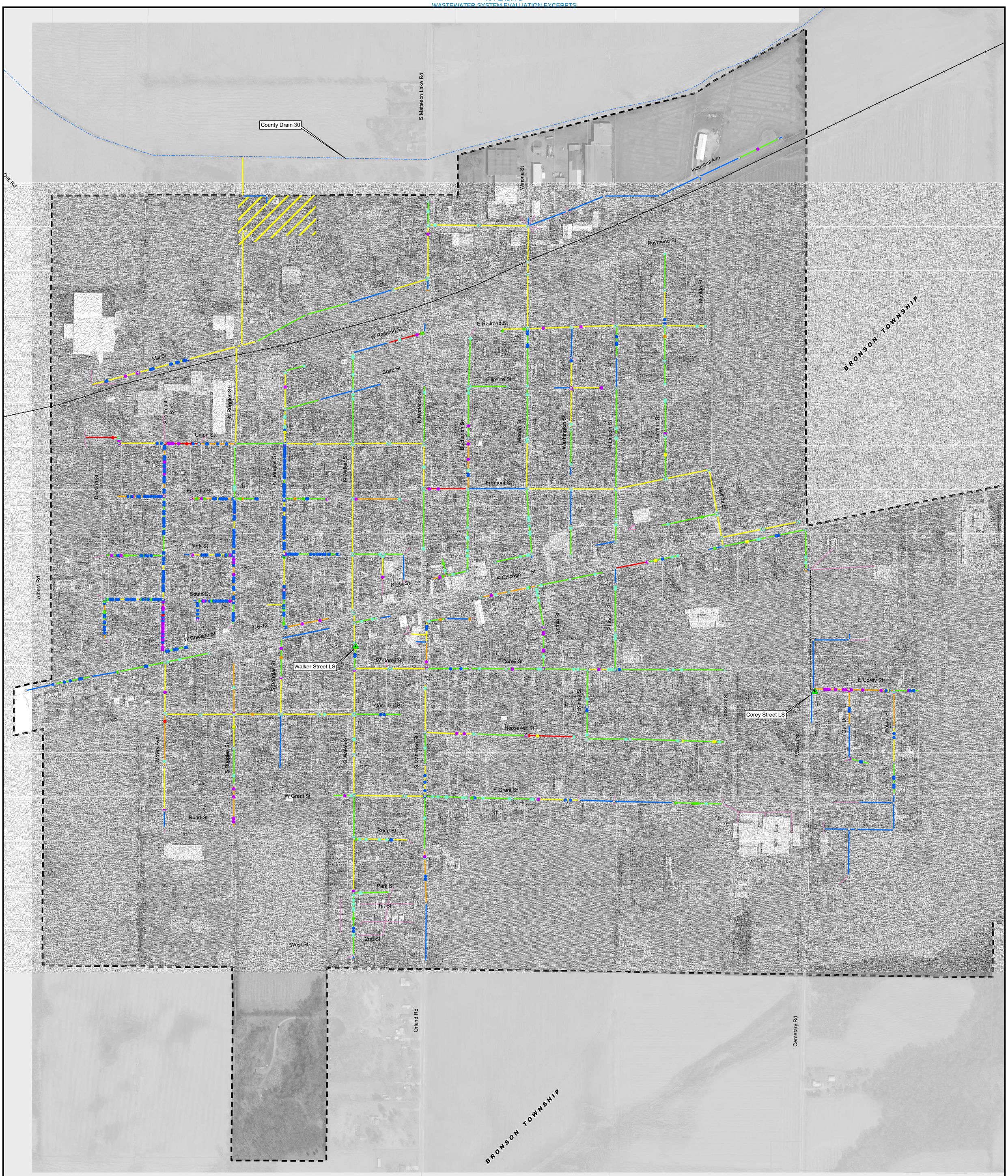

LEGEND

Structural Defects by CCTV

- Broken or Hole
- Cracked or Fractured
- Deformed, Buckled or Collapsed
- Joint Offset or Separation
- Sags and Alignments
- Material or Size Change or Repair
- Obstacles & Pipe Intrusions
- Surface Aggregate Missing, Corroded or Spalling

Gravity Sewer - Risk of Failure

- 1 - Least Risk of Failure
- 2
- 3
- 4
- 5 - Highest Risk of Failure
- City of Bronson Manhole
- City of Bronson Lift Station
- City of Bronson Force Main
- Private Gravity Sewer
- Private Manhole
- Wastewater Treatment Plant
- City of Bronson Limits

300 150 0 300 Ft

Scale: 1" = 300'

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Branch County, Michigan

Wastewater Collection System
Map 6: Structural Defects

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LEGEND

Infiltration Observations by CCTV

- Stain
- Weeper
- Dripper
- Runner
- Gusher
- Inifiltration Observation by CCTV
- City of Bronson Gravity Sewer
- City of Bronson Manhole
- City of Bronson Lift Station
- City of Bronson Force Main
- Private Gravity Sewer
- Private Manhole
- Wastewater Treatment Plant
- City of Bronson Limits

300 150 0 300 Ft

Scale: 1" = 300'

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Branch County, Michigan

Wastewater Collection System
Map 7: Infiltration Observation

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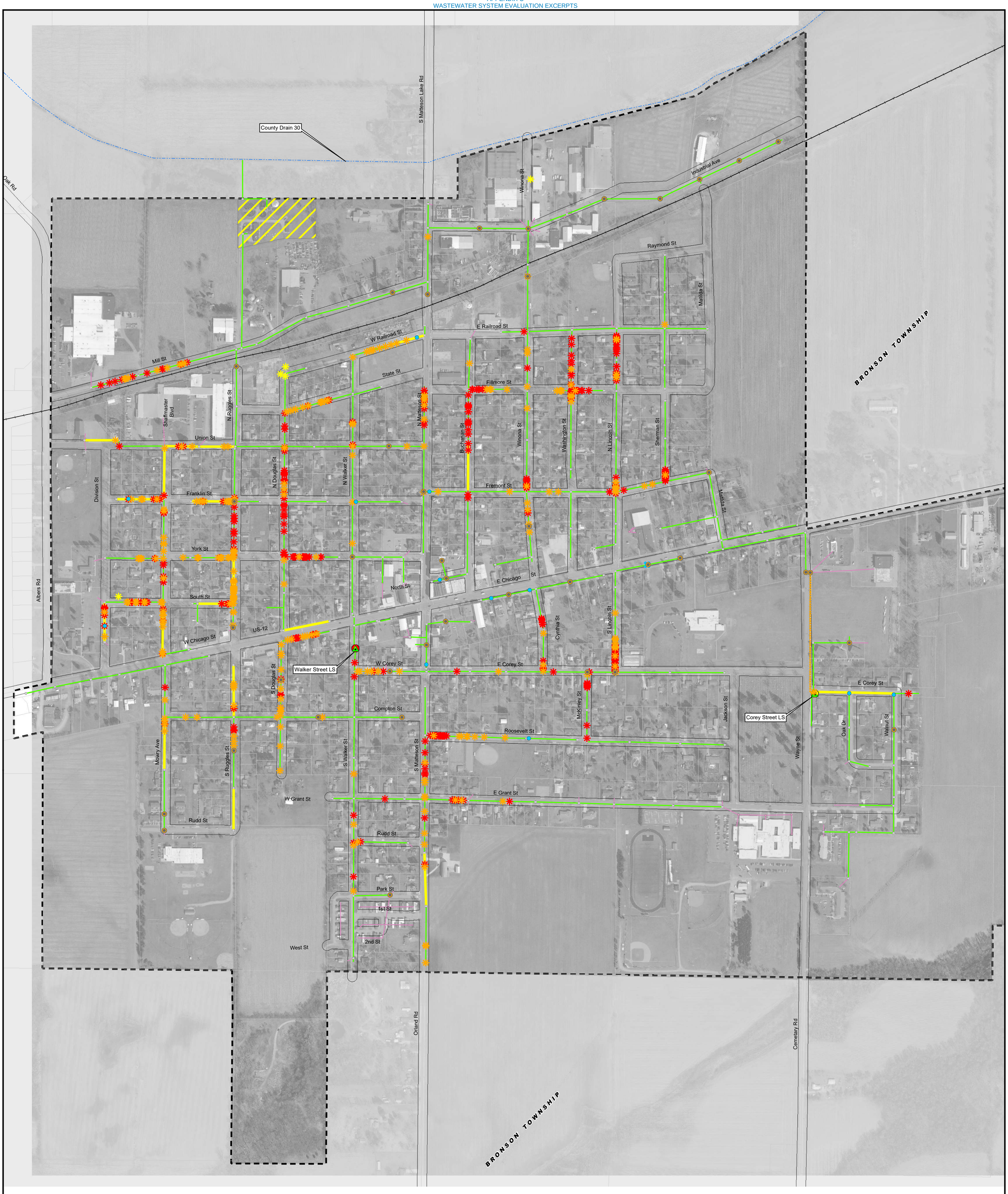

LEGEND

Recommended Improvements

- Eliminate Infiltration (HIgh Priority-Gusher/Runner)
- Eliminate Infiltration (Medium Priority-Weeper/Dripper)
- Eliminate Storm Structures from Sanitary
- Utility Penetration Removal
- Point Repair
- Manhole Rehabilitation
- Pipe Rehabilitation
- Lift Station Minor Improvements / Rehabilitation
- Lift Station Replacement
- Forcemain Replacement

Gravity Sewer System

- City of Bronson Gravity Sewer
- Private Gravity Sewer
- City of Bronson Sanitary Manhole
- Private Manhole
- City of Bronson Lift Station
- City of Bronson Force Main
- Wastewater Treatment Plant
- City of Bronson Limits

300 150 0 300 Ft

Scale: 1" = 300'

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Branch County, Michigan

Wastewater Collection System
Map 12: Recommended Improvements

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SCALE: 1 " = 40 '

LEGEND

△ WWTP Process

CITY OF BRONSON
BRANCH COUNTY, MICHIGAN
WASTEWATER TREATMENT PLANT

MAP 13: WASTEWATER TREATMENT PLANT

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Appendix D

2021 Sewer Flow Study

Sewer Flow Study

Wastewater Collection System Capacity Assessment and Inflow/Infiltration Analysis

Prepared for

City of Bronson

April 2021

2130268

Prein&Newhof

Contents

5 MODEL CALIBRATION

Model calibration was completed for base flows, dry weather I/I flows, and wet weather I/I flows. Base flows were calibrated for each metered district using water billing records and diurnal patterning as illustrated on Figure 1.

Dry weather I/I was calibrated for each metered district by comparing the data during dry days in a wet season with dry days in a dry season, estimated from water billing records. Table 3 shows a sample comparison of total volume and peak flow rates during the dry and wet seasons. The difference between the meter totals for these periods is taken as the constant dry weather I/I flow in the model. The dry weather I/I flow in the model is typically used for spring and fall (wet season) flow simulations.

Wet weather I/I was calibrated for each metered district by developing unique rainfall-derived inflow and infiltration (RDII) hydrographs for each district, using flow meter data, and utilizing rain data from two large rain events from September 2019 to June 2020. The accuracy of the calibrated model can be seen in Table 3, where 24-hour volume and peak flow rates from both field and model data are presented. Model calibration accuracy can be affected by a variety of factors, including meter reading errors, obstructions in the sewer, and rainfall variation across the study area.

6 EVALUATING THE LEVEL OF SERVICE

Using the calibrated model, the following flow characteristics were evaluated:

- Infiltration and inflow for both dry weather and wet weather
- System capacity for current and future development
- System flow velocities to guide Operation and Maintenance strategies

6.1 Evaluating Inflow and Infiltration

6.1.1 Dry Weather Inflow and Infiltration

6.1.1.1 General

Dry weather I/I (usually groundwater infiltration) is estimated based on the total sewer flow during periods of no precipitation and high groundwater.

6.1.1.2 Environmental Protection Agency Standards

The Environmental Protection Agency (EPA) has established standards by which dry weather I/I flows are judged to be "excessive" or not. Comparison of actual sewer flows to these standards can determine if a future project may be eligible for State or Federal Funding. The EPA standard "acceptable threshold" for base flow plus dry weather I/I is 120 gallons per capita per day (gpcd). Flows in excess of 120 gpcd are considered "excessive" and may be eligible for funding.

The "flow per capita" measure presented in Table 4a, Figure 4, and Map 5 is based on the estimated number of sewer customers in each district. Overall, the system carries about 452 gpcd during these times of high groundwater compared to 45 gpcd during the dry season. By the EPA standard, groundwater infiltration in this system is severe.

6.1.1.3 Cumulative Volume

Flow metering and modeling indicate that certain districts within the system may show localized areas of higher groundwater infiltration. Districts 8 and 9 appear to have the largest volume of groundwater infiltration as demonstrated by the green bands in Figure 5. All the districts except District 6 exceed the EPA standard due to excessive flow from dry weather I/I. The overall sewer system is estimated to convey a total of approximately 860,000 gpd during high groundwater periods, with 775,000 gpd of the total flow associated with excess flow from dry weather I/I.

6.1.2 Wet Weather Inflow and Infiltration

6.1.2.1 General

Wet weather I/I is evaluated by modeling a 25-year rain event. For this study the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation-Frequency Atlas was used to choose the design rain event of 4.48 inches for a 24-hour storm duration. For this design rain event the total excess flow due to wet weather I/I is 214,500 gpd, with a total flow during the design rain event of 1,074,500 gpd. Figure 5 shows the total volume of I/I for each district. Figures A-1 through A-13 show the increases in flow at each metered location during rain events. An example of the model calibration used to achieve these results is provided in Figure 3.

6.1.2.2 Environmental Protection Agency Standards

As with dry weather I/I, the Environmental Protection Agency (EPA) has established standards by which wet weather I/I flows are judged to be "excessive" or not. Comparison of actual or projected sewer flows to these standards can determine if a future project may be eligible for State or Federal Funding. The EPA standard "acceptable threshold" for base flow plus wet weather I/I is 275 gallons per capita per day (gpcd). Flows in excess of 275 gpcd are considered "excessive" and may be eligible for funding.

Again, the "flow per capita" measure is used for wet weather flows based on an estimate of the number of sewer customers. While areas of low population density expect to have generally lower flows compared to an area of high population density, comparing "flows per capita" allows for comparison between districts. Overall, the system as a whole conveys approximately 565 gpcd during the modeled design rain event. By the EPA standard, wet weather I/I in the study area in the City of Bronson system as a whole is severe. Districts 2 and 7 shows marginal levels of wet weather I/I flow estimated at 247 and 298 gpcd, respectively. Districts 1, 3, 4, 5, 8, 9, 10, 11, 12, and 13 show excessive wet weather I/I. These findings are shown in Table 4B, Map 6, and Figures 4 through 7.

6.1.2.3 Cumulative Volume

Figures 4 through 7 graphically represent the I/I summary provided in Table 4. Each graph separates normal base flows from excess flow attributed to dry and wet weather I/I. Figure 4 illustrates individual districts with the most severe I/I by representing base flow and I/I flow per capita contributions. Figure 5 represents the same data on a total volume basis. Figures 6 and 7 analyze the cumulative amount of normal base flow and excess I/I passing through each meter, with Figure 6 normalized per capita and Figure 7 showing total volume. These cumulative flow figures represent the accumulation of I/I as it travels downstream. These graphs help prioritize I/I removal efforts by highlighting districts with high volumes of I/I in addition to those exceeding the EPA thresholds.

Flow metering and modeling for the design rain event shows a large cumulative flow volume that affects the available capacity of downstream sewers as well as transportation and treatment costs.

As presented in Figure 7, modeling results indicate that Districts 9 and 10 experience the most wet weather I/I with about 270,800 gpd of total flow during the design rain event, with 113,400 gpd of excess flow from wet weather I/I. Consideration should be given to investigating and removing locations of direct inflow in order to reduce treatment costs. The impact of this flow on available capacity is discussed in the next section.

6.2 Evaluating the System Capacity

Capacity of the existing sanitary sewer system was evaluated under current development. Model data, including results presented herein, are intended to be used as a guideline for planning purposes. The sewer system should continue to be evaluated as development within the service area occurs or changes.

The existing sewer system within the study area has approximately 816 REUs that generate about 860,000 gpd, including dry weather I/I, based on flows during the metering period.

Map 5 shows the portion of a pipe's capacity that is used during the design storm with existing land use. Map 5 show the comparison of the peak instantaneous flow rate with the full flow capacity of the pipe for existing conditions. The map identifies pipe sections that do not have adequate capacity for existing flows.

Map 6 represents the existing unused capacity. Unused capacity represents the difference between maximum flow rate and a recommended 85 percent of full flow capacity in each pipe during the design storm event as described above. The purpose of this map is to assign an approximate remaining gallon per minute (gpm) available in each pipe. This map can also give a starting reference to consider if a proposed land use significantly differs from the current plan.

While evaluating overall system capacity, lift stations within the study area were modeled to assist in future planning and analysis. These results can be seen in Table 5, which presents the performance of each lift station in the existing study area system. Drawdown testing gives information about actual lift station performance compared to the design capacity, while modeling results compare peak flow rates entering each lift station during a 24 hour, 25 year storm event to its firm capacity. This table should be used in conjunction with the system condition assessment in determining lift station performance and planning future upgrades.

6.3 Evaluating Low Velocity

Modeling results were evaluated with respect to pipe flow velocities to identify potential operations and maintenance issues in sewers with inadequate flow velocity. Current industry standards recommend 2 feet per second (ft/s) as a minimum design velocity to prevent buildup of debris in the sewer. The modeling results for velocity under minimum day (base flow only) flow conditions can be seen in Map 7. Minimum day flow conditions refer to DCI system flow during low ground water conditions and dry periods. This map does not necessarily represent design concerns if velocity does not reach two feet second, but gives an estimate for pipes that may require more regular cleaning and maintenance. Approximately 98% of the sewer system shows velocities below 0.5 ft/s, representing a risk for clogging.

7 CONCLUSIONS AND NEEDS

Bronson's sewer system as a whole has excessive wet weather I/I which can result in customer backups and overflows. One of the City's lift stations and many of its trunk sewers are modeled with 25-year storm peak flows exceeding the system capacity. Peak flows are largely due to excess rain and groundwater entering the system during rain events. A combination of I/I removal and system capacity upsizing through pipe replacement and lift station upgrades are needed to maintain acceptable service and allow for system growth. The following paragraphs provide some guidance on steps that can be taken to target the high priority needs identified in this study.

7.1 Infiltration Reduction

Infiltration can be a contributor to increased costs at the treatment plant. Groundwater infiltration can be a significant portion of the total annual I/I volume since groundwater leaks can be continuous throughout the year and are not dependent on rainfall. Sealing infiltration leaks in sewer mains and manholes should be a high priority in the City's capital improvement program, with Districts 3, 4, 5, 8, 9, and 11 as early target areas.

7.2 Inflow Source Disconnection

Sources of direct inflow, such as roof drains and catch basins, have contributed to large, rapid, and short duration increases in sewer flow, exceeding the design firm capacity of the Walker Street Lift Station during modeled 25-year storm events. Direct inflow sources have been identified through smoke testing, and the City has been active in pursuing disconnection of these

multiple known sources of inflow. The disconnection efforts should continue in order to reduce the need for capacity improvements as described below.

7.3 Sewer and Lift Station Capacity Improvements

Multiple sewers and the Walker Street Lift Station do not have capacity to convey the customer flow along with I/I resulting from the 25-year 24-hour design storm. If peak flows cannot be reduced sufficiently through I/I removal, the capacity of sewers and the Walker Street Lift Station will need to be increased in order to maintain compliance with standards upheld by the State of Michigan. These capacity concerns can lead to surcharged manholes, wastewater overflows to the environment, and/or backups from the lift station into surrounding customer homes. If significant progress on I/I removal can be achieved, the capacity improvement needs may be reevaluated. Peak flows entering the lift station should be investigated further before additional flows are added to the system.

7.4 Wastewater Treatment Plant Capacity

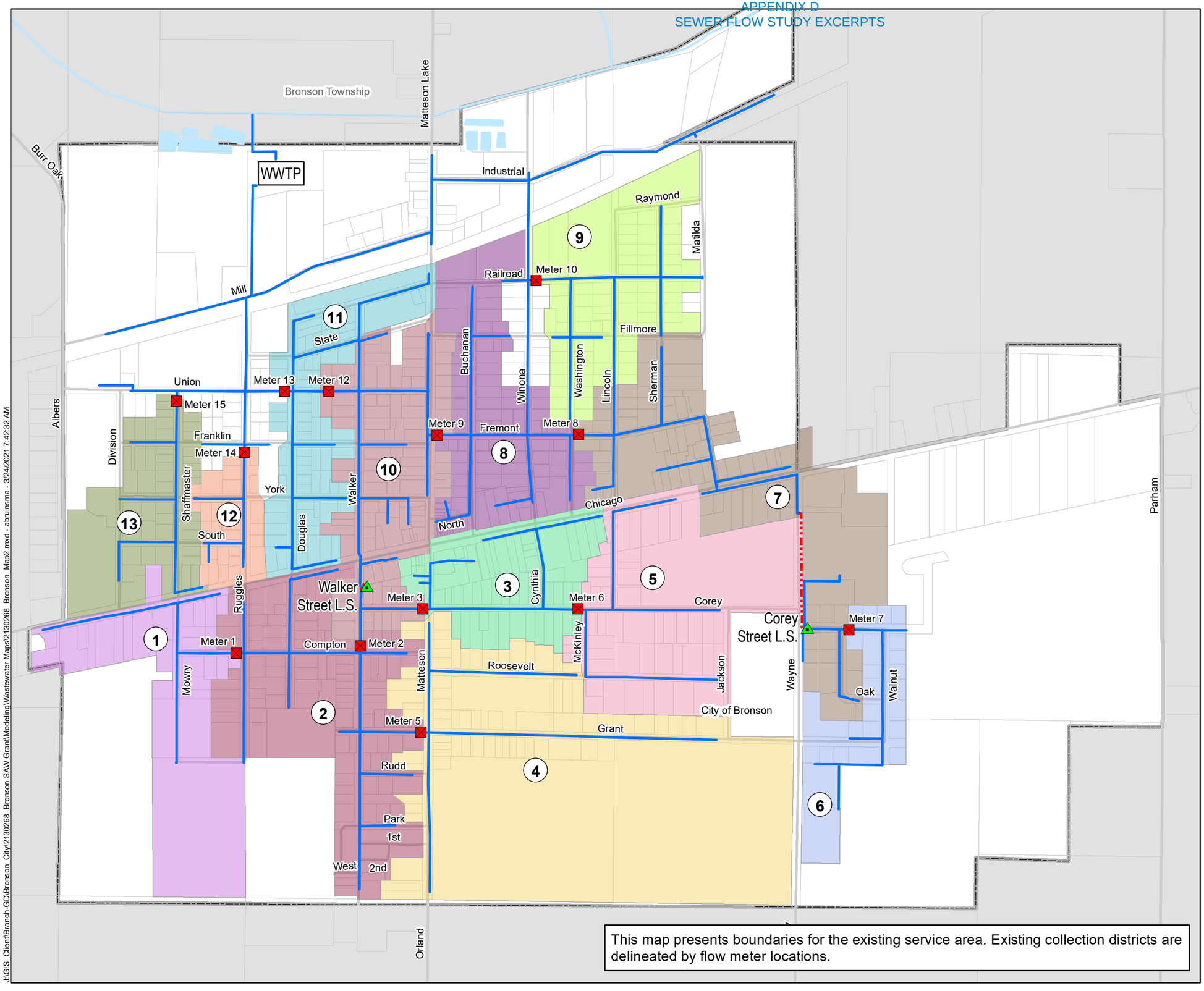
The wastewater treatment plant is designed to treat an average flow of 0.5 MGD of sanitary sewage and a peak hourly flow of 1.5 MGD. During large storm events, the plant is overwhelmed causing the upstream pipes to become surcharged. If I/I removal does not decrease backups at the plant, the plant will have to be upsized to adequately convey the flow during storm events.

