



CITY OF HARTFORD
19 W MAIN STREET
HARTFORD, MI 49057

STATE OF MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

DRINKING WATER STATE REVOLVING FUND

Project Plan For The City of Hartford Water System Improvements Project

5/22/2023

Existing System Needs

Water Treatment Plant

- The Iron Removal Plant (IRP) was constructed in 1995 with four vertical pressure filters. The City installed an additional pressure filter in 2004 and all pressure filter media was replaced in 2016. In order to continue to provide safe, reliable drinking water to the service area, these recommended improvements are necessary:
 - Update the controls and digital interfaces for more remote monitoring and control versus just receiving alarms and static data at a local level, replace the force main for the underground backwash storage tank, and install an isolation valve on the water main in the driveway to the Iron Removal Plant to allow shutdown of the main without requiring shutdown of the whole plant.

Water Storage

- The City of Hartford water system has a single 250,000-gallon double ellipse elevated storage tank built in 1957 with high and low water alarms. Based on the most recent tank inspection prepared by Dixon Engineering in 2016, the wet interior coating had signs of deterioration around the lap seams and sidewall stiffener and should be replaced. The exterior coating is nearing the end of its useful life and should be repainted in order to extend the useful life of the tower. It was also recommended to remove the unused antenna mount from the roof, install screened flap gate on the overflow pipe discharge, and install fall protection device on the wet interior ladder to ensure compliance with EGLE requirements.

Water Supply

- Water is supplied to the City system by three groundwater wells; the wells (#4, #5, and #6) are located near the Iron Removal Plant. Well #4 was drilled in 1986, well #5 in 1995 and well #6 in 2011. Well #4 was last overhauled in 2006, well #5 in 2005, and well #6 has not been overhauled yet. To ensure conformance with EGLE requirements and continued operation of the City's water source, the wells should be overhauled so that deficiencies can be addressed.

Water Distribution

- The existing distribution network is made up of nearly 18.5 miles of water main with portions that were constructed 80-100 years ago. 14,620 feet of this network is 4-inch water main and 27,389 feet is 6-inch water main, much of which is undersized causing bottlenecks in the system and is impacting available fire flow.

Water Service Lines and Meters

- It is estimated that approximately 80% of the water services in the project area will either contain lead or be galvanized previously connected to lead (GPCL) for a portion of the service based on previous replacement projects. To comply with the *Michigan Lead and Copper Rule*, lead service line replacement (LSLR) is required. Communities must complete LSLR at an average rate of 7% per year, not to exceed 20 years. All service lines must be replaced by 2041.
- Water meters were last replaced in 2014 and are approaching the end of their useful life. To maintain accurate billing these meters should be replaced.

Alternatives Considered

No Action

- The No Action alternative would mean none of the proposed water system improvements would be constructed. The IRP and supply wells would continue to age with increased likelihood of failure, resulting in costly and unplanned emergency repairs. Storage continues to operate as-is, but not maintaining the exterior and interior coating could lead to structural damage and much more costly future repairs. Undersized water mains at the end of their life would remain leading to increased water main breaks, inadequate fire flows, disruption of service and potential sources of contamination. The existing lead and galvanized steel (previously connected to lead) service lines remain in use with the risks they cause to public health. The City would also not be in compliance with the Lead and Copper Rule. Existing water meters would also continue to function with worse accuracy for billing over the years past their useful life.

Optimum Performance of Existing Facilities

- **Iron Removal Plant Improvements Include:**
 - Update the control operation and digital interfaces
 - Replace the underground backwash storage tank force main
 - Install an isolation valve on the 10" main to the IRP
- **Water Tower Renovations Include:**
 - Exterior Cleaning and Polyurethane Coating System
 - Wet Interior Cleaning and Three Coat Epoxy System
 - Fall Protection on Wet Interior Ladder
 - Screened Flap Gate on Discharge Pipe

• **Water Distribution System Improvements Include:**

- Lead Service Line Replacement
- Water Meter Replacement
- Marion Avenue – W Main Street to Prospect Street
- Railroad Street – Michigan Avenue to Hillsborough Street
- Michigan Avenue – Railroad Street to N Maple Street
- Tower Drive – N Maple Street to N Center Street
- Olds Street – N Center Street to N Haver Street
- Hilliard and Hart Street – N Maple Street to Edwin Street
- Washington Street – N Haver Street to Edwin Street
- Bernard Street – Mary Street to S Center Street

Regionalization

- The system is already a regional system serving parts of Hartford Township. Extending regionalization to the nearby systems of Watervliet or Lawrence is not feasible because it would require the construction of miles of water main and significant modification to each of the three distribution systems and at least one of the treatment and supply facilities in order to provide the required capacity that each of the systems demand.

