City of Grand Ledge
Water Treatment Plant, Distribution System, and Raw Water Supply Improvements

DWSRF Project Plan Public Hearing

The City of Grand Ledge

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Engineers | Architects | Scientists | Constructors

Public Hearing Contents

- Description of the water quality and capacity problems to be addressed by the projects and the principal alternatives that were considered
- Description of the recommended alternative
  - Capital Costs
  - Cost breakdown by project components
- Discussion of project financing and costs to users
  - Proposed method of project financing and estimated monthly debt retirement
  - Proposed annual, quarterly, or monthly charge to the typical residential customer
  - Any special fees that will be assessed
- Description of the anticipated social and environmental impacts associated with the recommended alternative and the measures that will be taken to mitigate adverse impacts
- In the event no one from the public attends the hearing (a reporter would be considered a member of the public, as would members of the applicant's governing body), the public hearing may be opened and closed without a formal presentation of the project plan. However, a transcript or recording must still be submitted with the final project plan documenting this action

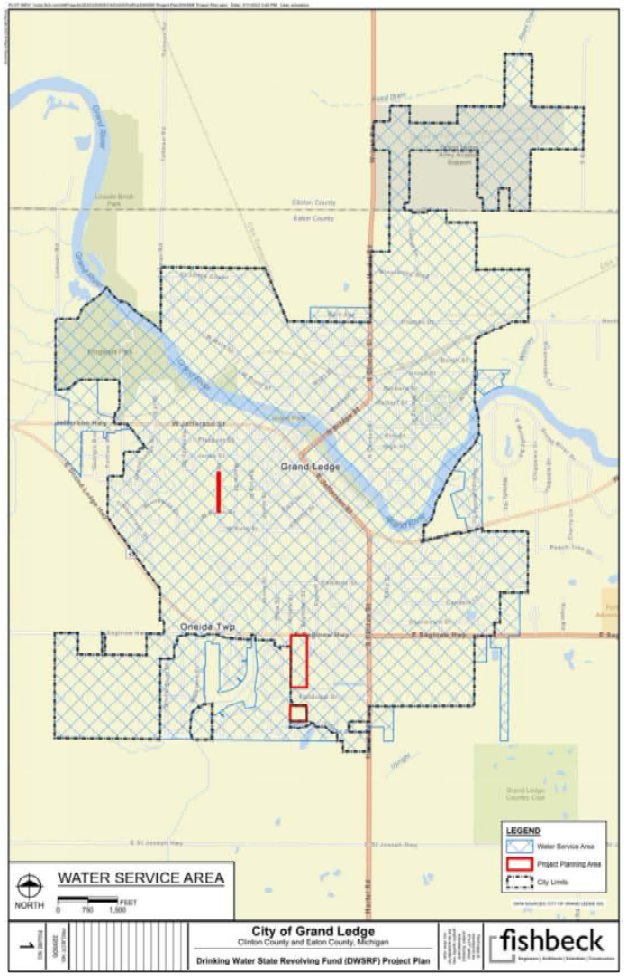
Agenda

- SRF Background & Description
- Distribution System Overview
- Treatment Plant Overview
- Raw Water Supply Overview
- Water Quality Problems Addressed
- Alternatives Considered
- Principal Alternatives
- Monetary Evaluation
- Social and Environmental Impacts Evaluation
- Next Steps

Existing Iron Removal Plant Site

Drinking Water State Revolving Fund (DWSRF)