Table 5: Lift Station Capacities and Flow Rate Data

	FIRM CAPACITY (GPM) [1]	DRAWDOWN TESTING			MODELED PEAK HOUR FLOW RATE (GPM) [2]
		DATE	PUMP #1 (GPM)	PUMP #2 (GPM)	EXISTING FLOWS
Walker Street	**300**	**8/15/2019**	**557**	**526**	**410 - 505**
Corey Street	**150**	**8/15/2020**	**238**	**310**	**40 - 50**

[1] Firm Capacity is defined as the pumping capacity of the lift station with the largest pump out of service.

[2] Peak hour flow rates modeled for the 24-hour, 25-year design storm event based on Atlas 14 total rainfall data.



This map presents boundaries for the existing service area. Existing collection districts are delineated by flow meter locations.

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CITY OF BRONSON
BRANCH COUNTY, MI
WASTEWATER COLLECTION SYSTEM

MAP 2: EXISTING SERVICE AREA AND COLLECTION DISTRICTS

April 2021

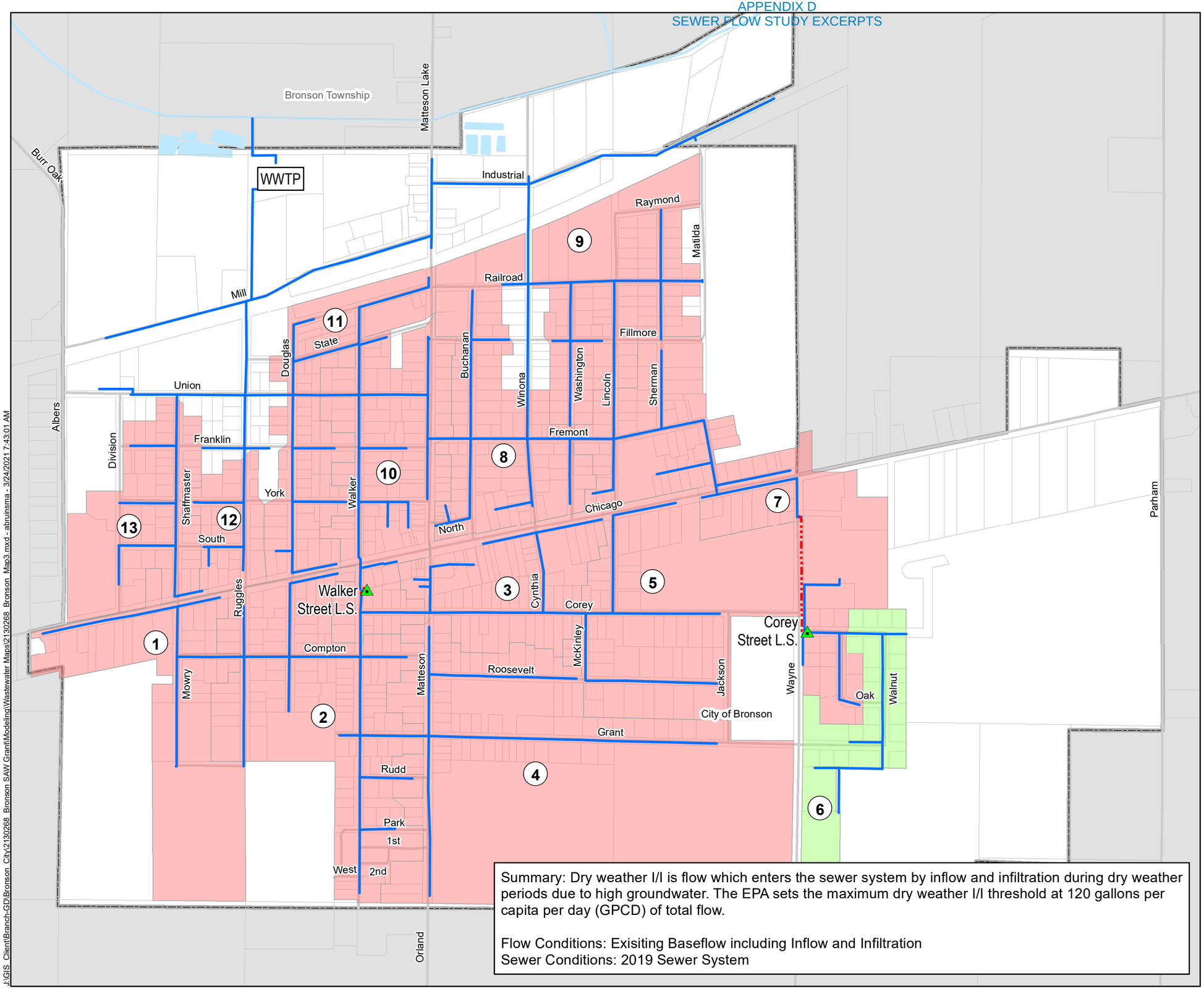
Prein&Newhof
2130268

LEGEND

- Manhole
- Lift Station
- Force Main
- Gravity Sewer
- (1) Meter Districts

N

1,000 500 0 1,000 Feet



Summary: Dry weather I/I is flow which enters the sewer system by inflow and infiltration during dry weather periods due to high groundwater. The EPA sets the maximum dry weather I/I threshold at 120 gallons per capita per day (GPCD) of total flow.

Flow Conditions: Exisiting Baseflow including Inflow and Infiltration
Sewer Conditions: 2019 Sewer System

CITY OF BRONSON
BRANCH COUNTY, MI
WASTEWATER COLLECTION SYSTEM

MAP 3: DRY WEATHER I/I RATES BY METER DISTRICT

April 2021

Prein&Newhof

2130268

LEGEND

- Lift Station
- Gravity Main
- Force Main

Dry Weather I/I Rate

- < 120 gpcd - 10%
- 120 gpcd +/- 10%
- > 120 gpcd + 10%

N

1,000 500 0 1,000 Feet

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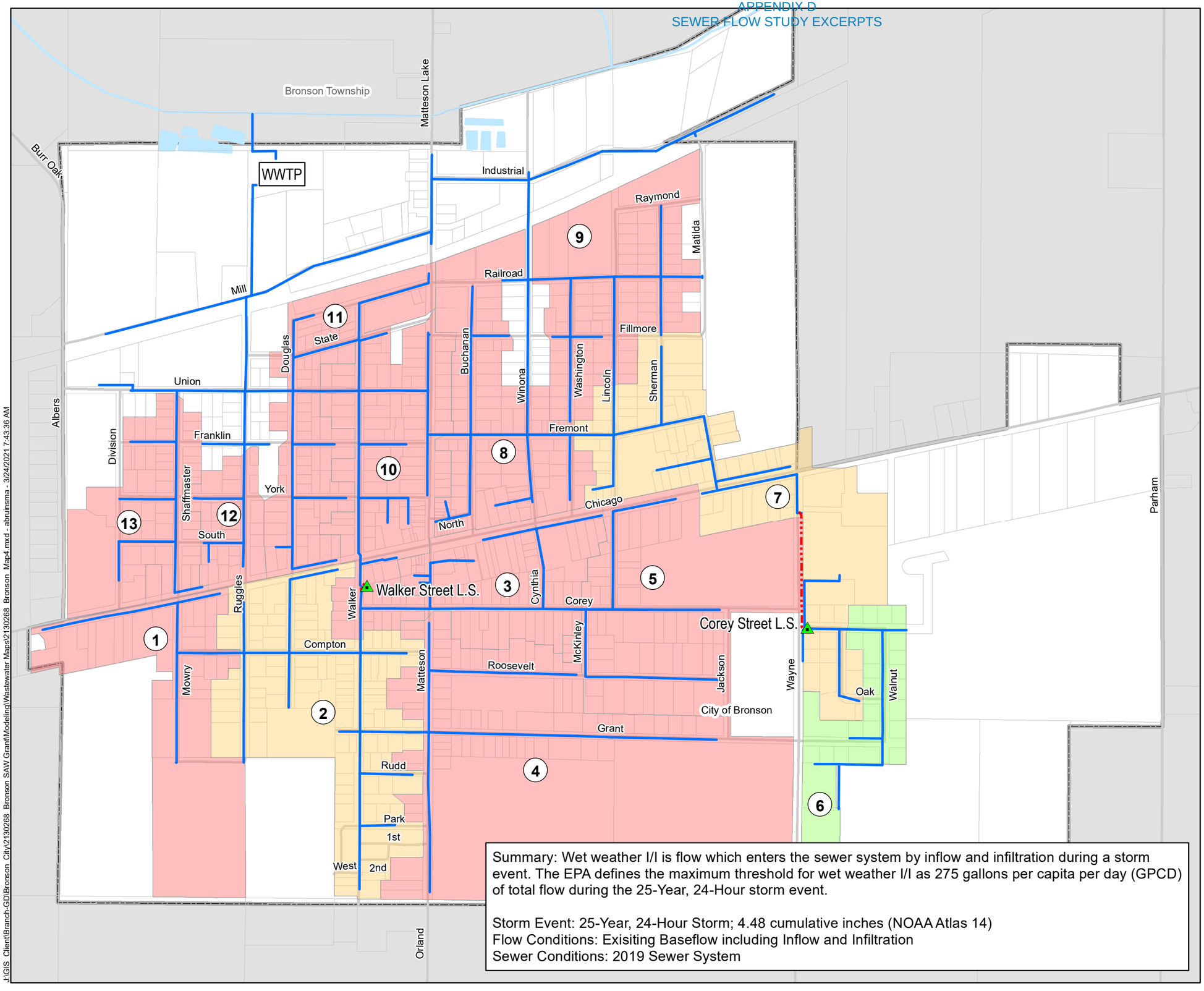

Summary: Wet weather I/I is flow which enters the sewer system by inflow and infiltration during a storm event. The EPA defines the maximum threshold for wet weather I/I as 275 gallons per capita per day (GPCD) of total flow during the 25-Year, 24-Hour storm event.

Storm Event: 25-Year, 24-Hour Storm; 4.48 cumulative inches (NOAA Atlas 14)
Flow Conditions: Exisiting Baseflow including Inflow and Infiltration
Sewer Conditions: 2019 Sewer System

CITY OF BRONSON
BRANCH COUNTY, MI
WASTEWATER COLLECTION SYSTEM

MAP 4: WET WEATHER I/I RATES BY METER DISTRICT

April 2021

Prein&Newhof
2130268

LEGEND

- Lift Station
- Gravity Sewer
- Force Main

Wet Weather I/I Rates

- < 275 gpcd - 10%
- 275 gpcd +/- 10%
- > 275 gpcd + 10%

N

1,000 500 0 1,000 Feet

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Appendix E

2021 WWTP Capacity Analysis

Wastewater Treatment Plant Capacity Analysis

Prepared for
City of Bronson

April 2021

2130268

Prein&Newhof

Contents

2 EXISTING FACILITY

2.1 Process Descriptions

The WWTP receives wastewater via gravity from the City of Bronson collection system. The main processes of the WWTP can be seen in the process schematic in Figure 1. The processes are generally described below.

2.1.1 Influent Pump Station

The 18-inch diameter influent gravity sewer is used to deliver raw wastewater to the grinder channel in the headworks portion of the Administration Building for preliminary treatment. A bypass channel is available to divert the flow through a manual bar screen prior to the raw sewage well during times of high flow or to perform maintenance on the grinder equipment. Influent flow is measured by a parshall flume and ultrasonic sensor located in the channel downstream of the grit chamber.

After passing through the grinder or manual bar screen, the wastewater enters the influent wet well in the Administration Building. The flow is pumped by any of three centrifugal raw sewage pumps to the grit chamber.

2.1.2 Grit Removal

Grit particles are separated out of the influent flow at the vortex grit removal chamber in order to protect the downstream equipment. The grit pump and grit classifier are not operated as designed because the grit quantity removed has been so minimal. The manufacturer has commented that the style of grit chamber installed at the WWTP has a legacy of nonperformance. As currently operated, the wastewater flows through the vortex chamber to a downstream channel and then by gravity to the oxidation ditch.

2.1.3 Oxidation Ditch

The oxidation ditch is an extended aeration process that utilizes long solids retentions times and aeration to remove biodegradable organics. The oxidation ditch provides the benefits of plug flow and completely mixed reactors, achieving BOD reduction, nitrification and denitrification. The oxidation ditch has three channels, each containing two sets of disk aerators. The wastewater flows from the oxidation ditch to the final clarifiers.

2.1.4 Final Clarifiers

The oxidation ditch splitter box distributes the flow to the two final clarifiers. The peripheral flow clarifiers use mechanical means (baffle, weir and skimmer) remove solids and floating material from the wastewater. The physical treatment process uses the low surface overflow rate and retention times in the tanks to allow the solids to settle and be removed by the RAS pumps. The addition of ferric chloride in the oxidation ditches promotes phosphorus precipitation with removal through settling in the clarifiers as part of the mixed liquor. The design intent is to pump the scum from the surface skimmer to either digester via the two scum pumps. Scum can also be pumped to the sludge storage tank via the loading pump.

2.1.5 Tertiary Filters

The tertiary filters are no longer in service. The cost to operate the tertiary filters did not justify the marginal improvement in water quality.

2.1.6 Effluent Pump Station

The effluent pump station is no longer in service because the flow bypasses the tertiary filters.

2.1.7 Disinfection

Ultraviolet (UV) light is used to disinfect the final clarifier effluent. At a wavelength of 254 nm, UV light penetrates and modifies the genetic material of the microorganisms that remain in the wastewater, which renders the potentially harmful microorganisms incapable of reproducing. The number of UV banks in operation and UV lamp intensity in each bank automatically adjust based on flow and wastewater transmissivity. The treated water then flows by gravity to the outfall at County Drain #30.

2.1.8 Recirculation Pump Station

The recirculation pump station is a triplex submersible pump station used to pump supernatant and other recycle streams to the grit channel upstream of the grit vortex chamber.

2.1.9 Return Activated Sludge & Waste Activated Sludge

The sludge collected at the final clarifiers is called “activated” sludge because it contains live microorganisms employed in the consumption of organic waste. The sludge that is pumped

back to the oxidation ditch is called return activated sludge (RAS). The sludge that is pumped to the sludge thickener in excess of what is needed for treatment is called waste activated sludge (WAS). The RAS and WAS processes are essential for activated sludge biological treatment at the WWTP. They serve to keep a healthy population of microorganisms alive and reproducing in the oxidation ditches. Three centrifugal pumps are used for both RAS and WAS.

2.1.10 Scum Pump Station

The scum pump station is not used because the function can be accomplished using the loading pump.

2.1.11 Sludge Handling

The sludge handling process consists of the equipment and piping used to convey biosolids. The loading pump transfers sludge from the sludge thickener to the sludge storage tank, digesters, or to the sludge loading station. Other pumps may have the capability to pump to these locations but are included with other processes that reflect their primary function. The storage tank holds the digested biosolids on site until they are hauled for land application.

2.1.12 Sludge Thickening

WAS is pumped to the circular gravity sludge thickener. This type of sludge thickener resembles a clarifier as the low surface overflow rate and increased retention times in the tank allow the solids to settle and be removed by the loading pump. Thickened sludge is pumped to the sludge storage tanks. Decant of supernatant from the sludge thickener is returned by gravity to the recirculation tank.

2.1.13 Sludge Storage Tank

A storage tank holds biosolids on site until they are hauled for land application. Thickened sludge is pumped from the sludge thickener to the sludge storage tank. Decant of supernatant from the sludge storage tank is returned by gravity to the recirculation tank.

In February 2019, the Michigan Department of Environmental Quality (since renamed the Department of Environment, Great Lakes, and Energy) suspended the authorization to land apply as part of the WWTP's Residuals Management Program due to the presence of

perfluoroalkyl substances (PFAS) in the biosolids. The WWTP has retained all biosolids on site and temporary storage has been added until a disposal location is identified.

2.1.14 Digesters

The two digesters are not used as they were originally designed (to produce stabilized solids, reduce pathogens, and reduce biomass quantity by partial destruction of volatile solids). Instead, the digesters are used as sludge storage tanks.

2.1.15 Ferric Chloride Feed

Ferric chloride is added to the treatment system near the effluent end of the oxidation ditches for chemical phosphorus removal. Ferric chloride reacts with soluble phosphate to form solid precipitates that settle and can be removed in the final clarifiers.

2.1.16 Polymer Feed

The polymer feed process is no longer in service as it is not needed to achieve treatment objectives.

2.1.17 Defoamer Feed

The defoamer feed process is no longer in service as it is not needed to achieve treatment objectives.

2.1.18 Chlorine Feed

The chlorine feed process is no longer in service as it is not needed to achieve treatment objectives.

2.2 Influent Flows

The design average daily flow of the WWTP is 0.5 MGD and the design peak hourly flow is 1.5 MGD, according to documents uploaded to MiWaters (herein referred to as the “design summary”), which are included in Appendix A.

The wastewater flows and loadings to the WWTP were examined for the study period. The monthly maximum day, monthly average day, and monthly minimum day influent flows are plotted in Figure 2. The trend line on the figure indicates a slight increase in influent flows during

the study period. Average day flows ranged from 0.26 MGD to 1.75 MGD. The average influent flow observed, 0.73 MGD, is approximately 147% of the design average day flow. Maximum day flows ranged from 0.32 MGD to 2.02 MGD. Instantaneous flow data was not available from previous years to calculate peak hour flow. Therefore, the maximum peak hourly flow during the study period is unknown. Table 1 provides a comparison of current influent flow conditions to the design flow and loading in the design summary.

2.3 Influent Loadings

The pollutants discussed herein include those which are monitored by the WWTP in accordance with the NPDES Permit. These include 5-day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), total phosphorus, and ammonia nitrogen.

Table 1 shows the design influent loadings from the design summary compared to the actual loadings to the WWTP during the study period.

2.3.1 $CBOD_5$

The average influent $CBOD_5$ loading was 360 lb/day, which is 52% of the design capacity. Figure 3 shows that the average influent $CBOD_5$ remained unchanged over the study period. The average monthly maximum day to average day ratio (max:avg) was 1.79.

2.3.2 TSS

The average influent TSS loading was 280 lb/day, which is 45% of the design capacity. Figure 4 shows that the average influent TSS increased slightly over the study period. The max:avg ratio was 2.78.

2.3.3 Total Phosphorus

The average influent total phosphorus loading was 9.7 lb/day, which is 47% of the design capacity. Figure 5 shows that the average influent phosphorus increased slightly over the study period. The max:avg ratio was 1.28.

2.3.4 Ammonia

The average influent ammonia loading was 54 lb/day, which is 43% of the design capacity. Figure 6 shows that the average influent ammonia decreased slightly over the study period. The max:avg ratio was 1.54.

2.3.5 Non-Compatible Pollutants

Non-compatible pollutants are pollutants that the WWTP is not designed to treat or remove. Non-compatibles include metals which are a concern related to land application of sludge. Based on sample data of the sludge to be land applied, the WWTP does not have significant concentrations of metals in the wastewater influent. Table 2 summarizes the WWTP annual biosolids sampling data and compares it to the land application biosolids concentration limits set forth by the EPA Part 503 Rule.

In 2018, the Department of Environmental Quality required that biosolids be tested for PFAS. Sampling results indicated the presence of PFAS in the biosolids and the authorized Residuals Management Plan was suspended in February 2019.

2.4 Treatment Efficiency

During the study period, samples were taken by WWTP staff at the influent and after disinfection. Since there is no intermediate sampling location, these data were used to determine the overall WWTP treatment efficiency. Removal efficiencies were calculated by taking the arithmetic mean of the monthly removal percentages during the study period. This method does not account for lag associated with detention time. Seasonal discharge limits are imposed by the NPDES Permit for $CBOD_5$, TSS, and ammonia nitrogen. Table 3 shows the treatment efficiencies and effluent concentrations of the pollutants during each date range corresponding to the NPDES permit.

The overall treatment efficiency of the WWTP for the study period was analyzed by determining the percent removal from the influent to the final effluent. Effluent concentrations and loadings were compared to NPDES permit limits. In total, there were eleven NPDES permit limit violations during the study period.

2.4.1 $CBOD_5$

$CBOD_5$ removal data is presented as a concentration in Figure 7 and as total loading in Figure 8. The average $CBOD_5$ removal by the WWTP was 96%, with an average final effluent concentration of 2.1 mg/l. The average final effluent loading was 13.2 lb/day. The $CBOD_5$ in the final effluent exceeded permit limits seven times during the study period.

2.4.2 TSS

TSS removal data is presented as a concentration in Figure 9 and as total loading in Figure 10. The average TSS removal by the WWTP was 93%, with an average final effluent concentration of 2.8 mg/l TSS. The average final effluent loading was 17.1 lb/day. The TSS in the final effluent did not exceed permit limits during the study period. The permit also mandates a minimum monthly average TSS removal efficiency of 85% for the months December – March. The observed removal efficiency was below 85% one day during the study period.

2.4.3 Phosphorus

Phosphorus removal data is presented as a concentration in Figure 11 and as total loading in Figure 12. The average phosphorus removal by the WWTP was 92%, with an average final effluent concentration of 0.14 mg/l phosphorus. The average final effluent loading was 0.83 lb/day. The phosphorus in the final effluent did not exceed permit limits during the study period.

2.4.4 Ammonia

Ammonia-nitrogen removal data is presented as a concentration in Figure 13 and as total loading in Figure 14. The average ammonia-nitrogen removal by the WWTP was 99%, with an average final effluent concentration of 0.07 mg/l ammonia-nitrogen. The average final effluent loading was 0.4 lb/day. The ammonia-nitrogen in the final effluent did not exceed permit limits during the study period.

2.4.5 Other Treatment Considerations

The NPDES Permit specifies numeric effluent limitations on total fecal coliform (TFC), pH, and dissolved oxygen (DO). Beginning in April 2019, it also requires that the WWTP report measured values of PFOS and PFOA on a quarterly basis. Sample data for these parameters

was not measured at the influent. Therefore, removal efficiencies by the WWTP could not be calculated.