Recommended Alternative

Description of Recommended Alternative

- The recommended alternative for this project is the *Optimum Performance of the Existing Facilities*.
- The proposed improvements can be described in four distinct parts: water supply, water storage, water distribution, and water service improvements.
- Implementation of the improvements for each of these components would address all of the project needs identified in the project plan.

Water Supply Improvements

- Overhaul existing water supply wells, add an isolation valve to the IRP, and relocate the backwash force main. The improvements would ensure the plant continues to operate such that water quality parameters are met and the City is able to provide safe, reliable, potable water to its customers.

Water Storage Improvements

- Recoat exterior and interior of the water storage tank. Without recoating the exterior and interior, consequences include structural damage to the steel of the storage tank resulting in much more costly repairs in the future. Installing a screened flap gate on the overflow pipe would do more to prevent rodents or birds from entering the pipe. The ladder in the wet interior from the roof to the bowl is not equipped with a fall prevention device, and the installation of a cable type fall prevention device would increase the safety for City employees.

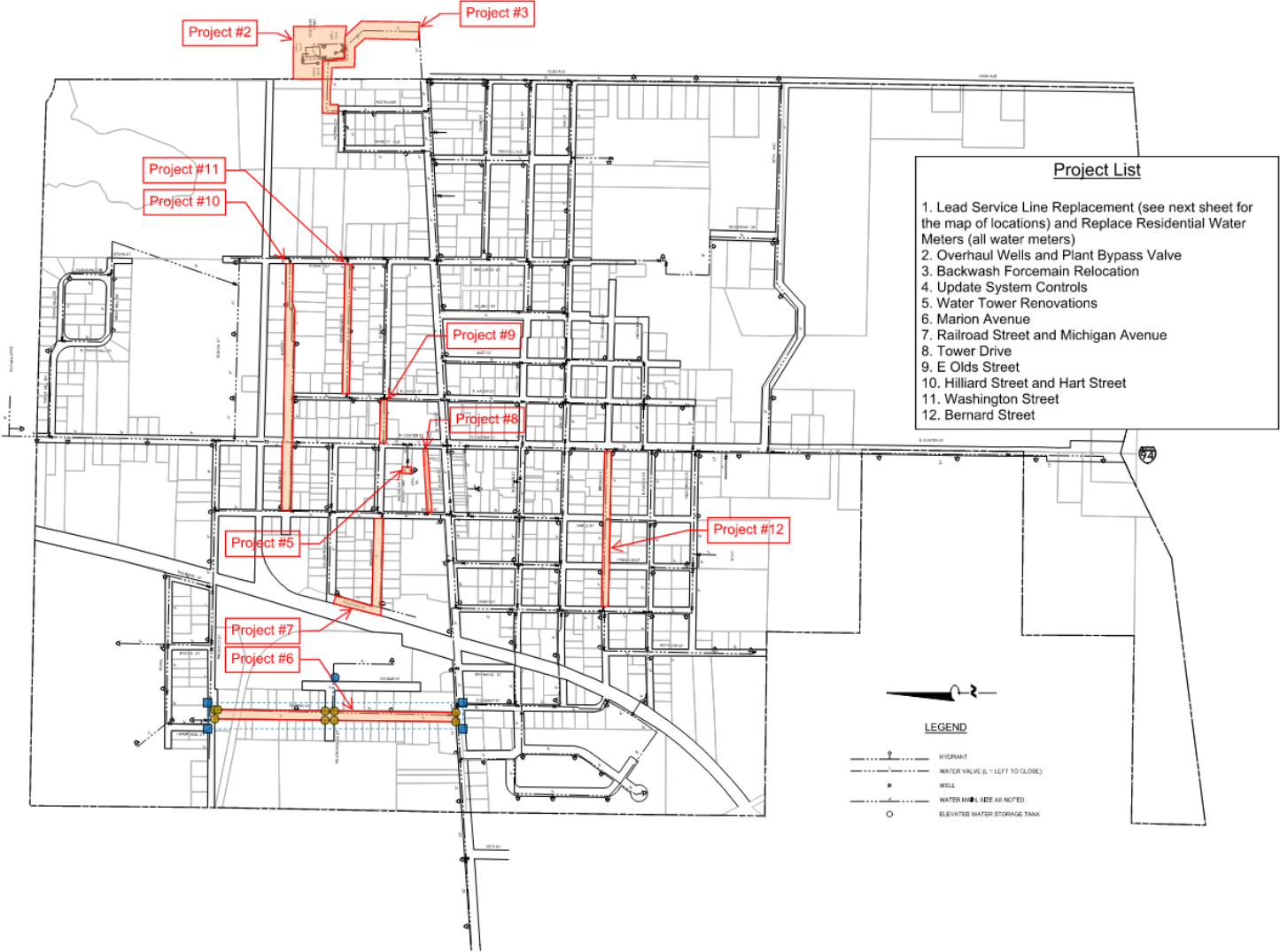
Water Distribution Improvements

- Undersized and aged water mains at key locations within the existing water distribution system will be replaced with proper pipe sizes selected based on fire flow recommendations set forth by the 10 State Standards 8.2.2 and by AWWA M31 Hydraulic Performance.

Water Service Improvements

- Replace any lead or galvanized previously connected to lead (GPCL) services that are encountered during replacement of the undersized water mains and others identified during DSMI initiatives. It is estimated that approximately 80% of the water services in the project area will either contain lead or be GPCL based on previous replacement projects in the Hartford water system. This will comply with the Michigan Lead and Copper Rule (LCR) and Act 399. Replacing the water meters will also ensure accurate billing for water usage.

Project Location Map





Project Financing

CITY OF HARTFORD DWSRF PROJECT PLAN
MONETARY EVALUATION
SUMMARY OF SELECTED ALTERNATIVE ESTIMATE

Alternative 2 - Optimum Performance of Existing Facilities

| 2023 Fiscal Year Interest Rates | |
|--------------------------------------|--------|
| 20-year loan | 1.875% |
| 30-year loan | 2.125% |
| 30-year loan Disadvantaged Applicant | 1.875% |
| 40-year loan Disadvantaged Applicant | 1.875% |

| Description | Amount |
|--|-----------------|
| Lead Service Line Replacement | \$ 4,488,000.00 |
| Residential Water Meter Replacement | 520,500 |
| Overhaul Wells | 105,000 |
| Plant Bypass Valve | 12,500 |
| Backwash Forcemain Relocation | 93,500 |
| Update System Controls | 50,000 |
| Water Tower Renovations | 298,000 |
| Marion Avenue Water Main Replacement | 720,750 |
| Railroad Street and Michigan Avenue Water Main Replacement | 406,650 |
| Tower Drive Water Main Replacement | 268,800 |
| E Olds Water Main Replacement | 100,600 |
| Hilliard and Hart Streets Water Main Replacement | 621,650 |
| Washington Street Water Main Replacement | 391,450 |
| Bernard Street Water Main Replacement | 500,300 |

| Estimated Loan Rate, Terms & Annual Debt Payment | |
|--|--------------|
| Estimated 2024 Interest Rate | 2.500% |
| Length of Loan (Years) | 30 |
| Total Estimated Project Cost to be Funded | \$12,100,000 |
| Estimated Annual Debt Payments | \$578,110 |

| | |
|--|-----------------|
| Subtotal (Construction Cost) | \$ 8,577,700.00 |
| Construction Contingencies (20%) | \$ 1,716,800.00 |
| DWSRF Funding Application | 45,500 |
| Design Engineering | 687,000 |
| Construction Engineering | 772,000 |
| Bond Counsel, Local Counsel, Rate Consultant | 258,000 |
| Administrative Costs | 43,000 |
| Total Project Cost: \$ 12,100,000.00 | |