2.4.5.1 Total Fecal Coliform

The NPDES Permit monthly average requirement for TFC in the effluent is no more than 200 CFU/100 mL. During the study period, the average count was 8 CFU/100 mL. The monthly average TFC in the final effluent did not exceed the permit limit during the study period. Observed TFC values are shown in Figure 15.

2.4.5.2 pH

The NPDES Permit daily requirement for effluent pH is greater than 6.5 and less than 9.0. During the study period, the effluent pH ranged from 7.27 to 8.84. The pH in the final effluent did not violate permit limits during the study period. Observed pH values are shown in Figure 16.

2.4.5.3 Dissolved Oxygen

The NPDES Permit daily requirement for effluent DO is no less than 5.0 mg/L from December through September and no less than 6.0 mg/L for October and November. These limits changed with the NPDES permit renewal, effective April 2019, to no less than 6.0 mg/L from May through November and no less than 5.0 mg/L from December through April. During the study period, the DO in the effluent ranged from 5.1 to 10.4 mg/L. The DO in the final effluent was below permit limits on three consecutive days in August 2019. Observed dissolved oxygen values are shown in Figure 17.

3 HYDRAULIC CAPACITY ANALYSIS

The hydraulic capacities of the WWTP processes that have a hydraulic limitation were analyzed using applicable recommendations and requirements of the "Recommended Standards for Wastewater Facilities", 2014 Edition (Ten States Standards), as well as the limits set forth by the NPDES Permit. Unless noted otherwise, the WWTP processes meet the criteria from the Ten States Standards. The hydraulic capacity for each process downstream of the oxidation ditch is assumed to be conservative, due to the buffering that occurs in tanks with detention time.

3.1 Influent Pump Station

The Ten States Standards (Section 42.31) indicate that pumping stations must be able to handle the peak hourly flow with the largest pump out of service. For a triplex station with three similar pumps, the firm capacity is the capacity produced with two pumps in simultaneous operation.

The three raw sewage pumps are individually rated for 500 gpm and therefore have a firm capacity of 1.44 MGD. It is presumed that the design intent is for one raw sewage pump in normal use with a second pump available during peak times. The third pump is to provide operational redundancy. However, operators report that it is not uncommon for all three pumps to run simultaneously and they have had to temporarily install a fourth submersible pump in the wet well to keep up with influent flow on several occasions.

3.2 Grit Removal

The Ten States Standards do not provide a recommendation for sizing of vortex-type grit chambers. According to the equipment manufacturer, the grit chamber was intended to have a maximum hydraulic capacity of 2.5 MGD. The grit chamber may be able to hydraulically accommodate the flow, but it is not able to adequately remove grit as designed even at average flow.

3.3 Oxidation Ditch

The Ten States Standards (Section 92.32) recommend the liquid depths of aeration tanks should not be less than 5.5 feet for horizontally mixed aeration tanks. The total aeration tank volume should be divided among 2 or more units capable of independent operation. Finally, the aeration tanks should have a freeboard of not less than 3 feet when using a mechanical surface aerator. According to the "Wastewater Engineering Design, Third Edition" by Metcalf and Eddy,

oxidation ditches should have a mean cell residence time (MCRT) between 10 and 30 days and a hydraulic retention time (HRT) between 8 and 36 hours.

The WWTP has one oxidation ditch with three channels. The channels have a liquid depth of 10.5 feet with a freeboard of 36 inches. The volumes of the channels are as follows, from inner to outer channel: 82,490 gallons, 136,870 gallons, and 191,250 gallons. The oxidation ditch has a total volume at the high water level of 410,600 gallons. At the specified design HRT of 15 hours, the oxidation ditch could accommodate an average day influent flow of 0.66 MGD with all three channels in use. Operating at the low end of the range recommended in Metcalf & Eddy is not feasible as permit violations have occurred when the WWTP has operated consistently below an HRT of 10.5 hours. Assuming a minimum HRT of 11 hours, the oxidation ditch can accommodate a peak day flow of 0.9 MGD with all three channels in use. Further analysis of treatment performance is presented in Section 4.1.

The average HRT during the study period was 17.7 hours. The current MCRT is unknown.

3.4 Final Clarifiers

3.4.1 General

The Ten States Standards (Section 71.1) recommend multiple settling units capable of operation in plants where the design average flows exceed 0.1 MGD. Additionally, the clarifier should have a minimum side water depth of 12 feet following the activated sludge process (Section 72.1).

Each final clarifier at the WWTP is 50 ft in diameter. Each of the final clarifiers has a side water depth of 14 feet. The WWTP operated with both final clarifiers online during the study period.

3.4.2 Surface Overflow Rate

The Ten States Standards (Section 72.232) recommend a maximum surface overflow rate of 1,000 gpd/ft^2 at the design peak hourly flow for the extended aeration activated sludge process.

The total surface area of the two final clarifiers is 3,930 ft^2. Therefore, the final clarifiers could handle a peak hourly flow rate of 3.9 MGD if only surface overflow rate criteria is considered.

3.4.3 Weir Loading

The maximum peak hour weir loading as set by the Ten States Standards (Section 72.43) is 20,000 gpd/ft.

With both final clarifiers in use, the total weir length is 314 ft. Therefore, the final clarifiers could handle a peak hourly flow rate of 9.4 MGD if only weir loading criteria is considered.

3.4.4 Solids Loading Rate

The Ten States Standards (Section 72.232) recommend a maximum peak solids loading rate of 35 lb/day/ft^2. This value is calculated based on the design maximum day flow rate, the design maximum return sludge rate requirement, and the design MLSS concentration. The Ten States Standards (Section 92.41) also recommend a design minimum return sludge rate of 50% design average flow.

The average MLSS concentration over the study period is 3,040 mg/l. Based on the cycle of building the biomass in the oxidation ditch followed by batch wasting, the MLSS concentration typically ranges between 1,500 – 4,000 mg/l. Therefore, the two final clarifiers can handle a maximum day flow of 4.3 MGD based on the average MLSS over the study period if only solids loading rate criteria is considered.

The maximum day solids loading rate observed during the study period was 14.5 lb/day/ft^2.

3.5 Tertiary Filters

The tertiary filters were not in service during the study period. Therefore, no hydraulic capacity analysis was performed.

3.6 Effluent Pump Station

The effluent pump station was not in service during the study period. Therefore, no hydraulic capacity analysis was performed.

3.7 Disinfection

The Ten States Standards (Section 104.3) recommend a minimum of two UV lamp banks in series in open channel construction with level control to achieve the necessary disinfection. The hydraulic properties should simulate plug flow conditions without short circuiting under the full operating flow range.

The UV disinfection process at the WWTP includes a single channel with two lamp banks and a finger weir for level control. The equipment is designed to hydraulically handle 1.8 MGD. Due to buffering in the upstream processes the allowable influent flow could be greater than 1.8 MGD.

3.8 Recirculation Pump Station

The Ten States Standards (Section 42.31) indicate that pumping stations must be able to handle the peak hourly flow with the largest pump out of service. For a triplex station with three similar pumps, the firm capacity is the capacity produced with two pumps in simultaneous operation.

The three recirculation pumps are individually rated for 350 gpm and therefore have a firm capacity of 1.0 MGD. It is presumed that the design intent is for one recirculation pump in normal use with a second pump available during peak times. The third pump is to provide operational redundancy.

3.9 Return Activated Sludge & Waste Activated Sludge

The Ten State Standards (Section 92.41) recommend the RAS rate be variable and range between 50% and 150% of the design average flow for extended aeration processes. In accordance with the Ten State Standards (Section 92.44), waste control facilities should have a capacity of at least 25% of the design average flow. Therefore, since the same pump is used for both RAS and WAS, 75% of the pump capacity is the maximum available for RAS.

Three activated sludge pumps are used to pump RAS or WAS, depending on the position of control valves. Each activated sludge pump at the WWTP is rated for 260 gpm. The firm capacity for the activated sludge pumps is 0.75 MGD, based on one pump out of service (Section 92.42). Therefore, the maximum pumping capacity available for RAS is 0.56 MGD, based on 25% of the pump capacity reserved for WAS.

Over the study period, the RAS rate as a percentage of influent flow averaged 50%. Based on the current RAS rate of 50% of influent flow, the average day flow could be as high as 1.1 MGD.

The current wasting procedure at the WWTP is based on the MLSS concentration in the oxidation ditch. Operators monitor the MLSS until it reaches approximately 4,000 mg/L. Then they batch waste the mixed liquor until the MLSS is reduced to 1,500 mg/L. Data shows that this process can take up to one week.

3.10 Scum Pump Station

The scum pump station was not in service during the study period. Therefore, no hydraulic capacity analysis was performed.

3.11 Sludge Handling

There are no Ten States Standards related to sludge pumping capacity, however, the Ten States Standards (Section 73.23) require a minimum velocity of 3 ft/s in sludge withdrawal pipelines. For return sludge piping, a minimum velocity of 2 ft/s is required if operating at normal return sludge rates (Section 92.43). The Ten States Standards (Section 87.2) recommend a minimum diameter of 6 inches on digested sludge pump suction and discharge lines and a minimum of 8 inches for gravity withdrawal of digested sludge.

The activated sludge pumps have a firm capacity of 0.75 MGD. The velocity in the 8 inch diameter RAS piping is 3.3 ft/s, and the velocity in the 4 inch diameter WAS piping is 13.3 ft/s.

The vortex pump, or “loading pump”, located in the Process Control Building is used to pump thickened sludge to the storage tanks and the sludge loading station and has a capacity of 200 gpm. The associated piping is 6 inch diameter and the velocity is 2.3 ft/s.

Some of the sludge withdrawal piping does not meet the Ten States Standards minimum velocity requirement of 3 ft/s. In these pipes, there may be the potential for solids settling in the pipe. However, the pumps are adequately sized for current operations.

3.12 Sludge Thickening

There are no requirements in the Ten States Standards applicable to hydraulic capacity of sludge thickeners. Gravity thickeners are typically sized on the basis of solids loading with provision for

the addition of final effluent water in order to maintain aerobic conditions in the thickener. The sludge thickener at the WWTP receives WAS and can also receive transferred sludge from the sludge storage tank or the digesters. Design loading values typically range from 2.5-7 lb/day/ft^2 for WAS (Metcalf & Eddy).

The sludge thickener has a surface area of 107 ft^2, and can therefore handle 750 lb/day of solids, assuming the maximum loading value of 7 lb/day/ft^2. The batch wasting procedure typically performed at the WWTP allows the WAS to thicken before being pumped to the storage tank prior to the next wasting cycle.

3.13 Sludge Storage

The Ten States Standards (Section 89.12) require a range of 120 – 180 days of storage for sludge storage facilities.

The WWTP has one sludge storage tank and two digesters (used for storage) with a total storage volume of 431,000 gallons. Given a total storage volume of 431,000 gallons and a minimum of 120 days solids storage, the net average daily sludge sent to the storage tanks could be 3,590 gallons per day.

The WWTP does not measure the flow of sludge transferred to the storage tanks nor the supernatant from the storage tanks that is returned to the recirculation tank. Based on data from hauled sludge prior to 2019, the WWTP typically land applied approximately 80 dry tons per year. The most recent sludge haul occurred in April 2018. The permanent storage volume exceeds 180 days for sludge produced at current flow and loading.

3.14 Chemical Feed

In accordance with the Ten States Standards (Section 111), the chemical feed equipment shall be designed to meet the maximum dosage requirements for the design conditions. Chemical storage tanks are recommended to hold a minimum supply of 10 days worth of chemical.

3.14.1 Ferric Chloride Feed

The WWTP currently maintains an average ferric chloride dosing rate of approximately 30 gallons per day. The two ferric chloride feed pumps are individually rated for 68 and

30 gallons per day, respectively. Based on the current average ferric chloride dosing rate, the feed pumps could accommodate an average day flow of 1.7 MGD.

The bulk ferric chloride storage tank has a volume of 6,000 gallons. The total volume is more than 200 days of storage based on the dosing rate. The allowable average day flow could be more than 20 times greater than the current average flow and the storage tanks would still meet the Ten States Standards.

3.15 Hydraulic Capacity Summary

A summary of the hydraulic capacities of each process described above is provided in Table 4. A comparison of the limiting allowable influent hydraulic capacity of each applicable process can be seen in Figure 18.

The most limiting process related to hydraulic capacity is the influent pump station. The influent pump station does not meet the Ten States Standards recommendation for redundancy as the firm capacity is less than the peak hourly flow during the study period. On average, there were 28 days per year in which the influent pump station could not accommodate the average daily flow. As groundwater levels remain high and increases the infiltration in the collection system, this will remain an ongoing operational disruption and negatively impact other treatment processes at the WWTP.

The next most limiting process is the oxidation ditch which currently operates below the design HRT of 15 hours at average flow during the months from April to September when the effluent BOD permit limits are most stringent. When flow exceeds 0.9 MGD [11 hours HRT] for several consecutive days, permit violations occur. During these months, HRT was 11 hours or less on 2 out of every 5 days. In the six months in which permit limits were exceeded for effluent BOD, the monthly average HRT ranged from 6 to 10 hours.

The activated sludge pumps are the next limiting process for hydraulic capacity. However, the duration of the pumped waste cycle could be extended and the flow rate decreased, which would allow more than 75% of pump capacity to be designated for RAS pumping.

4 TREATMENT CAPACITY ANALYSIS

The treatment capacities for the applicable WWTP processes were analyzed using the recommendations and requirements of the Ten States Standards, as well as the limits set forth by the 2019 NPDES Permit. Unless noted otherwise, the WWTP processes meet the Ten States Standards. Allowable Headworks Loadings (AHL) were also determined for processes where applicable. An AHL is defined by the EPA as the estimated maximum loading of a pollutant that can be received at a publicly owned treatment works' (POTW) headworks that should not cause a POTW to violate a particular treatment plant or environmental criterion.

4.1 Oxidation Ditch

The following AHL calculations for the oxidation ditches are presented with all three channels in the oxidation ditch in service. The oxidation ditch system is a modified form of the activated sludge process and is classified as a complete mix extended aeration system. It is assumed that influent and recycle loadings also remain proportionally the same as current operation.

The actual values noted are based on the current operation of the WWTP in which all three channels in the oxidation ditch are online.

4.1.1 Organic Loading

The Ten States Standards (Section 92.31) establish permissible capacities and loadings for aeration tanks; the allowable organic loading for extended aeration is 15 lb BOD_5/d/1000 ft^3 at design average BOD. The design organic loading of the oxidation ditch is 12.5 lb BOD_5/d/1000 ft^3, as inferred from the design summary.

The total volume of the oxidation ditch is 54,890 ft^3. Therefore, the allowable loading to the oxidation ditches is 820 lb BOD/day including recycle flows. The AHL is 740 lb BOD/day if only organic loading is considered, assuming 10% of the loading to the oxidation ditches is from recycle flows. No data was available to quantify the loading from recycle flows.

The oxidation ditch loading values seen at the WWTP during the study period averaged 360 lb BOD/day. This does not include the supernatant from the storage tank and sludge thickener which drain by gravity to the recirculation tank. It is assumed that these sources

contribute an additional 40 lb BOD/day since the BOD of the RAS was not sampled and tested for.

The oxidation ditch loading values seen at the WWTP during the study period ranged between 4.5 and 9.1 lb BOD/d/1000 ft^3 as shown in Figure 19.

4.1.2 Aeration

In accordance with the Ten States Standards (Section 92.331), aeration equipment should be capable of maintaining a minimum of 2.0 mg/L dissolved oxygen in the mixed liquor at all times. The oxygen requirements for extended aeration should be 1.5 lb O_2/lb design peak hourly BOD and 4.6 lb O_2/lb design peak hourly Total Kjeldahl Nitrogen (TKN) to achieve nitrification.

The oxidation ditch is equipped with two 15 hp and two 30 hp rotary surface aerators. Because equipment specific data was not available, it is assumed based on similar equipment that the rotor aerators deliver 3.0 lb O_2/hp-hr. At maximum immersion, the four aerators can achieve a total of 360 lb O_2/hr (15,120 lb O_2/day) for clean water. With the correction factor for wastewater applied, the oxidation ditches can achieve 6,430 lb O_2/day. Therefore, the peak hourly oxidation ditch loading could be 2,930 lb BOD/day with all three oxidation ditch channels in service, assuming the influent BOD:TKN ratio remains constant and complete nitrification occurs in the oxidation ditch.

Since hourly flow data was not available, a conservative approximation was used in the AHL calculation. The maximum day to average day (max:avg) ratio of BOD loadings from the study period was determined to be 1.79, and is used to compare the peak hour AHL values for aeration with the other AHL values which are based on average day flow. Considering only the aeration component of the oxidation ditch and reserving an estimated 10% of loading from recycle flows, the AHL for BOD could be as high as 1,470 lb BOD/day.

4.1.3 Food to Microorganism Ratio and Mixed Liquor Suspended Solids

The food to microorganism ratio (F:M) is the quantity of food available relative to the quantity of microorganisms. An F:M that is too high or too low could lead to poor settling sludge. The Ten States Standards (Section 92.31) suggested F:M ratio for extended aeration process is between 0.05-0.1 lb BOD/day/lb mixed liquor volatile suspended solids (MLVSS).

The Ten States Standards (Section 92.31) maximum MLSS values for extended aeration processes range between 3,000 to 5,000 mg/L. The maximum MLSS values are dependent upon the surface area provided for final settling, the rate of sludge return, and the aeration process. According to the WWTP operators, the target MLSS range is between 1,500 and 4,000 mg/L.

With all three oxidation ditch channels in service, an F:M of 0.1, an MLSS value of 3,000 mg/L, and the observed 64% volatile solids, the AHL is 650 lb BOD/day if only F:M is considered. As BOD loading increases, the MLSS concentration can also increase to remain within the Ten States Standards recommended range.

The F:M values during the study period were between 0.02-0.07 (Figure 20) and the daily aeration tank MLSS values ranged between 770 and 10,110 mg/L (Figure 21). The average F:M was 0.04. The average MLSS concentration in the aeration tanks was 3,040 mg/l and the average RAS flow rate was 45% of the influent flow rate.

The WWTP operated below the lower limit of the Ten States Standards recommended F:M range for extended aeration process during about 70% of the study period. The oxidation ditch is a hybrid of the conventional and extended aeration activated sludge processes. Industry reference literature recommend a range between 0.05 and 0.3 lb BOD/day/lb MLVSS (Metcalf & Eddy). Operating the WWTP outside the Ten States Standards recommended F:M range is not a primary concern, given the nature of oxidation ditches and that the WWTP has consistently met permitted effluent water quality limits when operated with sufficient HRT.

4.1.4 Sludge Volume Index

The sludge volume index (SVI) is a performance metric of the overall activated sludge process that combines the MLSS concentration and 30-minute sludge settleability test. It is also correlated to the F:M ratio and can give the operator valuable insight for process control. There are no specific recommendations for the SVI in Ten States Standards, however, this metric is referenced in the guidance for appropriate RAS rate (Section 92.41).

The SVI is shown in Figure 22. There is an apparent seasonal trend observed in the data. The average SVI during the study period is 68 mL/g. A well settling sludge is typically in the range of 100 – 200 mL/g. Generally, an SVI less than 80 mL/g indicates a dense, rapid

settling sludge, however, this value is unique to each WWTP. There is the potential for residual pin-floc above the sludge blanket that could cause effluent TSS levels to remain high.

4.1.5 Hydraulic Retention Time

Treatment performance over the study period is directly related to the HRT in the oxidation ditch. As described in Section 3.3, the design HRT of the oxidation ditch is 15 hours. Over the study period, the average HRT was 17.7 hours. However, in the six months where the NPDES permit limit was exceeded for $CBOD_5$ effluent loading, the average HRT was 7.9 hours. Figure 23 shows correlation between HRT and the removal efficiency for CBOD. Figures 24 through 27 show the correlation between HRT and the effluent loading for each compatible pollutant.

The treatment performance impact of MLSS and F:M ratio relative to HRT was analyzed for the two periods when the monthly effluent $CBOD_5$ permit limit was exceeded [April – June 2018 and May – July 2019]. Figures 28 through 31 show that increasing the MLSS concentration / decreasing the F:M ratio does not appear to improve treatment during periods of low HRT.

4.2 WWTP Capacity from Historic Removal Efficiency

In addition to the calculations based on the Ten States Standards, the WWTP removal efficiency of each pollutant limited by the NPDES permit was used to determine an AHL value using the equation below:

$$AHL_{Overall} = \frac{8.34 * C_{NPDES} * Q_{WWTP}}{1 - R_{WWTP}}$$

where,

C = Concentration, mg/l

Q = average influent flow, MGD

R = Removal efficiency

A summary of the overall WWTP AHL values is provided in the table below. Due to the permit violations for effluent $cBOD_5$ loading, a separate AHL is shown for the period April – September using the removal efficiency on days when HRT is less than 11 hours.

WWTP Allowable Headworks Loadings Based on NPDES Permit Limits[a]

Pollutant	NPDES Permit Limit, (mg/l)[b]	Removal Efficiency	AHL, (lb/day)
$CBOD_5$			
April – September	4	96%	740
April – September, HRT ≤10.5 hours	4	94%	480
October - November	7	98%	1,150
December – March	20	96%	2,920
TSS			
April – September	20	94%	2,220
October – November	22	96%	2,230
December - March	30	92%	2,120
Ammonia-N			
May – September	0.5	99%	450
October – November	2.1[c]	99%	1,060
December - March	10.0[c]	99%	7,980
April	5.5[c]	99%	4,780
Phosphorus	0.5	92%	40

[a] The AHL as determined by this method does not account for solids digestion or storage capacity.
[b] Monthly average, unless otherwise noted
[c] Daily limit

4.3 Treatment Capacity Summary

A summary of the AHLs for each of the processes discussed above is provided in Table 5. Maximum Allowable Headworks Loading (MAHL) is defined by the EPA as the estimated maximum loading of a pollutant that can be received and treated at a WWTP without causing pass through or interference with treatment processes. Therefore, the MAHL for each pollutant is the lowest (most protective) of the various AHLs calculated. The MAHL of each pollutant is summarized in the table below and includes a safety factor of 10%. Figure 32 shows a comparison of the MAHL for each pollutant with the current average loadings.

WWTP Maximum Allowable Headworks Loadings

Pollutant	MAHL, lb/day
BOD_5[a]	430
BOD_5	590
TSS	630
Phosphorus	30
Ammonia-N	410

[a] Based on a hydraulic retention time in the oxidation ditch of 11 hours.

The most stringent AHL for TSS was based on the information in the design summary provided in Appendix A, since there is not sufficient data to infer an AHL from the solids handling process at the WWTP.

5 CONCLUSIONS

The average WWTP influent flow over the study period was 147% of the design average due to inflow and infiltration. The trend line indicates that influent flows are increasing slightly. During the study period, the NPDES permit limits were exceeded a total of eleven times.