Project Financing

| Water Rates | 2023 Ex. Rate Structure | Proposed 2024 Rate Structure |
|-----------------------------|-------------------------------|------------------------------------|
| % RTS Increase Required | | +256% |
| City Metered | | |
| Service Fee | \$5.92 | \$21.10 |
| Water (per 1000 gal) | \$2.45 | \$8.80 |
| Water Improvement Project | \$6.00 | \$6.00 |
| Non-City Metered | | |
| Service Fee | \$8.88 | \$31.70 |
| Water (per 1000 gal) | \$3.68 | \$13.20 |
| Water Improvement Project | \$6.00 | \$6.00 |
| City Non-Metered | | |
| Service Fee | \$5.92 | \$21.10 |
| Residence | \$35.98 | \$128.20 |
| Bus (0-5) | \$53.97 | \$192.30 |
| Bus (6-10) | \$71.96 | \$256.30 |
| Bus (11+) | \$89.95 | \$320.40 |
| Water Improvement Project | \$6.00 | \$6.00 |
| Non-City Non-Metered | | |
| Service Fee | \$8.88 | \$31.70 |
| Residence | \$53.97 | \$192.30 |
| Bus (0-5) | \$80.96 | \$288.40 |
| Bus (6-10) | \$107.94 | \$384.50 |
| Bus (11+) | \$134.93 | \$480.60 |
| Water Improvement Project | \$6.00 | \$6.00 |

Project Schedule

The schedule for this project plan through the end of construction is as follows:

| | |
|---|------------|
| Public Meeting | 05/22/2023 |
| Plan Adoption | 05/22/2023 |
| Submittal of Final Project Plan | 06/01/2023 |
| Final Project Priority List | 08/15/2023 |
| Begin Design Engineering | 08/21/2023 |
| EGLE Approval of Plans & Specifications | 05/24/2024 |
| Obtain all Construction Permits | 05/24/2024 |
| Advertise for Bids | 05/24/2024 |
| Open Bids | 06/25/2024 |
| Tentative Contract Award | 07/01/2024 |
| Close SRF Loan | 08/28/2024 |
| Begin Construction | 09/30/2024 |
| End Construction | 06/05/2026 |

Social and Environmental Impacts of Selected Alternative

Beneficial and Adverse Impacts

- The principle long-term beneficial impacts of the project on the environment include improvements to drinking water quality, improvements to supply and distribution system reliability, and elimination of lead service lines in the system.
- Adverse environmental impacts are limited to short-term construction impacts such as temporary noise, dust, and exhaust and noise from construction vehicles, temporary water service outages during construction, and traffic disruption.

Water Treatment Plant Improvements

- All proposed improvements at the water treatment plant will occur within or on the existing water treatment plant building or previously disturbed areas. No impacts to traffic are expected. Temporary noise will likely result during construction. This will be mitigated by the use of mufflers and limiting construction hours.

Water Storage Improvements

- Recoat exterior and interior of the water storage tank. Impacts to traffic will be temporary and local traffic will be maintained at all times during work. Temporary noise and dust will likely result during work. This will be mitigated through the use of dust controlling measures and limiting construction hours.

Water Distribution Improvements

- Various water mains will be upgraded at key locations within the water system. Water mains will be installed within the existing road right-of-way in previously disturbed areas. Impacts to traffic will be temporary and local traffic will be maintained at all times during construction. Temporary noise and dust will likely result during construction. This will be mitigated through the use of dust controlling measures and limiting of construction hours.

Water Service Improvements

- All lead or galvanized previously connected to lead (GPCL) services will be replaced. Water services will be replaced in existing service trenches. Impacts to traffic will be temporary and local traffic will be maintained at all times during construction. Temporary noise and dust will likely result during construction. This will be mitigated through the use of dust controlling measures and limiting of construction hours.
- Customers will also be without water for a few hours while services are installed or transferred. This will be mitigated by communication and coordination with property owners.

Questions and Comments