The WWTP is hydraulically limited by the raw influent pump station as evidenced by the need to supplement capacity with additional pumps on multiple occasions during the study period. The oxidation ditch process is the next hydraulically limiting process. Operating the oxidation ditch below the design HRT for extended periods has a negative impact on treatment efficiency.

The oxidation ditch is also the limiting treatment process as currently operated with routine batch wasting of activated sludge and the tertiary filtration offline. The WWTP is at 64% of the MAHL for BOD, assuming sufficient HRT in the oxidation ditch. However, when the HRT in the oxidation ditch is below 11 hours, the WWTP is at 105% of the MAHL for BOD during April to September when the NPDES permit limit is most stringent. Daily wasting of activated sludge would maintain a more steady F:M ratio and MLSS concentration which may improve treatment consistency.

The MAHLs for the pollutants provide guidelines that will help the WWTP make informed decisions regarding accepting additional flow connections and/or additional loading. Current influent flows prohibit the WWTP from having adequate treatment capacity available for increased loading of all compatible pollutants.

CITY OF BRONSON
WWTP CAPACITY ANALYSIS

TABLE 1

Influent and Effluent Data Comparison

	Basis of Design[1]		Actual: 2017-2019	
Flow	**mgd**	**gpm**	**mgd**	**gpm**
Average Day	0.5	347	0.73	510
Peak Hour	1.5	1,042	N/A	N/A
Maximum Day	N/A	N/A	2.0	1,405
Average Day	**mg/L**	**lb/day**	**mg/L**	**lb/day**
$CBOD_5$				
Influent	165	688	54	357
Effluent, 4/1 - 9/30	4	17	2.0	14.6
Effluent, 10/1 - 11/30	7	29	2.0	7.9
Effluent, 12/1 - 3/31	20	83	2.3	13.7
TSS				
Influent	150	626	58	281
Effluent, 4/1 - 9/30	20	83	2.4	17.7
Effluent, 10/1 - 11/30	22	92	2.6	11.0
Effluent, 12/1 - 3/31	30	130	3.2	19.2
Phosphorus				
Influent	5	20.9	1.9	9.6
Effluent	0.5	770[3]	0.14	
Ammonia-Nitrogen				
Influent	30	125	11.5	54
Effluent, 5/1 - 9/30	0.5	2.1	0.07	0.97
Effluent, 10/1 - 11/30	2.1[2]			
Effluent, 12/1 - 3/31	10.0[2]			
Effluent, 4/1 - 4/30	5.5[2]			

Note:

[1] Basis of Design values per 2016 NPDES Permit Renewal Application. Effluent design values based on maximum monthly limit set forth in current NPDES Permit, unless otherwise noted.

[2] Daily Limit

[3] 12-Month Rolling Average

CITY OF BRONSON
WWTP CAPACITY ANALYSIS

TABLE 1

Influent and Effluent Data Comparison

	Basis of Design[1]	Actual: 2017-2019
Fecal Coliform Bacteria	**ct/100ml**	**ct/100ml**
Influent	NA	
Effluent	200	8
pH	**S.U.**	**S.U.**
Influent	NA	7.60
Effluent[2]	6.5 ≤ pH ≤ 9.0	7.85
Dissolved Oxygen	**mg/l**	**mg/l**
Influent	NA	
Effluent[2]	5.00	8.28

Note:

[1] Basis of Design values per 2016 NPDES Permit Renewal Application. Effluent design values based on maximum monthly limit set forth in current NPDES Permit, unless otherwise noted.

[2] Daily Limit

[3] 12-Month Rolling Average

Prein&Newhof

CITY OF BRONSON
WWTP CAPACITY ANALYSIS

TABLE 2

Land Application Biosolids Summary

Pollutant	Concentration Limit,* mg/kg	Annual Average Concentration, mg/kg		
		2017	2018	2019
Arsenic	75	4.64	3.36	*No Land Application*
Cadmium	85	5.29	2.30	
Copper	4,300	767	477	
Lead	840	36.8	22.1	
Mercury	57	1.25	2.60	
Molybdenum	75	15.7	12.0	
Nickel	420	160	72.2	
Selenium	100	5.80	1.77	
Zinc	7,500	863	619	

*EPA Part 503 Rule, Section 503.13 - Table 1. Dry weight basis

CITY OF BRONSON
WWTP CAPACITY ANALYSIS

TABLE 4

Hydraulic Capacity Summary

Process	Capacity	Units	Capacity Notes	Allowable Influent Flow (MGD)	Allowable Influent Flow Notes
Grinder	1.5	MGD	Rated Capacity	**1.5**	
Raw Influent Pumps	1.4	MGD	Firm Capacity. Each pump rated for 500 gpm (0.7 MGD)	**1.4**	Firm capacity with one pump out of service
Grit Removal	2.5	MGD	Rated Capacity	**2.5**	
Oxidation Ditch	0.4	MG	Total volume of oxidation ditch	**0.7**	Design hydraulic retention time of 15 hours - ADF
				0.9	Peak flow - Minimum hydraulic retention time of 11 hours
Final Clarifiers					Assuming both clarifiers in service
Surface Overflow Rate	3.9	MGD	Peak hour allowable per Ten States Standards	**3.9**	No peaking factor applied for buffering
Solids Loading	4.3	MGD	Maximum Day allowable per Ten States Standards	**4.3**	No peaking factor applied for buffering (based on maximum day flow)
Weir Loading	9.4	MGD	Peak hour allowable per Ten States Standards	**9.4**	No peaking factor applied for buffering
RAS/WAS	0.8	MGD	Firm Capacity. Each pump rated for 260 gpm (0.375 MGD)	**1.7**	Based on current RAS rate of 45% and one pump out of service
Disinfection					
UV Banks	1.8	MGD	Capacity of UV system	**1.8**	No peaking factor applied for buffering
Ferric Chloride Feed					
Feed Pump	30	gpd	Firm Capacity. Pump No. 1 rated for 30 gpd & Pump No. 2 rated for 68 gpd.	**1.7**	Assumed proportional feed rate to current average day flow
Bulk Storage	6,000	Gal	Storage volume	**14.7**	Assumed proportional feed rate to current average day flow
Recirculation Pump Station	350	GPM	Individual Pump Capacity	**20.0**	
Sludge Thickening	14,500	gal	Total volume of thickener	**NA**	
Sludge Handling					
Liquid Haul	200	GPM	Loading Pump Capacity	**NA**	
Sludge Storage					
Sludge Storage Tank	0.4	MG	Total volume of sludge storage tank and digesters	**2.0**	Assumed solids loading proportional to increase in influent flow Does not account for supernatant removal (only removed from digester)

Prein&Newhof

CITY OF BRONSON
WWTP CAPACITY ANALYSIS

TABLE 5

Allowable Headworks Loading Summary

Pollutant	AHL (lb/day)	Current Loading (lb/day)
$CBOD_5$		
NPDES Permit, April - September	790	392
NPDES Permit, April - September [1]	480	451
NPDES Permit, October - November	1,150	318
NPDES Permit, December - March	2,920	324
BOD		
Aeration Tank Loading	740	357
Aeration Tank Oxygen Demand	1,470	357
F/M Consideration	650	357
TSS		
NPDES Permit, April - September	2,220	298
NPDES Permit, October - November	2,230	332
NPDES Permit, December - March	2,120	228
Ammonia Nitrogen [2]		
NPDES Permit, May - September	450	57
NPDES Permit, October - November	1,060	59
NPDES Permit, December - March	7,980	49
NPDES Permit, April	4,780	53
Phosphorus		
NPDES Permit	40	10

Notes:

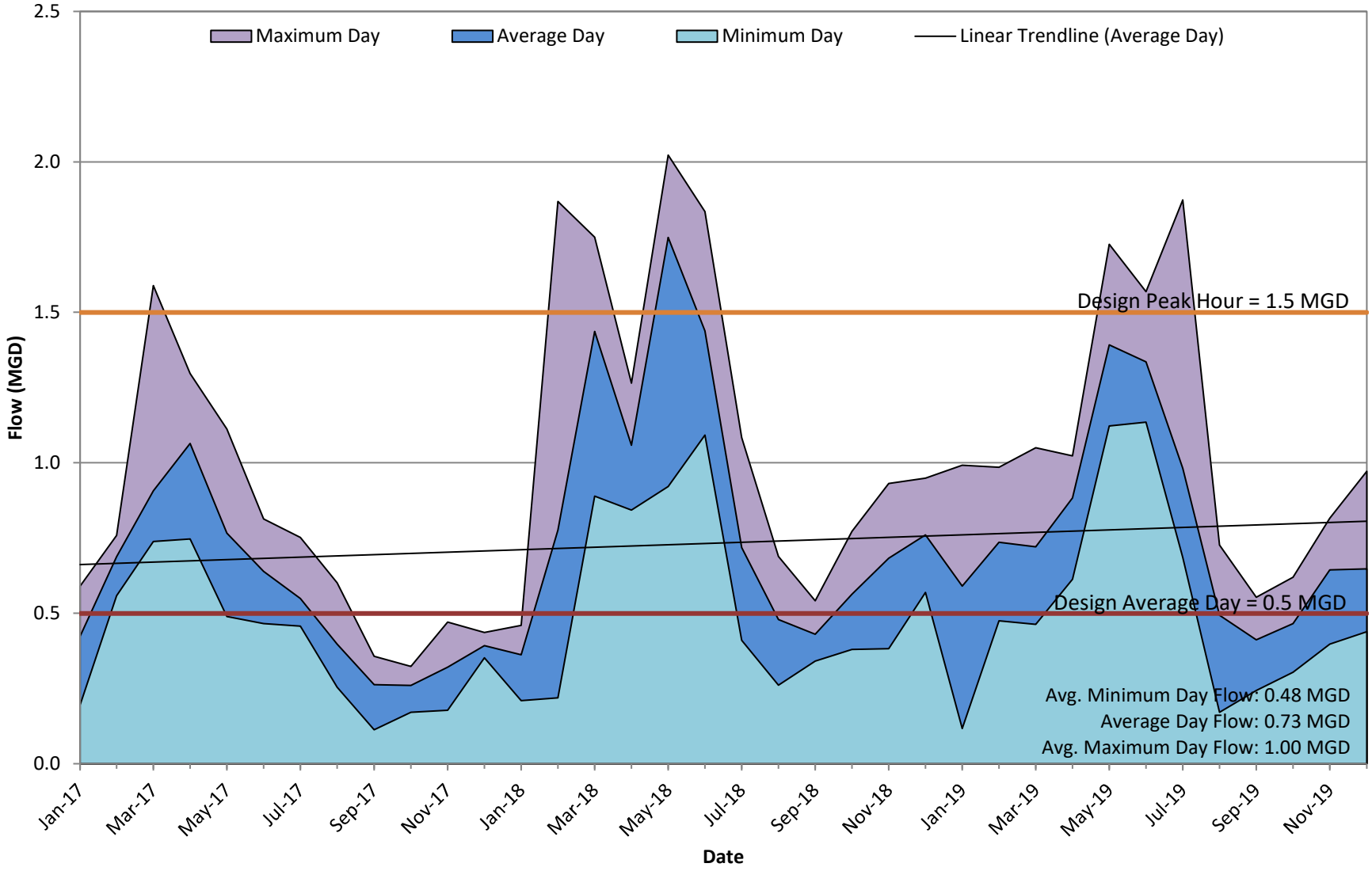
[1] Select days when Oxidation Ditch Hydraulic Retention Time is less than 11 hours.

[2] Ammonia limit Oct. - April calculated by historical % removal only and would potentially be limited by aeration capacity.

CITY OF BRONSON
WWTP CAPACITY ANALYSIS

FIGURE 2

Influent Flows



Appendix F

City of Bronson Zoning Map

City of Bronson Zoning Map

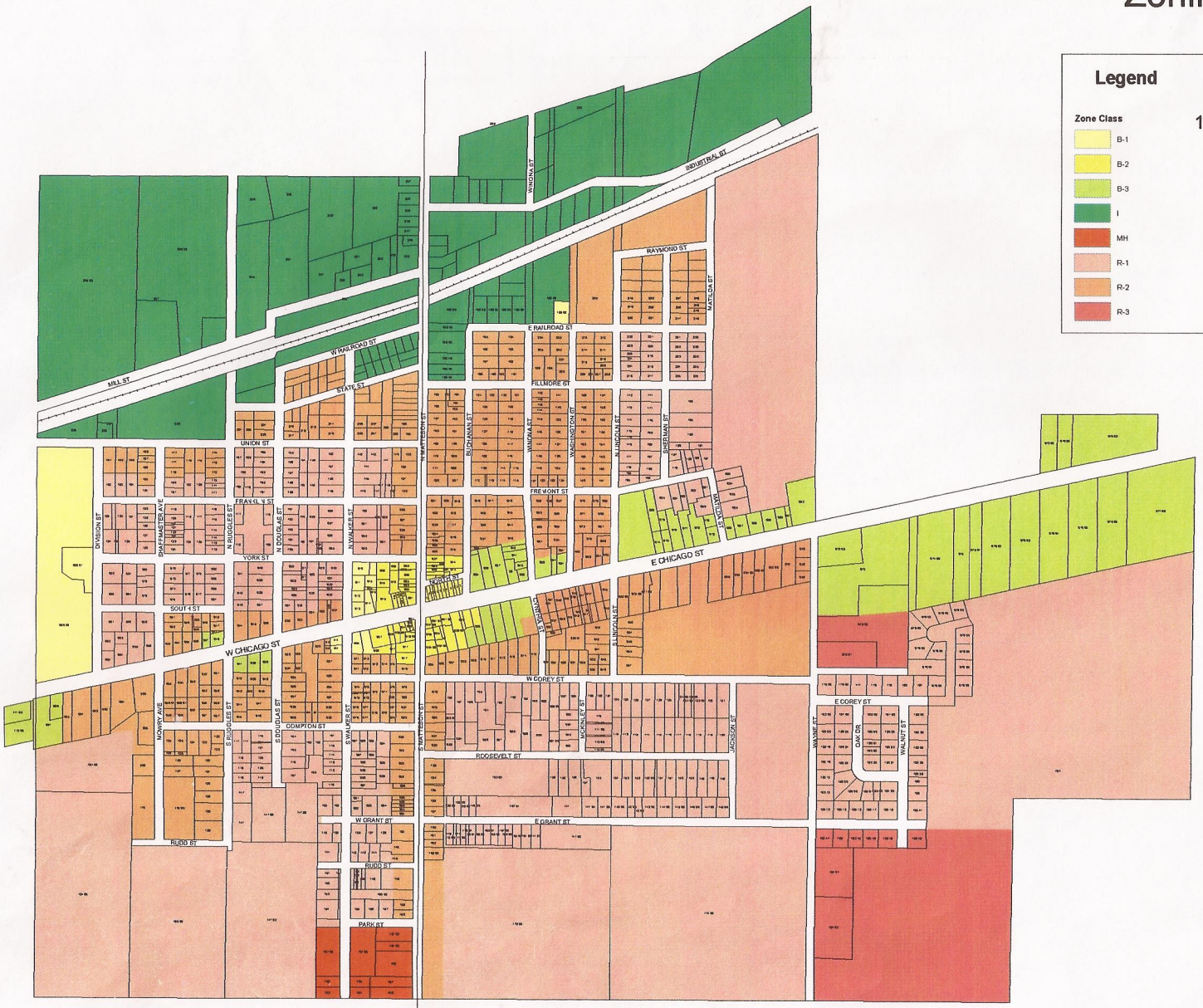
Legend

Zone Class

- B-1
- B-2
- B-3
- I
- MH
- R-1
- R-2
- R-3

Scale

1 inch equals 250 feet



NOTE
THIS MAP IS BASED ON ORIGINAL DRAWING BY ORIMES ENGINEERING,DATED NOVEMBER 1982, ORIGINAL SCALE 1 INCH EQUALS 200 FEET, AND AS REVISED BY BRONSON CITY MANAGER.

GEOGRAPHIC INFORMATION BRANCH GIS FOR BRANCH COUNTY

Appendix G

NRCS Soil Survey

United States Department of Agriculture

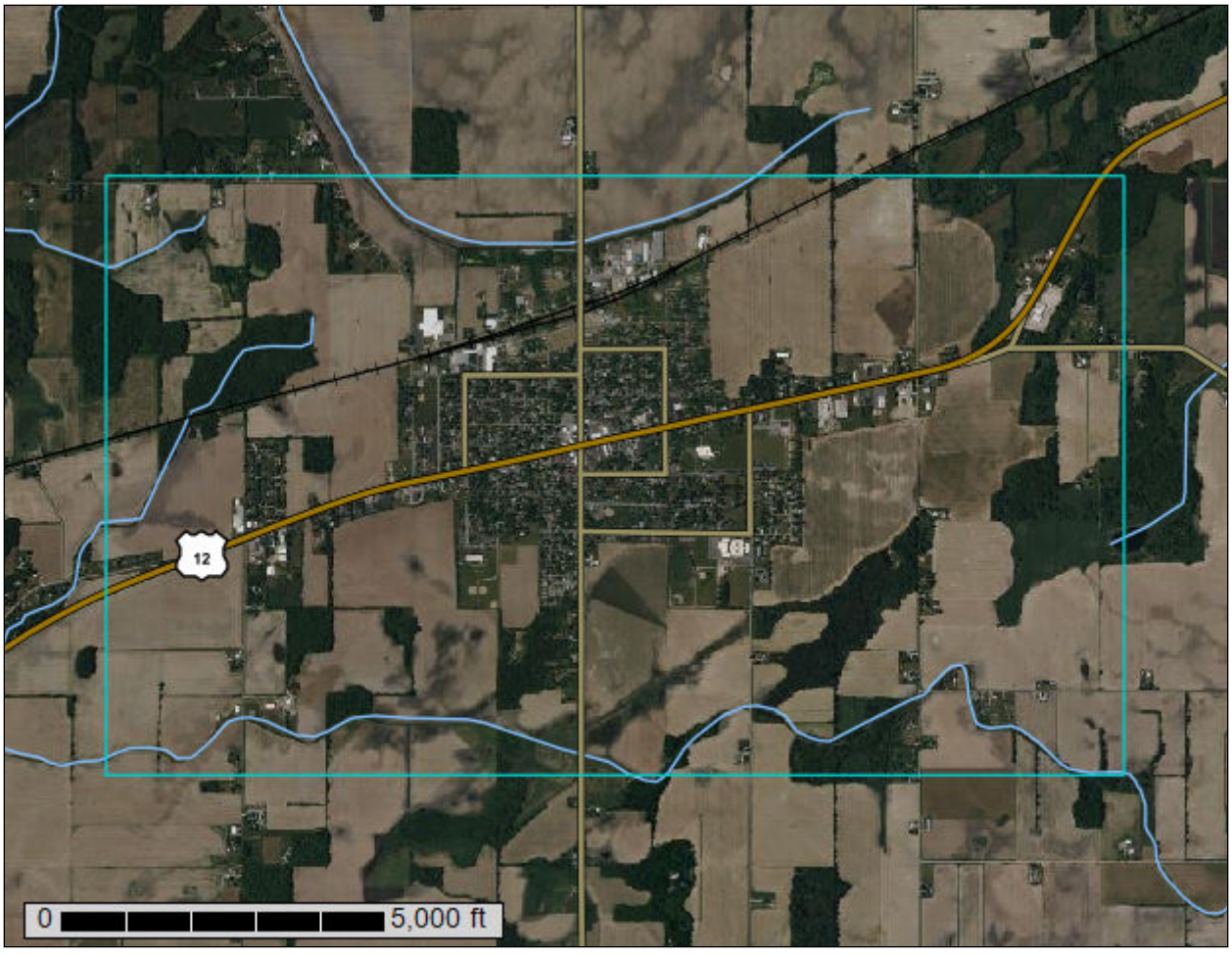
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Branch County, Michigan

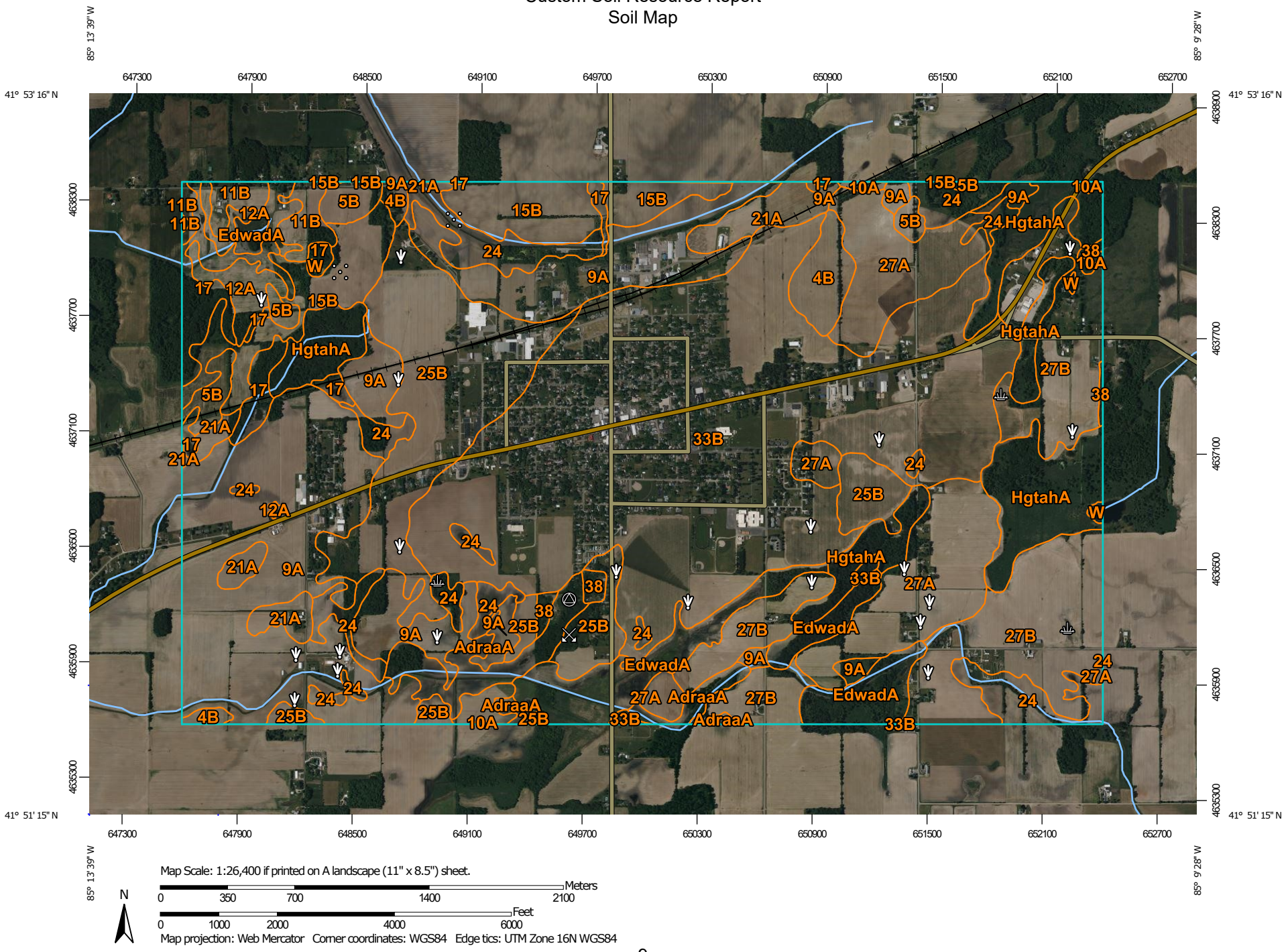
City of Bronson



December 12, 2022

Contents

Custom Soil Resource Report
Soil Map



Map Scale: 1:26,400 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 350, 700, 1400, 2100

Feet: 0, 1000, 2000, 4000, 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4B	Oshtemo sandy loam, 0 to 6 percent slopes	42.3	1.3%
5B	Hillsdale-Riddles fine sandy loams, 2 to 6 percent slopes	41.2	1.2%
9A	Matherton sandy loam, 0 to 3 percent slopes	556.5	16.6%
10A	Brady sandy loam, 0 to 2 percent slopes	5.8	0.2%
11B	Elmdale fine sandy loam, 2 to 6 percent slopes	31.6	0.9%
12A	Teasdale fine sandy loam, 0 to 3 percent slopes	41.8	1.2%
15B	Locke fine sandy loam, 1 to 4 percent slopes	153.2	4.6%
17	Barry loam, 0 to 2 percent slopes	72.5	2.2%
21A	Bronson sandy loam, 0 to 3 percent slopes	61.3	1.8%
24	Sebewa loam, 0 to 2 percent slopes	152.7	4.5%
25B	Branch loamy sand, 1 to 4 percent slopes	303.2	9.0%
27A	Fox sandy loam, 0 to 2 percent slopes	231.6	6.9%
27B	Fox sandy loam, 2 to 6 percent slopes	331.0	9.8%
33B	Ormas loamy sand, 0 to 6 percent slopes	907.6	27.0%
38	Udipsamments, gently sloping	11.9	0.4%
AdraaA	Adrian muck, 0 to 1 percent slopes	67.5	2.0%
EdwadA	Edwards muck, 0 to 1 percent slopes	135.4	4.0%
HgtahA	Houghton muck, 0 to 1 percent slopes	210.2	6.3%
W	Water	3.3	0.1%
Totals for Area of Interest		**3,360.8**	**100.0%**

Appendix H

IPaC Results

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To: December 12, 2022
Project Code: 2023-0024307
Project Name: Water and Wastewater Utility Upgrades

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Official Species List
The attached species list identifies any Federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Under 50 CFR 402.12(e) (the regulations that implement section 7 of the Endangered Species Act), the accuracy of this species list should be verified after 90 days. You may verify the list by visiting the IPaC website (https://ipac.ecosphere.fws.gov/) at regular intervals during project planning and implementation. To update an Official Species List in IPaC: from the My Projects page, find the project, expand the row, and click Project Home. In the What's Next box on the Project Home page, there is a Request Updated List button to update your species list. Be sure to select an "official" species list for all projects.

Consultation requirements and next steps
Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize Federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-Federal representative) must consult with the Fish and Wildlife Service if they determine their project may affect listed species or critical habitat.

There are two approaches to evaluating the effects of a project on listed species.

Approach 1. Use the All-species Michigan determination key in IPaC. This tool can assist you in making determinations for listed species for some projects. In many cases, the determination key

will provide an automated concurrence that completes all or significant parts of the consultation process. Therefore, we strongly recommend screening your project with the **All-Species Michigan Determination Key (Dkey)**. For additional information on using IPaC and available Determination Keys, visit https://www.fws.gov/media/mifo-ipac-instructions (and click on the attachment). Please carefully review your Dkey output letter to determine whether additional steps are needed to complete the consultation process.

Approach 2. Evaluate the effects to listed species on your own without utilizing a determination key. Once you obtain your official species list, you are not required to continue in IPaC, although in most cases using a determination key should expedite your review. If the project is a Federal action, you should review our section 7 step-by-step instructions before making your determinations: https://www.fws.gov/office/midwest-region-headquarters/midwest-section-7-technical-assistance. If you evaluate the details of your project and conclude "no effect," document your findings, and your listed species review is complete; you do not need our concurrence on "no effect" determinations. If you cannot conclude "no effect," you should coordinate/consult with the Michigan Ecological Services Field Office. The preferred method for submitting your project description and effects determination (if concurrence is needed) is electronically to EastLansing@fws.gov. Please include a copy of this official species list with your request.

For all **wind energy projects** and **projects that include installing communications towers that use guy wires**, please contact this field office directly for assistance, even if no Federally listed plants, animals or critical habitat are present within your proposed project area or may be affected by your proposed project.

Migratory Birds
Please see the "Migratory Birds" section below for important information regarding incorporating migratory birds into your project planning. Our Migratory Bird Program has developed recommendations, best practices, and other tools to help project proponents voluntarily reduce impacts to birds and their habitats. The Bald and Golden Eagle Protection Act prohibits the take and disturbance of eagles without a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at https://www.fws.gov/program/eagle-management/eagle-permits to help you avoid impacting eagles or determine if a permit may be necessary.

Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your consideration of threatened and endangered species during your project

Project Summary

Project Code: 2023-0024307
Project Name: Water and Wastewater Utility Upgrades
Project Type: Wastewater Pipeline - Maintenance / Modification - Below Ground
Project Description: Significant rehabilitation of wastewater collection system via trenchless pipe lining technology, existing manhole rehab, expansion of treatment plant onto existing farmland, relocation of two lift stations into easements on private property (lawn). Improvements to drinking water distribution system including replacement of existing water main and lead service lines.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.874098000000004,-85.18981450141413,14z

Counties: Branch County, Michigan

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/VY7VNPBEA5FCZNWD6XHIWLO3CY/documents/generated/6982.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 General project design guidelines: https://ipac.ecosphere.fws.gov/project/VY7VNPBEA5FCZNWD6XHIWLO3CY/documents/generated/6983.pdf	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Reptiles

NAME	STATUS
Copperbelly Water Snake *Nerodia erythrogaster neglecta*	Threatened

Population: Indiana north of 40 degrees north latitude, Michigan, Ohio
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7253

Eastern Massasauga (=rattlesnake) *Sistrurus catenatus*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- For all Projects: Project is within EMR Range

Species profile: https://ecos.fws.gov/ecp/species/2202
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/VY7VNPBEA5FCZNWD6XHIWLO3CY/documents/generated/5280.pdf

Insects

NAME	STATUS
Mitchell's Satyr Butterfly *Neonympha mitchellii mitchellii*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/8062

Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

Appendix I

Contaminated Site Map

BRONSON TOWNSHIP

CITY OF BRONSON

BRANCH COUNTY, MICHIGAN

CLEAN WATER STATE REVOLVING FUND

APPENDIX I: CONTAMINATED SITE MAP

MARCH 2023

Prein&Newhof

2220860

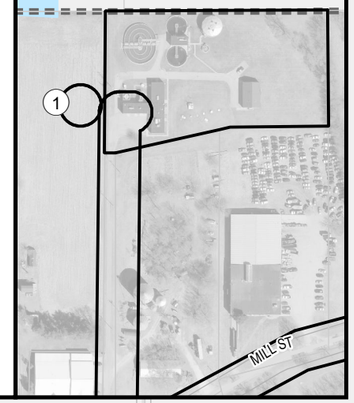
WWTP PROPOSED PROJECTS

1. New Headworks Building
2. Disinfection System
3. RAS/WAS
4. SCADA System
5. Final Clarifier Rehabilitation
6. Recirculation Pump Station
7. Ferric Chloride Feed
8. Administration Building Electrical Improvements
9. Administration Building Meter/Backflow Replacement
10. Lab Improvements
11. Grit Room Ventilation
12. Chemical Room Ventilation
13. Chemical Room Water Heater and Tepid Valve
14. Basement Level / Sludge Room Heat Exchanger
15. Site SE Rated MTS / Portable Power Connection
16. Building Lighting Improvements
17. Building Envelope Improvements
18. PFAS Sludge Disposal

WASTEWATER TREATMENT PLANT

Feet

0 100 200 400



WASTEWATER TREATMENT PLANT *(SEE INSET AT RIGHT)*

CITY OF BRONSON

COREY STREET L.S.

WALKER STREET L.S.

S MATTESON LAKE RD

INDUSTRIAL AVE

BURR OAK RD

RAYMOND ST

MATILDA ST

MILL ST

W RAILROAD ST

E RAILROAD ST

STATE ST

FILLMORE ST

SHERMAN ST

UNION ST

BUCHANAN ST

WINONA ST

WASHINGTON ST

N LINCOLN ST

ALBERS RD

FRANKLIN ST

N MATTESON ST

FREMONT ST

W CHICAGO RD

W CENTRAL RD

S PARHAM RD

DIVISION ST

SHAFFMASTER BLVD

N RUGGLES ST

N WALKER ST

YORK ST

E CHICAGO ST

SOUTH ST

N DOUGLAS ST

N LINCOLN ST

W CHICAGO ST

W COREY ST

E COREY ST

S LINCOLN ST

MCKINLEY ST

COMPTON ST

ROOSEVELT ST

JACKSON ST

WAYNE ST

OAK DR

WALNUT ST

MOWRY AVE

S RUGGLES ST

S DOUGLAS ST

W GRANT ST

E GRANT ST

S MATTESON ST

RUDD ST

S WALKER ST

PARK ST

1ST ST

2ND ST

ORLAND RD

CEMETERY RD

LEGEND

- Project Area
- Baseline Environmental Assessment
- Brownfield Site
- Hazardous Waste Site
- NPDES Site
- Superfund Site
- Toxic Release Site
- Part 201 Environmental Contamination
- Part 211 Underground Storage (Active)
- Part 211 Underground Storage (Closed)
- Part 213 LUST (Open)
- Part 213 LUST (Closed)
- Impaired Streams
- Restrictive Covenant

Sources: The Michigan Department of Environment, Great Lakes, and Energy Environmental Mapper and the U.S. Environmental Protection Agency EnviroMapper for Envirofacts.

SCALE: 1 " = 700 '

J:\GIS Client\Branch-GD\Bronson City\2220860 SRF\2220860 CWSRF App I Contaminated Sites.mxd - lferia - 3/15/2023 1:22:44 PM

Appendix J

WWTP NPDES Permit

PERMIT NO. MI0020729

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, 33 U.S.C., Section 1251 *et seq*., as amended; Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2011-1,

City of Bronson
141 South Matteson Street
Bronson, MI 49028

is authorized to discharge from the **Bronson Wastewater Treatment Plant** located at
408 Mill Street
Bronson, MI 49028

designated as **Bronson WWTP**

to the receiving water named County Drain #30 in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit.

This permit is based on a complete application submitted on March 10, 2016, as amended through September 16, 2016.

This permit takes effect on April 1, 2019. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules. On its effective date, this permit shall supersede National Pollutant Discharge Elimination System (NPDES) Permit No. MI0020729 (expiring October 1, 2016).

This permit and the authorization to discharge shall expire at midnight on **October 1, 2023**. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit an application that contains such information, forms, and fees as are required by the Michigan Department of Environmental Quality (Department) by **April 4, 2023**.

Issued DRAFT.

_____
Christine Alexander, Manager
Permits Section
Water Resources Division

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each October 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. The fee shall be postmarked by January 15 for notices mailed by December 1. The fee is due no later than 45 days after receiving the notice for notices mailed after December 1.

Annual Permit Fee Classification: Municipal Minor, Less than 1 MGD (Individual Permit)

In accordance with Section 324.3132 of the NREPA, the permittee shall make payment of an annual biosolids land application fee to the Department if the permittee land applies biosolids. In response to the Department's annual notice, the permittee shall submit the fee, which shall be postmarked no later than January 31 of each year.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Kalamazoo District Office of the Water Resources Division. The Kalamazoo District Office is located at 7953 Adobe Road, Kalamazoo, MI 49009-5025, Telephone: 269-567-3500, Fax: 269-567-9440.

CONTESTED CASE INFORMATION

Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System within the Michigan Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environmental Quality, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

Part I

Section A. Limitations and Monitoring Requirements

1. Final Effluent Limitations, Monitoring Point 001A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge treated municipal wastewater from Monitoring Point 001A through Outfall 001. Outfall 001 discharges to County Drain #30 at Latitude 41.88083, Longitude -85.19944. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)		(report)	MGD	---		---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)										
April – September	17	42	(report)	lbs/day	4	---	10	mg/l	5x Weekly	24-Hr Composite
October – November	29	46	(report)	lbs/day	7	---	11	mg/l	5x Weekly	24-Hr Composite
December – March	83	130	(report)	lbs/day	20	---	30	mg/l	5x Weekly	24-Hr Composite
Total Suspended Solids (TSS)										
April – September	83	130	(report)	lbs/day	20	30	(report)	mg/l	5x Weekly	24-Hr Composite
October – November	92	140	(report)	lbs/day	22	33	(report)	mg/l	5x Weekly	24-Hr Composite
December – March	130	190	(report)	lbs/day	30	45	(report)	mg/l	5x Weekly	24-Hr Composite
Ammonia Nitrogen (as N)										
May – September	2.1	8.3	(report)	lbs/day	0.5	---	2.0	mg/l	5x Weekly	24-Hr Composite
October – November	---	8.8	(report)	lbs/day	---	---	2.1	mg/l	5x Weekly	24-Hr Composite
December – March	---	42	(report)	lbs/day	---	---	10	mg/l	5x Weekly	24-Hr Composite
April	---	23	(report)	lbs/day	---	---	5.5	mg/l	5x Weekly	24-Hr Composite
Fecal Coliform Bacteria	---	---	---	---	200	400	(report)	cts/100 ml	5x Weekly	Grab
Perfluorooctane sulfonate (PFOS)	(report)	---	(report)	lbs/day	(report)	---	(report)	ng/l	Monthly	Grab
Perfluorooctanoic acid (PFOA)	(report)	---	(report)	lbs/day	(report)	---	(report)	ng/l	Monthly	Grab
	12-Month Rolling Total									
Total Phosphorus (as P)	770	---	---	lbs/year	0.5	---	(report)	mg/l	Weekly	24-Hr Composite
					Minimum % Monthly		**Minimum % Daily**			
Total Suspended Solids Minimum % Removal										
December - March	---	---	**---**	---	85	---	(report)	%	Monthly	Calculation
					Minimum Daily		**Maximum Daily**			
pH	**---**	**---**	**---**	**---**	6.5	**---**	9.0	S.U.	Daily	Grab
Dissolved Oxygen										
May - November	---	---	---	---	6.0	---	**---**	mg/l	Daily	Grab
December – April	---	---	---	---	5.0	---	---	mg/l	Daily	Grab

Part I

Section A. Limitations and Monitoring Requirements

The following design flow was used in determining the above limitations, but is not to be considered a limitation or actual capacity: 0.5 MGD.

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

b. Sampling Locations
Samples for Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), Total Suspended Solids (TSS), Ammonia Nitrogen (as N), and Total Phosphorus (as P) shall be taken prior to disinfection. Samples for Fecal Coliform Bacteria, pH, and Dissolved Oxygen shall be taken after disinfection. The Department may approve alternate sampling locations that are demonstrated by the permittee to be representative of the effluent.

c. Ultraviolet Disinfection
It is understood that ultraviolet light will be used to achieve compliance with the fecal coliform limitations. If disinfection other than ultraviolet light will be used, the permittee shall notify the Department in accordance with Part II.C.12. of this permit.

d. Percent Removal Requirements
These requirements shall be calculated based on the monthly (30-day) effluent TSS concentrations and the monthly influent concentrations for approximately the same period.

e. Total Phosphorus Reporting Requirements
The monthly average total phosphorus load limitation of 770 lbs/year shall be a cumulative total. Report the monthly cumulative total (lbs/year) by adding the current monthly average load to the phosphorus loads for the previous eleven months. The monthly average load shall be calculated by averaging the daily load values for the reporting month and multiplying by the number of days in the month. The monthly average load (lbs/month) should be reported along with the annual load (lbs/year).

f. Monitoring Frequency Reduction for Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA)
After the submittal of 24 months of monthly data or at least 10 equally spaced data points over a minimum of 3 months, the permittee may request, in writing, Department approval of a reduction in monitoring frequency for PFOS and/or PFOA. This request shall contain an explanation as to why the reduced monitoring is appropriate. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency indicated in Part I.A.1. of this permit. The monitoring frequency for PFOS and/or PFOA, shall not be reduced to less than annually. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.

Part I

Section A. Limitations and Monitoring Requirements

2. Quantification Levels and Analytical Methods for Selected Parameters

Quantification levels (QLs) are specified for selected parameters in the table below. These QLs shall be considered the maximum acceptable unless a higher QL is appropriate because of sample matrix interference. Justification for higher QLs shall be submitted to the Department within 30 days of such determination. Where necessary to help ensure that the QLs specified can be achieved, analytical methods may also be specified in the table below. The sampling procedures, preservation and handling, and analytical protocol for all monitoring conducted in compliance with this permit, including monitoring conducted to meet the requirements of the application for permit reissuance, shall be in accordance with the methods specified in the table below, or in accordance with Part II.B.2. of this permit if no method is specified in the table below, unless an alternate method is approved by the Department. With the exception of total mercury, all units are in ug/l. The table is continued on the following page:

Parameter	QL	Units	Analytical Method
1,2-Diphenylhydrazine (as Azobenzene)	3.0	ug/l	
2,4,6-Trichlorophenol	5.0	ug/l	
2,4-Dinitrophenol	19	ug/l	
3,3'-Dichlorobenzidine	1.5	ug/l	EPA Method 605
4,4'-DDD	0.05	ug/l	EPA Method 608
4,4'-DDE	0.01	ug/l	EPA Method 608
4,4'-DDT	0.01	ug/l	EPA Method 608
Acrylonitrile	1.0	ug/l	
Aldrin	0.01	ug/l	EPA Method 608
Alpha-Hexachlorocyclohexane	0.01	ug/l	EPA Method 608
Antimony, Total	1	ug/l	
Arsenic, Total	1	ug/l	
Barium, Total	5	ug/l	
Benzidine	0.1	ug/l	EPA Method 605
Beryllium, Total	1	ug/l	
Beta-Hexachlorocyclohexane	0.01	ug/l	EPA Method 608
Bis (2-Chloroethyl) Ether	1.0	ug/l	
Boron, Total	20	ug/l	
Cadmium, Total	0.2	ug/l	
Chlordane	0.01	ug/l	EPA Method 608
Chromium, Hexavalent	5	ug/l	
Chromium, Total	10	ug/l	
Copper, Total	1	ug/l	
Cyanide, Available	2	ug/l	EPA Method OIA 1677
Cyanide, Total	5	ug/l	
Delta-Hexachlorocyclohexane	0.01	ug/l	EPA Method 608
Dieldrin	0.01	ug/l	EPA Method 608
Di-N-Butyl Phthalate	9.0	ug/l	
Endosulfan I	0.01	ug/l	EPA Method 608
Endosulfan II	0.01	ug/l	EPA Method 608
Endosulfan Sulfate	0.01	ug/l	EPA Method 608
Endrin	0.01	ug/l	EPA Method 608
Endrin Aldehyde	0.01	ug/l	EPA Method 608
Fluoranthene	1.0	ug/l	
Heptachlor	0.01	ug/l	EPA Method 608
Heptachlor Epoxide	0.01	ug/l	EPA Method 608

Part I

Section A. Limitations and Monitoring Requirements

Parameter	QL	Units	Analytical Method
Hexachlorobenzene	0.01	ug/l	EPA Method 612
Hexachlorobutadiene	0.01	ug/l	EPA Method 612
Hexachlorocyclopentadiene	0.01	ug/l	EPA Method 612
Hexachloroethane	5.0	ug/l	
Lead, Total	1	ug/l	
Lindane	0.01	ug/l	EPA Method 608
Lithium, Total	10	ug/l	
Mercury, Total	0.5	ng/l	EPA Method 1631E
Nickel, Total	5	ug/l	
PCB-1016	0.1	ug/l	EPA Method 608
PCB-1221	0.1	ug/l	EPA Method 608
PCB-1232	0.1	ug/l	EPA Method 608
PCB-1242	0.1	ug/l	EPA Method 608
PCB-1248	0.1	ug/l	EPA Method 608
PCB-1254	0.1	ug/l	EPA Method 608
PCB-1260	0.1	ug/l	EPA Method 608
Pentachlorophenol	1.8	ug/l	
Perfluorooctane sulfonate (PFOS)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Perfluorooctanoic acid (PFOA)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Phenanthrene	1.0	ug/l	
Selenium, Total	1.0	ug/l	
Silver, Total	0.5	ug/l	
Strontium, Total	1000	ug/l	
Sulfides, Dissolved	20	ug/l	
Thallium, Total	1	ug/l	
Toxaphene	0.1	ug/l	EPA Method 608
Vinyl Chloride	0.25	ug/l	
Zinc, Total	10	ug/l	

3. Inflow and Infiltration Reduction Plan

The Bronson WWTP shall submit the following:

a. On or before May 1, 2021, the permittee shall submit to the Department for review and approval a plan and schedule to conduct a Sanitary Sewer Evaluation Study (SSES) to identify sources of I/I.

b. On or before July 1, 2022, the permittee shall submit to the Department for review and approval a plan and schedule to eliminate or reduce I/I to ensure that flows are within WWTP design capacities.

The permittee shall submit an annual report on or before July 1 of each year after 2022 that summarizes I/I reduction and/or removal activates completed during the previous year, provides estimates of the volume of I/I removed from the collection system, and I/I reduction/removal activities planned for the upcoming year. The Department may modify this permit in accordance with applicable laws and regulations to incorporate more detail regarding the approved I/I reduction plan.

Part I

Section A. Limitations and Monitoring Requirements

4. Pollutant Minimization and Source Evaluation Program for Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA)

The goal of the Pollutant Minimization and Source Evaluation Program is to identify and address sources of perfluorooctane sulfonate (PFOS) and/or perfluorooctanoic acid (PFOA) and to reduce and maintain the effluent concentrations of PFOS and/or PFOA at or below the water quality-based effluent limits (WQBELs). The WQBELs are 12 ng/L for PFOS and 15 ug/L for PFOA.

On or before May 2, 2019, the permittee shall submit an approvable Pollutant Minimization and Source Evaluation Program for PFOS and/or PFOA to proceed toward the goal. The Pollutant Minimization and Source Evaluation Program shall continue work under the IPP Interim Initiative and shall include the following at a minimum:

a. Identification of and strategies to identify any additional potential and probable PFOS and/or PFOA sources

b. Monitoring plan for the permitted facility's influent and effluent and effluent from potential sources

c. Implemented measures thus far to eliminate, reduce, and/or control sources, and an assessment of the degree of success and the strategies used to measure success

d. Proposed measures and implementation schedules for elimination, control, and/or reduction of the identified sources (prioritizing highest loadings and concentrations), and the strategies that will be used to measure success

The Pollutant Minimization and Source Evaluation Program shall be implemented upon approval by the Department.

On or before May 1 of each year following Pollutant Minimization and Source Evaluation Program implementation, the permittee shall submit to the Department a status report for the previous calendar year. Upon written notification by the Department, the permittee may be required to submit more frequent status reports. Status reports at a minimum shall include:

a. Complete listing of PFOS and/or PFOA sources

b. Summary of influent and effluent monitoring data

c. Summary of monitoring data from known or potential sources

d. History and compliance status for sources

e. Implemented measures to eliminate, reduce, or control sources, (prioritizing highest loadings and concentrations), and an assessment of the degree of success and the strategies used to measure success

f. Proposed measures and schedules for elimination, control, or reduction of any newly identified PFOS and/or PFOA sources (prioritizing highest loadings and concentrations), and the strategies that will be used to measure success

g. Barriers to implementation and revisions to the implementation schedule

h. Laboratory reports, if not previously supplied

Any information generated as a result of the Pollutant Minimization and Source Evaluation Program set forth in this permit may be used to support a request to modify the Pollutant Minimization and Source Evaluation Program or to demonstrate that the requirement has been completed satisfactorily.

Part I

Section A. Limitations and Monitoring Requirements

A request for modification of the approved Pollutant Minimization and Source Evaluation Program shall be submitted in writing to the Department along with supporting documentation for review and approval. The Department may approve modifications to the approved Pollutant Minimization and Source Evaluation Program, including a reduction in the frequency of the influent and known or potential source monitoring requirements. Approval of a Pollutant Minimization and Source Evaluation Program modification does not require a permit modification.

This permit may be modified in accordance with applicable laws and rules to include additional PFOS and/or PFOA conditions and/or limitations as necessary.

5. Untreated or Partially Treated Sewage Discharge Reporting and Testing Requirements

In accordance with Section 324.3112a of the NREPA, if untreated sewage, including sanitary sewer overflows (SSO) and combined sewer overflows (CSO), or partially treated sewage is directly or indirectly discharged from a sewer system onto land or into the waters of the state, the entity responsible for the sewer system shall immediately, but not more than 24 hours after the discharge begins, notify, by telephone, the Department, local health departments, a daily newspaper of general circulation in the county in which the permittee is located, and a daily newspaper of general circulation in the county or counties in which the municipalities whose waters may be affected by the discharge are located that the discharge is occurring.

The permittee shall also annually contact municipalities, including the superintendent of a public drinking water supply with potentially affected intakes, whose waters may be affected by the permittee's discharge of combined sewage, and if those municipalities wish to be notified in the same manner as specified above, the permittee shall provide such notification. Such notification shall also include a daily newspaper in the county of the affected municipality.

At the conclusion of the discharge, written notification shall be submitted in accordance with and on the “Report of Discharge Form” available via the internet at: http://www.deq.state.mi.us/csosso/ , or, alternatively for combined sewer overflow discharges, in accordance with notification procedures approved by the Department.

In addition, in accordance with Section 324.3112a of the NREPA, each time a discharge of untreated sewage or partially treated sewage occurs, the permittee shall test the affected waters for *Escherichia coli* to assess the risk to the public health as a result of the discharge and shall provide the test results to the affected local county health departments and to the Department. The testing shall be done at locations specified by each affected local county health department but shall not exceed 10 tests for each separate discharge event. The affected local county health department may waive this testing requirement, if it determines that such testing is not needed to assess the risk to the public health as a result of the discharge event. The results of this testing shall be submitted with the written notification required above, or, if the results are not yet available, submit them as soon as they become available. This testing is not required, if the testing has been waived by the local health department, or if the discharge(s) did not affect surface waters.

Permittees accepting sanitary or municipal sewage from other sewage collection systems are encouraged to notify the owners of those systems of the above reporting and testing requirements.

Part I

Section A. Limitations and Monitoring Requirements

6. Facility Contact

The "Facility Contact" was specified in the application. The permittee may replace the facility contact at any time, and shall notify the Department in writing within 10 days after replacement (including the name, address and telephone number of the new facility contact).

a. The facility contact shall be (or a duly authorized representative of this person):
- for a corporation, a principal executive officer of at least the level of vice president; or a designated representative if the representative is responsible for the overall operation of the facility from which the discharge originates, as described in the permit application or other NPDES form,
- for a partnership, a general partner,
- for a sole proprietorship, the proprietor, or
- for a municipal, state, or other public facility, either a principal executive officer, the mayor, village president, city or village manager or other duly authorized employee.

b. A person is a duly authorized representative only if:
- the authorization is made in writing to the Department by a person described in paragraph a. of this section; and
- the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Nothing in this section releases the permittee from properly submitting reports and forms as required by law.

7. Monthly Operating Reports

Part 41 of Act 451 of 1994 as amended, specifically Section 324.4106 and associated R 299.2953, requires that the permittee file with the Department, on forms prescribed by the Department, operating reports showing the effectiveness of the treatment facility operation and the quantity and quality of liquid wastes discharged into waters of the state.

Within 30 days of the effective date of this permit, the permittee shall submit to the Department a revised treatment facility monitoring program to address monitoring requirement changes reflected in this permit, or submit justification explaining why monitoring requirement changes reflected in this permit do not necessitate revisions to the treatment facility monitoring program. The permittee shall implement the revised treatment facility monitoring program upon approval from the Department. Applicable forms and guidance are available on the Department's web site at http://www.michigan.gov/deq/0,1607,7-135-3313_44117---,00.html. The permittee may use alternate forms if they are consistent with the approved treatment facility monitoring program. Unless the Department provides written notification to the permittee that monthly submittal of operating reports is required, operating reports that result from implementation of the approved treatment facility monitoring program shall be maintained on site for a minimum of three (3) years and shall be made available to the Department for review upon request.

Part I

Section B. Storm Water Pollution Prevention

Section B. Storm Water Pollution Prevention is not required for this permit.

Part I

Section C. Industrial Waste Pretreatment Program

1. Michigan Industrial Pretreatment Program

a. The permittee shall implement the Michigan Industrial Pretreatment Program (MIPP) approved on July 15, 2002, and any subsequent modifications approved up to the issuance of this permit.

b. The permittee shall comply with R 323.2301 through R 323.2317 of the Michigan Administrative Code (Part 23 Rules) and the approved MIPP.

c. The permittee shall have the legal authority and necessary interjurisdictional agreements that provide the basis for the implementation and enforcement of the approved MIPP throughout the service area. The legal authority and necessary interjurisdictional agreements shall include, at a minimum, the authority to carry out the activities specified in R 323.2306(a).

d. The permittee shall develop procedures which describe, in sufficient detail, program commitments which enable implementation of the approved MIPP and the Part 23 Rules in accordance with R 323.2306(c).

e. The permittee shall establish an interjurisdictional agreement (or comparable document) with all tributary governmental jurisdictions. Each interjurisdictional agreement shall contain, at a minimum, the following:

1) identification of the agency responsible for the implementation and enforcement of the approved MIPP within the tributary governmental jurisdiction's boundaries; and

2) the provision of the legal authority which provides the basis for the implementation and enforcement of the approved MIPP within the tributary governmental jurisdiction's boundaries.

f. The permittee shall prohibit discharges that:

1) cause, in whole or in part, the permittee's failure to comply with any condition of this permit or the NREPA;

2) restrict, in whole or in part, the permittee's management of biosolids;

3) cause, in whole or in part, operational problems at the treatment facility or in its collection system;

4) violate any of the general or specific prohibitions identified in R 323.2303(1) and (2);

5) violate categorical standards identified in R 323.2311; and

6) violate local limits established in accordance with R 323.2303(4).

g. The permittee shall maintain a list of its nondomestic users that meet the criteria of a significant industrial user as identified in R 323.2302(cc).

h. The permittee shall develop an enforcement response plan which describes, in sufficient detail, program commitments which will enable the enforcement of the approved MIPP and the Part 23 Rules in accordance with R 323.2306(g).

i. The Department may require modifications to the approved MIPP which are necessary to ensure compliance with the Part 23 Rules in accordance with R 323.2309.

j. The permittee shall not implement changes or modifications to the approved MIPP without notification to the Department.

k. The permittee shall maintain an adequate revenue structure and staffing level for effective implementation of the approved MIPP.

Part I

Section C. Industrial Waste Pretreatment Program

l. The permittee shall develop and maintain, for a minimum of three (3) years, all records and information necessary to determine nondomestic user compliance with the Part 23 Rules and the approved MIPP. This period of retention shall be extended during the course of any unresolved enforcement action or litigation regarding a nondomestic user or when requested by the Department or the United States Environmental Protection Agency. All of the aforementioned records and information shall be made available upon request for inspection and copying by the Department and the United States Environmental Protection Agency.

m. The permittee shall evaluate the approved MIPP for compliance with the Part 23 Rules and the prohibitions set forth in item f. above. Based upon this evaluation, the permittee shall propose to the Department all necessary changes or modifications to the approved MIPP no later than the next Industrial Pretreatment Program Annual Report due date (see item o. below).

n. The permittee shall develop and enforce local limits to implement the prohibitions set forth in item f. above. Local limits shall be based upon data representative of actual conditions demonstrated in a maximum allowable headworks loading analysis.

o. On or before April 1st of each year, the permittee shall submit to the Department, as required by R 323.2310(8), an Industrial Pretreatment Program Annual Report on the status of program implementation and enforcement activities. The reporting period shall begin on January 1st and end on December 31st. At a minimum, the Industrial Pretreatment Program Annual Report shall include:

1) the Pretreatment Program Reports data identified in Appendix A to 40 CFR Part 127 – NPDES Electronic Reporting;

2) a summary of changes to the approved MIPP that have not been previously reported to the Department;

3) a summary of results of all the sampling and analyses performed of the wastewater treatment plant's influent, effluent, and biosolids conducted in accordance with approved methods during the reporting period. The summary shall include the monthly average, daily maximum, quantification level, and number of samples analyzed for each pollutant. At a minimum, the results of analyses for all locally limited parameters for at least one monitoring event that tests influent, effluent and biosolids during the reporting period shall be submitted with each report, unless otherwise required by the Department. Sample collection shall be at intervals sufficient to provide pollutant removal rates, unless the pollutant is not measurable; and

4) any other relevant information requested by the Department.

p, The permittee is required under this permit and R 323.2303(4) of the Michigan Administrative Code to review and update their local limits when:

1) New pollutants are introduced.

2) New pollutants that were previously unevaluated are identified

3) New water quality or biosolids standards are established or additional information becomes available about the nature of pollutants, such as removal rates and accumulation in biosolids.

Substantial increases of pollutants are proposed as required in the notification of new or increased uses in accordance with the provisions of 40 CFR 122.42.

PART I

Section D. Residuals Management Program

1. Residuals Management Program for Land Application of Biosolids

The permittee is authorized to land-apply bulk biosolids or prepare bulk biosolids for land application in accordance with the permittee's approved Residuals Management Program (RMP) approved on January 3, 2001, and approved modifications thereto, in accordance with the requirements established in R 323.2401 through R 323.2418 of the Michigan Administrative Code (Part 24 Rules). The approved RMP, and any approved modifications thereto, are enforceable requirements of this permit. Incineration, landfilling and other residual disposal activities shall be conducted in accordance with Part II.D.7. of this permit. The Part 24 Rules can be obtained via the internet (http://www.michigan.gov/deq/ and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids then click on Biosolids Laws and Rules Information which is under the Laws & Rules banner in the center of the screen).

a. Annual Report
On or before October 30 of each year, the permittee shall submit an annual report to the Department for the previous fiscal year of October 1 through September 30. The report shall be submitted electronically via the Department's MiWaters system at https://miwaters.deq.state.mi.us. At a minimum, the report shall contain:

1) a certification that current residuals management practices are in accordance with the approved RMP, or a proposal for modification to the approved RMP; and

2) a completed Biosolids Annual Report Form, available at https://miwaters.deq.state.mi.us.

b. Modifications to the Approved RMP
Prior to implementation of modifications to the RMP, the permittee shall submit proposed modifications to the Department for approval. The approved modification shall become effective upon the date of approval. Upon written notification, the Department may impose additional requirements and/or limitations to the approved RMP as necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

c. Record Keeping
Records required by the Part 24 Rules shall be kept for a minimum of five years. However, the records documenting cumulative loading for sites subject to cumulative pollutant loading rates shall be kept as long as the site receives biosolids.

d. Contact Information
RMP-related submittals shall be made to the Department.

PART II

Part II may include terms and /or conditions not applicable to discharges covered under this permit.

Section A. Definitions

Acute toxic unit (TU_A) means $100/LC_{50}$ where the LC_{50} is determined from a whole effluent toxicity (WET) test which produces a result that is statistically or graphically estimated to be lethal to 50% of the test organisms.

Annual monitoring frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Authorized public agency means a state, local, or county agency that is designated pursuant to the provisions of section 9110 of Part 91 of the NREPA to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by that agency.

Best management practices (BMPs) means structural devices or nonstructural practices that are designed to prevent pollutants from entering into storm water, to direct the flow of storm water, or to treat polluted storm water.

Bioaccumulative chemical of concern (BCC) means a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation. The human health bioaccumulation factor shall be derived according to R 323.1057(5). Chemicals with half-lives of less than 8 weeks in the water column, sediment, and biota are not BCCs. The minimum bioaccumulation concentration factor (BAF) information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the biota-sediment accumulation factor (BSAF) methodology. The minimum BAF information needed to define an inorganic chemical as a BCC, including an organometal, is either a field-measured BAF or a laboratory-measured bioconcentration factor (BCF). The BCCs to which these rules apply are identified in Table 5 of R 323.1057 of the Water Quality Standards.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

Certificate of Coverage (COC) is a document, issued by the Department, which authorizes a discharge under a general permit.

Chronic toxic unit (TU_C) means $100/MATC$ or $100/IC_{25}$, where the maximum acceptable toxicant concentration (MATC) and IC_{25} are expressed as a percent effluent in the test medium.

Class B biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Combined sewer system is a sewer system in which storm water runoff is combined with sanitary wastes.

PART II

Section A. Definitions

Daily concentration is the sum of the concentrations of the individual samples of a parameter divided by the number of samples taken during any calendar day. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations (except for pH and dissolved oxygen). When required by the permit, report the maximum calculated daily concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the Discharge Monitoring Reports (DMRs).

For pH, report the maximum value of any *individual* sample taken during the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs and the minimum value of any *individual* sample taken during the month in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. For dissolved oxygen, report the minimum concentration of any *individual* sample in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Daily loading is the total discharge by weight of a parameter discharged during any calendar day. This value is calculated by multiplying the daily concentration by the total daily flow and by the appropriate conversion factor. The daily loading will be used to determine compliance with any maximum daily loading limitations. When required by the permit, report the maximum calculated daily loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMRs.

Daily monitoring frequency refers to a 24-hour day. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Department means the Michigan Department of Environmental Quality.

Detection level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Discharge means the addition of any waste, waste effluent, wastewater, pollutant, or any combination thereof to any surface water of the state.

EC_{50} means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

Fecal coliform bacteria monthly
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a discharge event. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the period in which the discharge event occurred was partially in each of two months, the calculated monthly value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a reporting month. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

PART II

Section A. Definitions

Fecal coliform bacteria 7-day
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days of discharge during a discharge event. If the number of daily concentrations determined during the discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean value for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. If the 7-day period was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days in a reporting month. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. The first calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

Flow-proportioned sample is a composite sample with the sample volume proportional to the effluent flow.

General permit means a National Pollutant Discharge Elimination System permit issued authorizing a category of similar discharges.

Geometric mean is the average of the logarithmic values of a base 10 data set, converted back to a base 10 number.

Grab sample is a single sample taken at neither a set time nor flow.

IC_{25} means the toxicant concentration that would cause a 25% reduction in a nonquantal biological measurement for the test population.

Illicit connection means a physical connection to a municipal separate storm sewer system that primarily conveys non-storm water discharges other than uncontaminated groundwater into the storm sewer; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

Illicit discharge means any discharge to, or seepage into, a municipal separate storm sewer system that is not composed entirely of storm water or uncontaminated groundwater. Illicit discharges include non-storm water discharges through pipes or other physical connections; dumping of motor vehicle fluids, household hazardous wastes, domestic animal wastes, or litter; collection and intentional dumping of grass clippings or leaf litter; or unauthorized discharges of sewage, industrial waste, restaurant wastes, or any other non-storm water waste directly into a separate storm sewer.

Individual permit means a site-specific NPDES permit.

Inlet means a catch basin, roof drain, conduit, drain tile, retention pond riser pipe, sump pump, or other point where storm water or wastewater enters into a closed conveyance system prior to discharge off site or into waters of the state.

PART II

Section A. Definitions

Interference is a discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) therefore, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or, of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act. [This definition does not apply to sample matrix interference].

Land application means spraying or spreading biosolids or a biosolids derivative onto the land surface, injecting below the land surface, or incorporating into the soil so that the biosolids or biosolids derivative can either condition the soil or fertilize crops or vegetation grown in the soil.

LC_{50} means a statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Maximum acceptable toxicant concentration (MATC) means the concentration obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration that did not cause the occurrence of a specific adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specific adverse effect and above which all tested concentrations caused such an occurrence.

Maximum extent practicable means implementation of best management practices by a public body to comply with an approved storm water management program as required by a national permit for a municipal separate storm sewer system, in a manner that is environmentally beneficial, technically feasible, and within the public body's legal authority.

MGD means million gallons per day.

Monthly concentration is the sum of the daily concentrations determined during a reporting period divided by the number of daily concentrations determined. The calculated monthly concentration will be used to determine compliance with any maximum monthly concentration limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly concentration in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

For minimum percent removal requirements, the monthly influent concentration and the monthly effluent concentration shall be determined. The calculated monthly percent removal, which is equal to 100 times the quantity [1 minus the quantity (monthly effluent concentration divided by the monthly influent concentration)], shall be reported in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Monthly loading is the sum of the daily loadings of a parameter divided by the number of daily loadings determined during a reporting period. The calculated monthly loading will be used to determine compliance with any maximum monthly loading limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly loading in the "AVERAGE" column under "QUANTITY OR LOADING" on the DMR.

Monthly monitoring frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Municipal separate storm sewer means a conveyance or system of conveyances designed or used for collecting or conveying storm water which is not a combined sewer and which is not part of a publicly-owned treatment works as defined in the Code of Federal Regulations at 40 CFR 122.2.

PART II

Section A. Definitions

Municipal separate storm sewer system (MS4) means all separate storm sewers that are owned or operated by the United States, a state, city, village, township, county, district, association, or other public body created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law, such as a sewer district, flood control district, or drainage district, or similar entity, or a designated or approved management agency under Section 208 of the Federal Act that discharges to the waters of the state. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

National Pretreatment Standards are the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Federal Act. The standards establish nationwide limits for specific industrial categories for discharge to a POTW.

No observed adverse effect level (NOAEL) means the highest tested dose or concentration of a substance which results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

Noncontact cooling water is water used for cooling which does not come into direct contact with any raw material, intermediate product, by-product, waste product or finished product.

Nondomestic user is any discharger to a POTW that discharges wastes other than or in addition to water-carried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

Outfall is the location at which a point source discharge enters the surface waters of the state.

Part 91 agency means an agency that is designated by a county board of commissioners pursuant to the provisions of section 9105 of Part 91 of the NREPA; an agency that is designated by a city, village, or township in accordance with the provisions of section 9106 of Part 91 of the NREPA; or the Department for soil erosion and sedimentation activities under Part 615, Part 631, or Part 632 pursuant to the provisions of section 9115 of Part 91 of the NREPA.

Part 91 permit means a soil erosion and sedimentation control permit issued by a Part 91 agency pursuant to the provisions of Part 91 of the NREPA.

Partially treated sewage is any sewage, sewage and storm water, or sewage and wastewater, from domestic or industrial sources that is treated to a level less than that required by the permittee's National Pollutant Discharge Elimination System permit, or that is not treated to national secondary treatment standards for wastewater, including discharges to surface waters from retention treatment facilities.

Point of discharge is the location of a point source discharge where storm water is discharged directly into a separate storm sewer system.

Point source discharge means a discharge from any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock. Changing the surface of land or establishing grading patterns on land will result in a point source discharge where the runoff from the site is ultimately discharged to waters of the state.

Polluting material means any material, in solid or liquid form, identified as a polluting material under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

POTW is a publicly owned treatment work.

Pretreatment is reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

PART II

Section A. Definitions

Public (as used in the MS4 individual permit) means all persons who potentially could affect the authorized storm water discharges, including, but not limited to, residents, visitors to the area, public employees, businesses, industries, and construction contractors and developers.

Public body means the United States; the state of Michigan; a city, village, township, county, school district, public college or university, or single-purpose governmental agency; or any other body which is created by federal or state statute or law.

Qualified Personnel means an individual who meets qualifications acceptable to the Department and who is authorized by an Industrial Storm Water Certified Operator to collect the storm water sample.

Qualifying storm event means a storm event causing greater than 0.1 inch of rainfall and occurring at least 72 hours after the previous measurable storm event that also caused greater than 0.1 inch of rainfall. Upon request, the Department may approve an alternate definition meeting the condition of a qualifying storm event.

Quantification level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly monitoring frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Regional Administrator is the Region 5 Administrator, U.S. EPA, located at R-19J, 77 W. Jackson Blvd., Chicago, Illinois 60604.

Regulated area means the permittee's urbanized area, where urbanized area is defined as a place and its adjacent densely-populated territory that together have a minimum population of 50,000 people as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

Secondary containment structure means a unit, other than the primary container, in which significant materials are packaged or held, which is required by State or Federal law to prevent the escape of significant materials by gravity into sewers, drains, or otherwise directly or indirectly into any sewer system or to the surface or ground waters of this state.

Separate storm sewer system means a system of drainage, including, but not limited to, roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels, which is not a combined sewer where storm water mixes with sanitary wastes, and is not part of a POTW.

Significant industrial user is a nondomestic user that: 1) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 2) discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the permittee as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's treatment plant operation or violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

PART II

Section A. Definitions

Significant materials Significant Materials means any material which could degrade or impair water quality, including but not limited to: raw materials; fuels; solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (see 40 CFR 372.65); any chemical the facility is required to report pursuant to Section 313 of Emergency Planning and Community Right-to-Know Act (EPCRA); polluting materials as identified under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code); Hazardous Wastes as defined in Part 111 of the NREPA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills and significant leaks means any release of a polluting material reportable under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

Special-use area means secondary containment structures required by state or federal law; lands on Michigan's List of Sites of Environmental Contamination pursuant to Part 201, Environmental Remediation, of the NREPA; and/or areas with other activities that may contribute pollutants to the storm water for which the Department determines monitoring is needed.

Stoichiometric means the quantity of a reagent calculated to be necessary and sufficient for a given chemical reaction.

Storm water means storm water runoff, snow melt runoff, surface runoff and drainage, and non-storm water included under the conditions of this permit.

Storm water discharge point is the location where the point source discharge of storm water is directed to surface waters of the state or to a separate storm sewer. It includes the location of all point source discharges where storm water exits the facility, including *outfalls* which discharge directly to surface waters of the state, and *points of discharge* which discharge directly into separate storm sewer systems.

SWPPP means the Storm Water Pollution Prevention Plan prepared in accordance with this permit.

Tier I value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier I toxicity database.

Tier II value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier II toxicity database.

Total maximum daily loads (TMDLs) are required by the Federal Act for waterbodies that do not meet water quality standards. TMDLs represent the maximum daily load of a pollutant that a waterbody can assimilate and meet water quality standards, and an allocation of that load among point sources, nonpoint sources, and a margin of safety.

Toxicity reduction evaluation (TRE) means a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

Water Quality Standards means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of the NREPA, being R 323.1041 through R 323.1117 of the Michigan Administrative Code.

Weekly monitoring frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

WWSL is a wastewater stabilization lagoon.

WWSL discharge event is a discrete occurrence during which effluent is discharged to the surface water up to 10 days of a consecutive 14 day period.

PART II

Section A. Definitions

3-portion composite sample is a sample consisting of three equal-volume grab samples collected at equal intervals over an 8-hour period.

7-day concentration
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily concentrations determined. If the number of daily concentrations determined during the WWSL discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations. When required by the permit, report the maximum calculated 7-day concentration for the WWSL discharge event in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days in a reporting month divided by the number of daily concentrations determined. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations in the reporting month. When required by the permit, report the maximum calculated 7-day concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

7-day loading
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily loadings determined. If the number of daily loadings determined during the WWSL discharge event is less than 7 days, the number of actual daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations. When required by the permit, report the maximum calculated 7-day loading for the WWSL discharge event in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days in a reporting month divided by the number of daily loadings determined. If the number of daily loadings determined is less than 7, the actual number of daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations in the reporting month. When required by the permit, report the maximum calculated 7-day loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

24-hour composite sample is a flow-proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period. A time-proportioned composite sample may be used upon approval of the Department if the permittee demonstrates it is representative of the discharge.

PART II

Section B. Monitoring Procedures

1. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Federal Act (40 CFR Part 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants), unless specified otherwise in this permit. **Test procedures used shall be sufficiently sensitive to determine compliance with applicable effluent limitations**. Requests to use test procedures not promulgated under 40 CFR Part 136 for pollutant monitoring required by this permit shall be made in accordance with the Alternate Test Procedures regulations specified in 40 CFR 136.4. These requests shall be submitted to the Manager of the Permits Section, Water Resources Division, Michigan Department of Environmental Quality, P.O. Box 30458, Lansing, Michigan, 48909-7958. The permittee may use such procedures upon approval.

The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Control/Quality Assurance program.

3. Instrumentation

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Department.

PART II

Section C. Reporting Requirements

1. Start-up Notification

If the permittee will not discharge during the first 60 days following the effective date of this permit, the permittee shall notify the Department within 14 days following the effective date of this permit, and then 60 days prior to the commencement of the discharge.

2. Submittal Requirements for Self-Monitoring Data

Part 31 of the NREPA (specifically Section 324.3110(7)); and R 323.2155(2) of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, allow the Department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct "Retained Self-Monitoring," the permittee shall submit self-monitoring data via the Department's MiWaters system.

The permittee shall utilize the information provided on the MiWaters website, located at https://miwaters.deq.state.mi.us, to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the Department no later than the 20th day of the month following each month of the authorized discharge period(s). The permittee may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

3. Retained Self-Monitoring Requirements

If instructed on the effluent limits page (or otherwise authorized by the Department in accordance with the provisions of this permit) to conduct retained self-monitoring, the permittee shall maintain a year-to-date log of retained self-monitoring results and, upon request, provide such log for inspection to the staff of the Department. Retained self-monitoring results are public information and shall be promptly provided to the public upon request.

The permittee shall certify, in writing, to the Department, on or before January 10th (April 1st for animal feeding operation facilities) of each year, that: 1) all retained self-monitoring requirements have been complied with and a year-to-date log has been maintained; and 2) the application on which this permit is based still accurately describes the discharge. With this annual certification, the permittee shall submit a summary of the previous year's monitoring data. The summary shall include maximum values for samples to be reported as daily maximums and/or monthly maximums and minimum values for any daily minimum samples.

Retained self-monitoring may be denied to a permittee by notification in writing from the Department. In such cases, the permittee shall submit self-monitoring data in accordance with Part II.C.2., above. Such a denial may be rescinded by the Department upon written notification to the permittee. Reissuance or modification of this permit or reissuance or modification of an individual permittee's authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act (Act 96 of the Public Acts of 1987) for assurance of proper facility operation shall be submitted as required by the Department.

PART II

Section C. Reporting Requirements

5. Compliance Dates Notification

Within 14 days of every compliance date specified in this permit, the permittee shall submit a *written* notification to the Department indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Federal Act, Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

a. 24-Hour Reporting
Any noncompliance which may endanger health or the environment (including maximum and/or minimum daily concentration discharge limitation exceedances) shall be reported, verbally, within 24 hours from the time the permittee becomes aware of the noncompliance. A written submission shall also be provided within five (5) days.

b. Other Reporting
The permittee shall report, in writing, all other instances of noncompliance not described in a. above at the time monitoring reports are submitted; or, in the case of retained self-monitoring, within five (5) days from the time the permittee becomes aware of the noncompliance.

Written reporting shall include: 1) a description of the discharge and cause of noncompliance; and 2) the period of noncompliance, including exact dates and times, or, if not yet corrected, the anticipated time the noncompliance is expected to continue, and the steps taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittee shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittee has determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if the notice is provided after regular working hours, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706 (calls from **out-of-state** dial 1-517-373-7660).

Within ten (10) days of the release, the permittee shall submit to the Department a full written explanation as to the cause of the release, the discovery of the release, response (clean-up and/or recovery) measures taken, and preventive measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

PART II

Section C. Reporting Requirements

8. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset, shall notify the Department by telephone within 24 hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

a. that an upset occurred and that the permittee can identify the specific cause(s) of the upset;

b. that the permitted wastewater treatment facility was, at the time, being properly operated and maintained (note that an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation); and

c. that the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

In any enforcement proceedings, the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

9. Bypass Prohibition and Notification

a. Bypass Prohibition
Bypass is prohibited, and the Department may take an enforcement action, unless:

1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and

3) the permittee submitted notices as required under 9.b. or 9.c. below.

b. Notice of Anticipated Bypass
If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least ten (10) days before the date of the bypass, and provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions listed in 9.a. above.

c. Notice of Unanticipated Bypass
The permittee shall submit notice to the Department of an unanticipated bypass by calling the Department at the number indicated on the second page of this permit (if the notice is provided after regular working hours, use the following number: 1-800-292-4706) as soon as possible, but no later than 24 hours from the time the permittee becomes aware of the circumstances.

PART II

Section C. Reporting Requirements

d. Written Report of Bypass
A written submission shall be provided within five (5) working days of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e. Bypass Not Exceeding Limitations
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of 9.a., 9.b., 9.c., and 9.d., above. This provision does not relieve the permittee of any notification responsibilities under Part II.C.11. of this permit.

f. Definitions

1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. Bioaccumulative Chemicals of Concern (BCC)

Consistent with the requirements of R 323.1098 and R 323.1215 of the Michigan Administrative Code, the permittee is prohibited from undertaking any action that would result in a lowering of water quality from an increased loading of a BCC unless an increased use request and antidegradation demonstration have been submitted and approved by the Department.

11. Notification of Changes in Discharge

The permittee shall notify the Department, in writing, as soon as possible but no later than 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of: 1) detectable levels of chemicals on the current Michigan Critical Materials Register, priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, or the Pollutants of Initial Focus in the Great Lakes Water Quality Initiative specified in 40 CFR 132.6, Table 6, which were not acknowledged in the application or listed in the application at less than detectable levels; 2) detectable levels of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information; or 3) any chemical at levels greater than five times the average level reported in the complete application (see the first page of this permit, for the date(s) the complete application was submitted). Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the compliance schedules.

PART II

Section C. Reporting Requirements

12. Changes in Facility Operations

Any anticipated action or activity, including but not limited to facility expansion, production increases, or process modification, which will result in new or increased loadings of pollutants to the receiving waters must be reported to the Department by a) submission of an increased use request (application) and all information required under R 323.1098 (Antidegradation) of the Water Quality Standards or b) by notice if the following conditions are met: 1) the action or activity will not result in a change in the types of wastewater discharged or result in a greater quantity of wastewater than currently authorized by this permit; 2) the action or activity will not result in violations of the effluent limitations specified in this permit; 3) the action or activity is not prohibited by the requirements of Part II.C.10.; and 4) the action or activity will not require notification pursuant to Part II.C.11. Following such notice, the permit or, if applicable, the facility's COC may be modified according to applicable laws and rules to specify and limit any pollutant not previously limited.

13. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the permittee shall submit to the Department 30 days prior to the actual transfer of ownership or control a written agreement between the current permittee and the new permittee containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittee is proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

14. Operations and Maintenance Manual

For wastewater treatment facilities that serve the public (and are thus subject to Part 41 of the NREPA), Section 4104 of Part 41 and associated Rule 2957 of the Michigan Administrative Code allow the Department to require an Operations and Maintenance (O&M) Manual from the facility. An up-to-date copy of the O&M Manual shall be kept at the facility and shall be provided to the Department upon request. The Department may review the O&M Manual in whole or in part at its discretion and require modifications to it if portions are determined to be inadequate.

At a minimum, the O&M Manual shall include the following information: permit standards; descriptions and operation information for all equipment; staffing information; laboratory requirements; record keeping requirements; a maintenance plan for equipment; an emergency operating plan; safety program information; and copies of all pertinent forms, as-built plans, and manufacturer's manuals.

Certification of the existence and accuracy of the O&M Manual shall be submitted to the Department at least sixty days prior to start-up of a new wastewater treatment facility. Recertification shall be submitted sixty days prior to start-up of any substantial improvements or modifications made to an existing wastewater treatment facility.

PART II

Section C. Reporting Requirements

15. Signatory Requirements

All applications, reports, or information submitted to the Department in accordance with the conditions of this permit and that require a signature shall be signed and certified as described in the Federal Act and the NREPA.

The Federal Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

The NREPA (Section 3115(2)) provides that a person who at the time of the violation knew or should have known that he or she discharged a substance contrary to this part, or contrary to a permit, COC, or order issued or rule promulgated under this part, or who intentionally makes a false statement, representation, or certification in an application for or form pertaining to a permit or COC or in a notice or report required by the terms and conditions of an issued permit or COC, or who intentionally renders inaccurate a monitoring device or record required to be maintained by the Department, is guilty of a felony and shall be fined not less than $2,500.00 or more than $25,000.00 for each violation. The court may impose an additional fine of not more than $25,000.00 for each day during which the unlawful discharge occurred. If the conviction is for a violation committed after a first conviction of the person under this subsection, the court shall impose a fine of not less than $25,000.00 per day and not more than $50,000.00 per day of violation. Upon conviction, in addition to a fine, the court in its discretion may sentence the defendant to imprisonment for not more than 2 years or impose probation upon a person for a violation of this part. With the exception of the issuance of criminal complaints, issuance of warrants, and the holding of an arraignment, the circuit court for the county in which the violation occurred has exclusive jurisdiction. However, the person shall not be subject to the penalties of this subsection if the discharge of the effluent is in conformance with and obedient to a rule, order, permit, or COC of the Department. In addition to a fine, the attorney general may file a civil suit in a court of competent jurisdiction to recover the full value of the injuries done to the natural resources of the state and the costs of surveillance and enforcement by the state resulting from the violation.

16. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittee shall submit electronically all such reports or notifications as required by this permit, on forms provided by the Department.

PART II

Section D. Management Responsibilities

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit, more frequently than, or at a level in excess of, that authorized, shall constitute a violation of the permit.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of the NREPA and/or the Federal Act and constitutes grounds for enforcement action; for permit or Certificate of Coverage (COC) termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA. Permittees authorized to discharge storm water shall have the storm water treatment and/or control measures under direct supervision of a storm water operator certified by the Department, as required by Section 3110 of the NREPA.

3. Facilities Operation

The permittee shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

4. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittee shall either:

a. provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit; or

b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

5. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any adverse impact to the surface waters or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

PART II

Section D. Management Responsibilities

6. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code). For a Publicly Owned Treatment Work (POTW), these facilities shall be approved under Part 41 of the NREPA.

7. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit, or other pollutants or wastes) removed from or resulting from treatment or control of wastewaters, including those that are generated during treatment or left over after treatment or control has ceased, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31 for protection of water resources, Part 55 for air pollution control, Part 111 for hazardous waste management, Part 115 for solid waste management, Part 121 for liquid industrial wastes, Part 301 for protection of inland lakes and streams, and Part 303 for wetlands protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state.

8. Right of Entry

The permittee shall allow the Department, any agent appointed by the Department, or the Regional Administrator, upon the presentation of credentials and, for animal feeding operation facilities, following appropriate biosecurity protocols:

a. to enter upon the permittee's premises where an effluent source is located or any place in which records are required to be kept under the terms and conditions of this permit; and

b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any discharge of pollutants.

9. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit, shall be available for public inspection at the offices of the Department and the Regional Administrator. As required by the Federal Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

10. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or the facility's COC, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

PART II

Section E. Activities Not Authorized by This Permit

1. Discharge to the Groundwaters

This permit does not authorize any discharge to the groundwaters. Such discharge may be authorized by a groundwater discharge permit issued pursuant to the NREPA.

2. POTW Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities at a POTW. Approval for the construction or modification of any physical structures or facilities at a POTW shall be by permit issued under Part 41 of the NREPA.

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part II.C.9. pursuant to 40 CFR 122.41(m)), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Federal Act except as are exempted by federal regulations.

5. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Federal Act.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Department of Environmental Quality permits, or approvals from other units of government as may be required by law.

Appendix K

Project Cost Estimates

Appendix K - Summary Table

FY2024 Proposed CWSRF Projects

Project ID#	Location & Description	Construction Cost	Contingencies (10%)	Engineering / Administration	Total Construction Cost	Total Cost	
001	Chicago Street	$37,650	$3,765	$11,295	$41,415	$52,710	
050	W. Railroad Street (Dig/Repair and Sanitary Full Liner)	$33,600	$3,360	$10,080	$36,960	$47,040	
060	Division Street (Dig/Repair and Sanitary Full Liner)	$33,600	$3,360	$10,080	$36,960	$47,040	
061	Franklin Street (Dig/Repair and Sanitary Full Liner)	$33,600	$3,360	$10,080	$36,960	$47,040	
090	201 Industrial Avenue - disconnect CB behind DPW from sanitary (Inflow removal)	$34,200	$3,420	$10,260	$37,620	$47,880	
091	N. Douglas and Railroad Street - disconnect 3 storm structures from sanitary (Inflow removal)	$72,500	$7,250	$21,750	$79,750	$101,500	
130	System Wide - Sanitary Full Liner w/o laterals (ROF 4 and 5)	$888,549	$88,855	$222,137	$977,403	$1,199,540	
150	System wide grouting - I/I pipes (weepers, drippers, runners, and gushers)	$1,536,836	$153,684	$384,209	$1,690,520	$2,074,729	
160	MH Lining and Casting Replacement	$367,200	$36,720	$110,160	$403,920	$514,080	
140	Sanitary Lining (Surcharged Pipes)	$465,262	$46,526	$116,316	$511,788	$628,104	
145	Grouting - (Surcharge Pipes)	$212,387	$21,239	$53,097	$233,625	$286,722	
							Collection System Improvements Total
							$5,046,385
410	Corey LS - Forcemain Replacement	$142,000	$14,200	$42,600	$156,200	$198,800	
505	Corey Street LS Improvements (Replace)	$605,500	$60,550	$139,265	$666,050	$805,315	
510	Walker Street LS & Force Main Replacement	$815,000	$81,500	$163,000	$896,500	$1,059,500	
							Lift Station Improvements Total
							$2,063,615
551	Headworks Improvements	$3,750,000	$375,000	$750,000	$4,125,000	$4,875,000	
553	UV Disinfection System Improvements	$386,000	$38,600	$77,200	$424,600	$501,800	
554	RAS/WAS Improvements	$395,000	$39,500	$79,000	$434,500	$513,500	
555	Admin Building Electrical Improvements	$178,000	$17,800	$35,600	$195,800	$231,400	
556	Admin Building - Meter/Backflow - Replacement	$8,000	$800	$1,600	$8,800	$10,400	
557	Lab Improvements	$398,000	$39,800	$79,600	$437,800	$517,400	
558	Grit Room - Ventilation	$39,000	$3,900	$7,800	$42,900	$50,700	
559	Chemical Room - Ventilation	$20,000	$2,000	$4,000	$22,000	$26,000	
560	Chemical Room - water heater and tepid valve	$7,000	$700	$1,400	$7,700	$9,100	
561	Basement Level/Sludge Room - heat exchanger	$16,000	$1,600	$3,200	$17,600	$20,800	
562	Site - SE Rated MTS / Portable Power Connection	$24,000	$2,400	$4,800	$26,400	$31,200	
563	Building Lighting Improvements	$70,000	$7,000	$14,000	$77,000	$91,000	
564	WWTP SCADA System	$539,000	$53,900	$107,800	$592,900	$700,700	
565	Building Envelope Improvements	$31,000	$3,100	$6,200	$34,100	$40,300	
566	PFAS Sludge Disposal	$444,000	$44,400	$88,800	$488,400	$577,200	
567	Recirculation Pump Replacements	$121,000	$12,100	$24,200	$133,100	$157,300	
568	Ferric Chloride Feed Improvements	$311,000	$31,100	$62,200	$342,100	$404,300	
							WWTP Improvements Total
							$8,758,100
	2022 TOTAL	**$12,014,883**	**$1,201,488**	**$2,651,728**	**$13,216,371.30**	**$15,868,100**	
	2025 TOTAL	**$18,174,000**	**$1,820,000**	**$4,012,000**	**$19,994,000.00**	**$24,006,000**	

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #001: Chicago Street - External Utility Penetration

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	General Conditions / Mobilization (10%)	1	LS	$3,400	$3,400
2	Utility Coordination and relocation of utility penetration	1	LS	$5,500	$5,500
3	Remove HMA pavement	50	SY	$25	$1,250
4	Remove & Replace curb	30	LF	$50	$1,500
5	Remove & Replace Drive Apron	1	LS	$2,500	$2,500
6	Excavate and repair 8" sanitary sewer	1	LS	$10,000	$10,000
7	Road Replacement, full depth (6" HMA, 8" Agg)	50	SY	$100	$5,000
8	Post Video Inspection	1	LS	$500	$500
9	Traffic Control	1	LS	$7,500	$7,500
10	Restoration	1	LS	$500	$500
	Construction Costs				$37,650
	Contingencies (10%)				$3,765
	Engineering, Administration & Legal (30%)				$11,295
	Project Total				$52,710

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #050: W. Railroad Street (Point Repair – Dig/Repair)

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	General Conditions / Mobilization (10%)	1	LS	$3,100	$3,100
2	Bypass Operation	1	LS	$1,000	$1,000
3	Remove HMA pavement	50	SY	$25	$1,250
4	Remove & Replace curb	30	LF	$50	$1,500
5	Excavate and repair 8" sanitary sewer	1	LS	$10,000	$10,000
6	Dewatering	1	LS	$10,000	$10,000
7	Road Replacement, full depth (4" HMA, 6" Agg)	50	SY	$75	$3,750
8	Post Video Inspection	1	LS	$500	$500
9	Traffic Control	1	LS	$2,000	$2,000
10	Restoration	1	LS	$500	$500
	Construction Costs				$33,600
	Contingencies (10%)				$3,360
	Engineering, Administration & Legal (30%)				$10,080
	Project Total				$47,040

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #060: Division Street (Point Repair – Dig/Repair)

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	General Conditions / Mobilization (10%)	1	LS	$3,100	$3,100
2	Bypass Operation	1	LS	$1,000	$1,000
3	Remove HMA pavement	100	SY	$25	$2,500
4	Excavate and repair 8" sanitary sewer / wye	1	LS	$10,000	$10,000
5	Dewatering	1	LS	$7,500	$7,500
6	Road Replacement, full depth (4" HMA, 6" Agg)	100	SY	$75	$7,500
7	Post Video Inspection	1	LS	$500	$500
8	Traffic Control	1	LS	$1,000	$1,000
9	Restoration	1	LS	$500	$500
	Construction Costs				$33,600
	Contingencies (10%)				$3,360
	Engineering, Administration & Legal (30%)				$10,080
	Project Total				$47,040

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #061: Franklin Street (Point Repair – Dig/Repair)

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	General Conditions / Mobilization (10%)	1	LS	$3,100	$3,100
2	Bypass Operation	1	LS	$1,000	$1,000
3	Remove HMA pavement	100	SY	$25	$2,500
4	Excavate and repair 8" sanitary sewer	1	LS	$10,000	$10,000
5	Dewatering	1	LS	$7,500	$7,500
6	Road Replacement, full depth (4" HMA, 6" Agg)	100	SY	$75	$7,500
7	Post Video Inspection	1	LS	$500	$500
8	Traffic Control	1	LS	$1,000	$1,000
9	Restoration	1	LS	$500	$500
	Construction Costs				$33,600
	Contingencies (10%)				$3,360
	Engineering, Administration & Legal (30%)				$10,080
	Project Total				$47,040

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #090: 201 Industrial Avenue (disconnect CB behind DPW from sanitary)

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	General Conditions / Mobilization (10%)	1	LS	$3,100	$3,100
2	Remove pavement	100	SY	$25	$2,500
3	Remove storm structures and storm pipes	1	LS	$4,000	$4,000
4	Core existing storm structure	1	LS	$1,000	$1,000
5	New Storm Structures	2	EA	$6,500	$13,000
6	12" storm pipe	26	LF	$100	$2,600
7	Pavement Replacement, full depth (4" HMA, 6" Agg)	100	SY	$75	$7,500
8	Traffic Control	1	LS	$500	$500
	Construction Costs				$34,200
	Contingencies (10%)				$3,420
	Engineering, Administration & Legal (30%)				$10,260
	Project Total				$47,880

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #091: N. Douglas and Railroad Street (disconnect 3 storm structures from sanitary)

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	General Conditions / Mobilization (10%)	1	LS	$6,600	$6,600
2	Remove pavement	280	SY	$10	$2,800
3	Remove and replace curb	50	LF	$50	$2,500
4	Remove storm structures and storm pipes	1	LS	$5,000	$5,000
5	Remove and replace sidewalk ramp	1	LS	$3,500	$3,500
6	New Storm Structures	4	EA	$6,000	$24,000
7	12" storm pipe	75	LF	$100	$7,500
8	Road Replacement, full depth (4" HMA, 6" Agg)	280	SY	$70	$19,600
9	Traffic Control	1	LS	$500	$500
10	Restoration	1	LS	$500	$500
	Construction Costs				$72,500
	Contingencies (10%)				$7,250
	Engineering, Administration & Legal (30%)				$21,750
	Project Total				$101,500

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #130: System Wide Lining

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Mobilization	1	LS	$15,000	$15,000
2	Traffic Control	1	LS	$15,000	$15,000
3	Bypass Operation	1	LS	$5,000	$5,000
4	6" Sewer Cleaning and CCTV (pre and post inspections)	239	LF	$6	$1,434
5	8" Sewer Cleaning and CCTV (pre and post inspections)	5,926	LF	$6	$35,556
6	10" Sewer Cleaning and CCTV (pre and post inspections)	1,041	LF	$7	$6,767
7	12" Sewer Cleaning and CCTV (pre and post inspections)	306	LF	$7	$2,142
8	6" Sanitary Sewer, CIPP	239	LF	$75	$17,925
9	8" Sanitary Sewer, CIPP	5,926	LF	$50	$296,300
10	10" Sanitary Sewer, CIPP	1,041	LF	$55	$57,255
11	12" Sanitary Sewer, CIPP	306	LF	$95	$29,070
12	Service Lateral Reinstatement	114	EA	$150	$17,100
13	Lateral Lining (Clean, CCTV, Service Connection + 10' liner)	30	EA	$10,000	$300,000
14	Work Allowance - dig and repair (complete with restoration)	1	LS	$80,000	$80,000
15	Pipe preparation - cutting or removal intruding tap	10	EA	$500	$5,000
16	Restoration	1	LS	$5,000	$5,000
	Construction Costs				$888,549
	Contingencies (10%)				$88,855
	Engineering, Administration & Legal (25%)				$222,137
	Project Total				$1,199,540

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #140: Sanitary Lining (Surcharged Pipes)

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Mobilization	1	LS	$15,000	$15,000
2	Traffic Control	1	LS	$15,000	$15,000
3	Bypass Operation	1	LS	$75,000	$75,000
4	8" Sewer Cleaning and CCTV (pre and post inspections)	357	LF	$6	$2,142
5	12" Sewer Cleaning and CCTV (pre and post inspections)	1,136	LF	$7	$7,952
6	15"/16" Sewer Cleaning and CCTV (pre and post inspections)	708	LF	$7	$4,956
7	18" Sewer Cleaning and CCTV (pre and post inspections)	816	LF	$7	$5,712
8	8" Sanitary Sewer, CIPP	357	LF	$50	$17,850
9	12" Sanitary Sewer, CIPP	1,136	LF	$95	$107,920
10	15"/16" Sanitary Sewer, CIPP	708	LF	$110	$77,880
11	18" Sanitary Sewer, CIPP	816	LF	$125	$102,000
12	Service Lateral Reinstatement	19	EA	$150	$2,850
13	Work Allowance - dig and repair (complete with restoration)	1	LS	$25,000	$25,000
14	Pipe preparation - cutting or removal intruding tap	2	EA	$500	$1,000
15	Restoration	1	LS	$5,000	$5,000
	Construction Costs				$465,262
	Contingencies (10%)				$46,526
	Engineering, Administration & Legal (25%)				$116,316
	Project Total				$628,104

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #145: Grouting - (Surcharge Pipes) - Phase II

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Mobilization	1	LS	$15,000	$15,000
2	Permits, bonding and inspection fees	1	LS	$2,500	$2,500
3	Traffic Control	1	LS	$15,000	$15,000
4	Cleaning and Televising Prep for grouting	3,017	EA	$7	$21,119
5	Additional Cleaning	24	HR	$250	$6,000
6	Bypass Operation	1	LS	$75,000	$75,000
7	Test Each Joint	750	EA	$65	$48,750
8	Seal Each Joint that Fail Air Test	100	EA	$50	$5,000
9	Grout	450	Gal	$25	$11,250
10	Post Video Inspection	3,107	LF	$3	$7,768
11	Restoration	1	LS	$5,000	$5,000
	Construction Costs				$212,387
	Contingencies (10%)				$21,239
	Engineering, Administration & Legal (25%)				$53,097
	Project Total				$286,722

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #150: System Wide Grouting

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Mobilization	1	LS	$100,000	$100,000
2	Permits, bonding and inspection fees	1	LS	$25,000	$25,000
3	Traffic Control	1	LS	$127,500	$127,500
4	Cleaning and Televising Prep for grouting	36,088	EA	$7	$252,616
5	Additional Cleaning	252	HR	$250	$63,000
6	Bypass Operation	1	LS	$150,000	$150,000
7	Test Each Joint	8,400	EA	$65	$546,000
8	Seal Each Joint that Fail Air Test	1,000	EA	$50	$50,000
9	Grout	4,500	Gal	$25	$112,500
10	Post Video Inspection	36,088	LF	$3	$90,220
11	Restoration	1	LS	$20,000	$20,000
	Construction Costs				$1,536,836
	Contingencies (10%)				$153,684
	Engineering, Administration & Legal (25%)				$384,209
	Project Total				$2,074,729

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #160: Manhole Rehabilitation

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	General Conditions / Mobilization (10%)	1	LS	$33,400	$33,400
2	Traffic Control (5%)	1	LS	$15,000	$15,000
3	Lining / Structural	198	VF	$600	$118,800
4	Bypass Operation	39	EA	$1,000	$39,000
5	Infiltration - grouting (ROF 3 to 5)	11	EA	$2,000	$22,000
6	Infiltration - grouting (ROF 2)	21	EA	$1,500	$31,500
7	Casting adjustment/replacement	43	EA	$2,500	$107,500
	Construction Costs				$367,200
	Contingencies (10%)				$36,720
	Engineering, Administration & Legal (30%)				$110,160
	Project Total				$514,080

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #410: Corey LS - Forcemain Replacement

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	General Conditions / Mobilization (10%)	1	LS	$12,900	$12,900
2	Remove pavement	170	SY	$20	$3,400
3	Remove and Replace Concrete Sidewalk	500	SF	$8	$4,000
4	Direction Drilled Forcemain (8")	750	LF	$120	$90,000
5	Connection of FM at LS	1	LS	$10,000	$10,000
6	Connection of FM at Existing MH	1	LS	$5,000	$5,000
7	HMA road patch - Complete	170	SY	$60	$10,200
8	Traffic Control	1	LS	$5,000	$5,000
9	Restoration	1	LS	$1,500	$1,500
	Construction Costs				$142,000
	Contingencies (10%)				$14,200
	Engineering, Administration & Legal (30%)				$42,600
	Project Total				$198,800

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #505: Corey Street LS Improvements (Replace)

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Bypass Pumping	1	LS	$10,000	$10,000
2	Demolition	1	LS	$15,000	$15,000
3	Precast Wet Well & Valve Chamber (inc. Excavation, Backfill & Dewatering)	1	LS	$150,000	$150,000
4	Pumps, Valves & Piping (including coating)	1	LS	$90,000	$90,000
5	Control Panel	1	LS	$65,000	$65,000
6	Electrical & Instrumentation	1	LS	$25,000	$25,000
7	Force Main	1	LS	$10,000	$10,000
8	Gravity Sewer	350	LF	$300	$105,000
9	4' Dia. Manhole	3	LS	$6,500	$19,500
10	Traffic Control	1	LS	$25,000	$25,000
11	Pipe Bollards	1	LS	$2,000	$2,000
12	Restoration	1	LS	$10,000	$10,000
13	General Conditions	1	LS	$79,000	$79,000
	Construction Costs				$605,500
	Contingencies (10%)				$60,550
	Engineering, Administration & Legal (23%)				$139,265
	Project Total				$805,315

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #510: Walker Street LS & Force Main Replacement

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Bypass Pumping	1	LS	$25,000	$25,000
2	Demolition	1	LS	$20,000	$20,000
3	Excavation & Backfill	1	LS	$140,000	$140,000
4	Precast Wet Well & Valve Chamber	1	LS	$150,000	$150,000
5	Pumps, Valves & Piping (inc. Coating)	1	LS	$100,000	$100,000
6	Control Panel	1	LS	$75,000	$75,000
7	Electrical & Instrumentation	1	LS	$35,000	$35,000
8	Generator & ATS	1	LS	$50,000	$50,000
9	5' Dia. Meter Chamber	1	LS	$25,000	$25,000
10	Force Main	1	LS	$15,000	$15,000
11	Gravity Sewer	1	LS	$20,000	$20,000
12	4' Dia. Manholes	1	LS	$15,000	$15,000
13	Traffic Control	1	LS	$5,000	$5,000
14	Restoration	1	LS	$25,000	$25,000
15	Allowance for Easement	1	LS	$10,000	$10,000
16	General Conditions	1	LS	$105,000	$105,000
	Construction Costs				$815,000
	Contingencies (10%)				$81,500
	Engineering, Administration & Legal (20%)				$163,000
	Project Total				$1,059,500

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #551: WWTP Headworks - Influent Pumping, Screening & Grit Removal

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Demolition	1	LS	$60,000	$60,000
2	Bypass Pumping	1	LS	$70,000	$70,000
3	Dewatering	1	LS	$50,000	$50,000
4	Excavation & Backfill	1	LS	$150,000	$150,000
5	Cast-In-Place Concrete	1	LS	$375,000	$375,000
6	Pumps, Valves, and Piping	1	LS	$280,000	$280,000
7	Gates	1	LS	$20,000	$20,000
8	Screening System	1	LS	$350,000	$350,000
9	Grit Removal System	1	LS	$274,000	$274,000
10	Building Enclosure (Masonry, Precast, Roof, Doors)	1	LS	$300,000	$300,000
11	HVAC & Plumbing Mechanical	1	LS	$130,000	$130,000
12	Metals (Railing, Grating, Stairs)	1	LS	$40,000	$40,000
13	Control Panels & Instrumentation	1	LS	$120,000	$120,000
14	Electrical Equipment and Wiring	1	LS	$800,000	$800,000
15	Coatings	1	LS	$50,000	$50,000
16	Sanitary Sewer	200	lf	$240	$48,000
17	Connection to Existing	1	LS	$10,000	$10,000
18	Site Concrete	1	LS	$40,000	$40,000
19	Paving	1	LS	$40,000	$40,000
20	Lawn Restoration	1	LS	$20,000	$20,000
21	General Conditions	1	LS	$323,000	$323,000
22	Bonds, Insurance, Permits	1	LS	$150,000	$150,000
23	Electrical Allowance	1	LS	$50,000	$50,000
	Construction Costs				$3,750,000
	Contingencies (10%)				$375,000
	Engineering, Administration & Legal (20%)				$750,000
	Project Total				$4,875,000

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #553: WWTP Disinfection Upgrades

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Demolition	1	LS	$15,000	$15,000
2	Bypass Pumping	1	LS	$50,000	$50,000
3	Trojan System UV3000B	1	LS	$140,000	$140,000
4	Installation Labor	1	LS	$30,000	$30,000
5	Electrical	1	LS	$65,000	$65,000
6	Instrumentation & Controls	1	LS	$35,000	$35,000
7	General Conditions	1	LS	$51,000	$51,000
	Construction Costs				$386,000
	Contingencies (10%)				$38,600
	Engineering, Administration & Legal (20%)				$77,200
	Project Total				$501,800

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
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Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #554: WWTP RAS / WAS Pumps Replacement

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Demolition	1	LS	$25,000	$25,000
2	RAS Pumps	3	LS	$26,000	$78,000
3	Installation Labor	1	LS	$30,000	$30,000
4	Valves & Piping	1	LS	$95,000	$95,000
5	Concrete	1	LS	$10,000	$10,000
6	Electrical	1	LS	$65,000	$65,000
7	Instrumentation & Controls	1	LS	$40,000	$40,000
8	General Conditions	1	LS	$52,000	$52,000
	Construction Costs				$395,000
	Contingencies (10%)				$39,500
	Engineering, Administration & Legal (20%)				$79,000
	Project Total				$513,500

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #555: WWTP Admin Building Electrical Improvements

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	MCC-A Replacment	1	LS	$150,000	$150,000
2	Transormers and Panelboards Replacement	1	LS	$28,000	$28,000
	Construction Costs				$178,000
	Contingencies (10%)				$17,800
	Engineering, Administration & Legal (20%)				$35,600
	Project Total				$231,400

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #556 - 565: WWTP Improvements (Misc)

Date:
November 2022

Project #:
2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
556	Admin Building - Meter/Backflow - Replacement	1	LS	$8,000	$8,000
558	Grit Room - Ventilation	1	LS	$39,000	$39,000
559	Chemical Room - Ventilation	1	LS	$20,000	$20,000
560	Chemical Room - water heater and tepid valve	1	LS	$7,000	$7,000
561	Basement Level/Sludge Room - heat exchanger	1	LS	$16,000	$16,000
562	Site - SE Rated MTS / Portable Power Connection	1	LS	$24,000	$24,000
563	Building Lighting Improvements	1	LS	$70,000	$70,000
564	WWTP SCADA System	1	LS	$539,000	$539,000
565	Building Envelope Improvements	1	LS	$31,000	$31,000
	Construction Costs				$754,000.00
	Contingencies (10%)				$76,000.00
	Engineering, Administration & Legal (20%)				$151,000.00
	Project Total				$981,000.00

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #557: WWTP Lab Room

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Lab Room - Interior Renovation	1	LS	$365,000	$365,000
2	Lab Room - Plumbing Fixtures	1	LS	$25,000	$25,000
3	Lab Room - Lab Hood Fan	1	LS	$8,000	$8,000
	Construction Costs				$398,000
	Contingencies (10%)				$39,800
	Engineering, Administration & Legal (20%)				$79,600
	Project Total				$517,400

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #566: WWTP PFAS Sludge Disposal

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Mobilization and Loadout Contractor	1	LS	$15,000	$15,000
2	Mobile Dewatering Unit	1	LS	$100,000	$100,000
3	Cake Disposal	2	LS	$133,000	$266,000
4	Demobilization	1	LS	$5,000	$5,000
5	General Conditions	1	LS	$58,000	$58,000
	Construction Costs				$444,000
	Contingencies (10%)				$45,000
	Engineering, Administration & Legal (20%)				$88,800
	Project Total				$577,800

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #567: WWTP Recirculation Pump Replacement

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Demolition	1	LS	$15,000	$15,000
2	Bypass Pumping	1	LS	$35,000	$35,000
3	Recirculation Pump	2	LS	$15,000	$30,000
4	Installation Labor	1	LS	$5,000	$5,000
5	Electrical	1	LS	$10,000	$10,000
6	Instrumentation & Controls	1	LS	$10,000	$10,000
7	General Conditions	1	LS	$16,000	$16,000
	Construction Costs				$121,000
	Contingencies (10%)				$13,000
	Engineering, Administration & Legal (20%)				$25,000
	Project Total				$159,000

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Prein&Newhof
Engineers ▪ Surveyors ▪ Environmental ▪ Laboratory

Estimate of Probable Cost

Owner:
City of Bronson

Project Title:
Project #568: WWTP Ferric Chloride Feed Improvements

Date: November 2022

Project #: 2220860 / 2220861

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Demolition	1	LS	$35,000	$35,000
2	Excavation	1	LS	$30,000	$30,000
3	Structural - Containment Area	1	LS	$30,000	$30,000
4	Coating System	1	LS	$10,000	$10,000
5	Storage Tank	1	LS	$71,000	$71,000
6	Metering Pumps	2	ea.	$10,000	$20,000
7	Chemical Feed Piping	1	LS	$39,000	$39,000
8	Electrical, Instrumentation & Controls	1	LS	$20,000	$20,000
9	Restoration	1	LS	$15,000	$15,000
10	General Conditions	1	LS	$41,000	$41,000
	Construction Costs				$311,000
	Contingencies (10%)				$32,000
	Engineering, Administration & Legal (20%)				$63,000
	Project Total				$406,000

All work quantities and costs are estimated for preliminary planning purposes only.
Costs estimated in 2022 Dollars

Appendix L

Present Worth Analysis

CITY OF BRONSON CWSRF PROJECT PLAN
PRESENT WORTH ANALYSIS

Project Description	Collection System Improvements	Lift Station Improvements	Wastewater Treatment Plant Improvements
	FY2024	FY2024	FY2024
CWSRF Eligible Capital Costs (including ELAC)			
Structures (50 yr)	$4,087,000	$1,232,600	$3,183,400
Process Equipment (20 yr)	$0	$211,200	$1,837,000
Auxiliary Equipment (20 yr)	$0	$275,000	$2,390,300
Incidental Construction Costs	$0	$0	$0
Planning	$0	$0	$0
Design / Construction Engineering	$959,400	$344,800	$1,347,400
2022 Project Cost (CWSRF Eligible)	$5,046,400	$2,063,600	$8,758,100
2025 Project Cost (CWSRF Eligible) [1]	$7,634,000	$3,123,000	$13,249,000
(A) 30-yr Present Worth of Capital Costs [2]	$6,772,371	$2,770,516	$11,753,622
Operation, Maintenance & Replacement (OM&R)			
Energy Cost Savings	$0	$0	($2,500)
Annual O&M [3]	$0	$0	($5,000)
Process Equipment Replacement (20 yr)	$0	$228,754	$1,989,681
Auxiliary Equipment Replacement (20 yr)	$0	$297,856	$2,588,968
(B) 30-yr Present Worth of OM&R [2]	$0	$0	($141,084)
(C) 30-yr Present Worth of Energy Cost Savings [4]	$0	$0	$129,834
Salvage Value of Capital			
Salvage value at 30 years	$1,634,800	$736,140	$3,387,010
(D) 30-yr Present Worth of Salvage [2]	$1,450,285	$653,054	$3,004,728
Total Present Worth (A + B + C - D)	$5,322,087	$2,117,462	$8,737,645
Equivalent Annual Cost [5]	$233,566	$92,927	$383,462
Total Existing Equivalent Dwelling Units (EDUs)			
City of Bronson EDUs:	1,021.5		
Unit of Government Responsible for Payment for:	0	0	0
City of Bronson	100.00%	100.00%	100.00%
City of Bronson Annual Cost per EDU	$228.65	$90.97	$375.39
City of Bronson Monthly Cost per EDU	$19.05	$7.58	$31.28
Total Proposed Project Cost FY2024:	**$24,006,000**		
Total Present Worth FY2024:	**$16,177,193**		
Total Equivalent Annual Cost FY2024:	**$709,955**		
	Annual [4]	**Monthly [4]**	
Total Cost per EDU	**$695.01**	**$57.92**	

Notes:

[1] Based on an annual inflation rate of 10%

[2] U.S. EPA Discount rate for Year 2022 is 0.400%

[3] Negative value indicates reduction in Annual O&M

[4] Assumed energy cost rate of escalation is 3.75%

[5] Based on Total Present Worth and interest rate of 1.875%

Appendix M

Green Project Reserve Business Case

WWTP SCADA System Improvements

Summary

- A supervisory control and data acquisition (SCADA) system will be installed that allows for remote monitoring to optimize treatment effectiveness, minimize power costs, and minimize labor costs.
- The SCADA system would provide automation of critical operations, such as maintaining mixed liquor suspended solids concentrations and waste activated sludge flow rates. It is also expected that the increased automation capabilities would improve treatment efficiency of the oxidation ditch during wet weather by maintaining biomass via real-time adjustment of RAS pumping and chemical dosage rates.
- SCADA system was proposed to be installed as a result of the Corrective Action Plan.
- Estimated project cost= $700,700.
- Estimated energy efficiency (green) portion of loan = 100%.

Background/Results

SCADA SYSTEM - EFFICIENCY & ENERGY REDUCTION IMPACT: The existing systems are being controlled manually. As peak flows are expected to be reduced as a result of the I/I removal efforts, a SCADA system will allow the WWTP equipment to operate efficiently. SCADA system operation will be able to monitor more of the process treatment system, remotely control and schedule the system, collect historical process trends to improve efficiency, reduce labor effort throughout the work week. The following are some of the major efficiency and energy cost reduction impact of a new SCADA system:

- Process Control of Pumps & Rotary Aerators: The SCADA system can effectively monitor certain variables (level, flow, pressure, dissolved oxygen, ORP, pH level, chemical concentration) with in the treatment process to control the variable speed and time rotary aerators, pumps, UV bulbs, etc. to properly match the energy required to meet optimal process results. Energy in a variable speed device can greatly reduce the actual electrical energy consumed by the treatment process.
- Based on the previous bullet item, by reducing the amount of energy required in the process, you will inherently reduce the amount the energy transferred to the heat within the process equipment surroundings. This will can provide additional savings in the spring summer cooling months.
- Historical trending and process monitoring can help load level the energy consumed throughout the day to reduce monthly utility demand charges and take advantage of off-peak rates (i.e. cycling recirculation pumping after peak hours).
- The SCADA system will also help reduce labor hours dedicated to maintenance by allowing better preventative maintenance schedules for equipment by continuous monitoring of certain equipment characteristics that will provide warnings of excessive wear and potential failures before it happens.
- The system will also reduce labor hours required to manually operate and adjust the treatment process, which provides more time for maintenance, inspection, and improvements.

Conclusion

- GPR Costs: SCADA = $700,700.
- GPR Justification: The SCADA is GPR-eligible per Section 3.5-8[1]: *SCADA systems can be justified based on substantial energy savings.*

1: https://www.epa.gov/sites/production/files/2015-04/documents/green_project_reserve_eligibility_guidance.pdf

Appendix N

Annual Cost Summary

CITY OF BRONSON
BRANCH COUNTY, MICHIGAN
CWSRF PROJECT PLAN
ANNUAL COST SUMMARY

No.	Project		CWSRF Project Cost Estimate	Annual Debt Service*	Operation & Maintenance Increase/Decrease	Total Annual Cost
1.	Collection System Improvements		$7,634,000	$335,000	$0	$335,000
2.	Lift Station Improvements		$3,123,000	$137,100	$0	$137,100
3.	Wastewater Treatment Plant Improvements		$13,249,000	$581,400	-$5,000	$576,400
		Total FY 2024:	$24,006,000	$1,053,531	-$5,000	$1,048,500
	Existing EDU's					1,021.5
	Annual EDU Cost**					$695.01
	Monthly EDU Cost**					$57.92

*Annual debt service based on 30 year loan with a 1.875% interest rate.
**EDU Cost based on total present worth

Appendix O

Overburdened Community Documentation

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 Bronson

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)

   $41,476

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

   $14,623

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

   $20,200,000

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

Signature

2-16-23
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.

Appendix P

Public Participation Documentation

Appendix Q

Signed Resolution