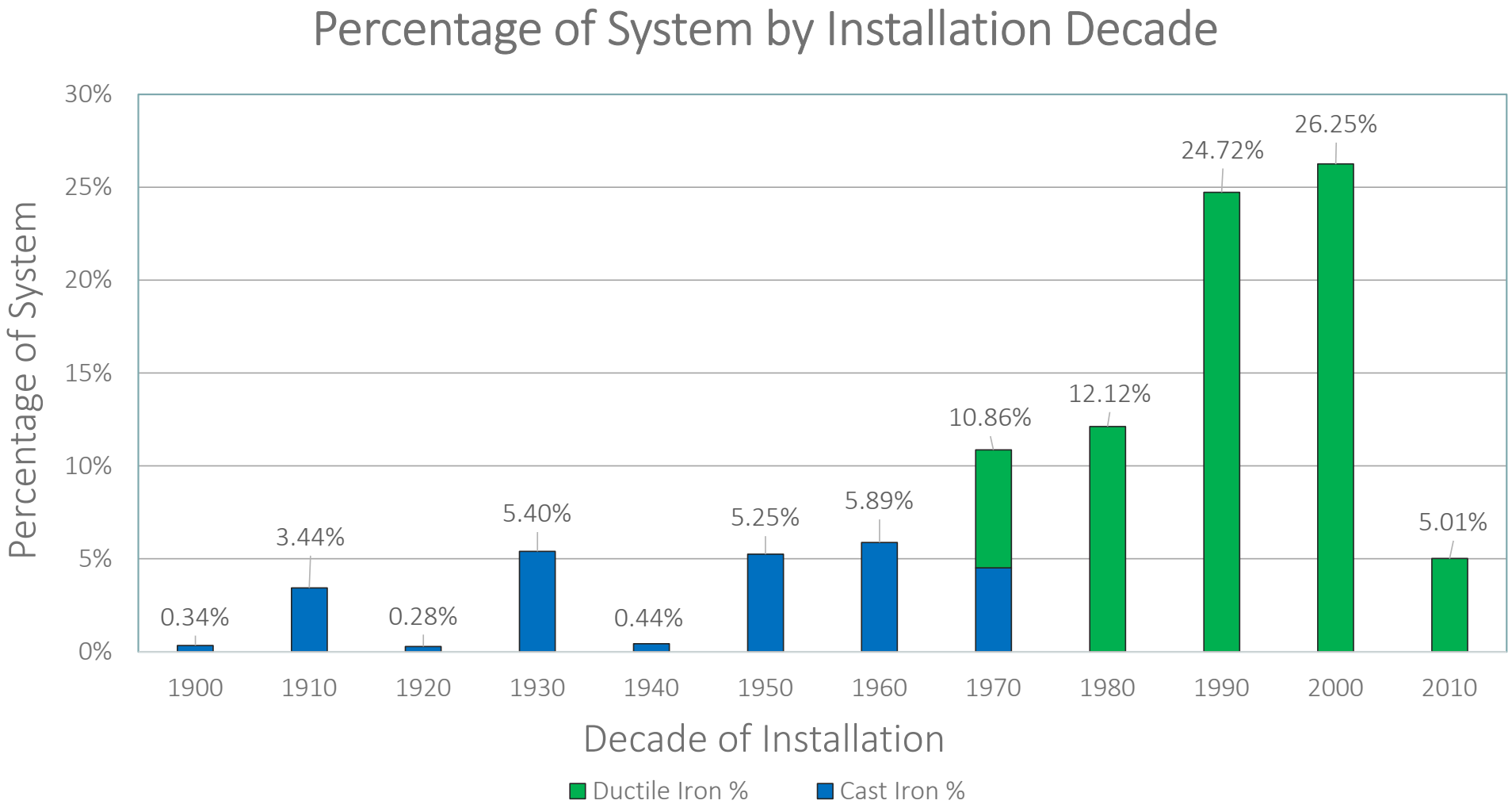
- Came from 1996 amendments to the Safe Drinking Water Act
- Administered by the Michigan Department of Environment, Great Lakes, and Energy (EGLE)
- Aimed to address water quality needs of communities.
- Provides low-interest funding to assist in studies & improvements to drinking water systems.



Water Service Area

Distribution System Overview

- System mainly consists of Ductile Iron and Cast Iron.
- Feeds City and parts of Oneida Township.
- City has been proactive in water main replacement but regular replacement is needed.


Percentage of System by Installation Decade
Percentage of System
30%
25%
20%
15%
10%
5%
0%
0.34%
3.44%
0.28%
5.40%
0.44%
5.25%
5.89%
10.86%
12.12%
24.72%
26.25%
5.01%
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Decade of Installation
Ductile Iron %
Cast Iron %

Water Treatment Plant Overview

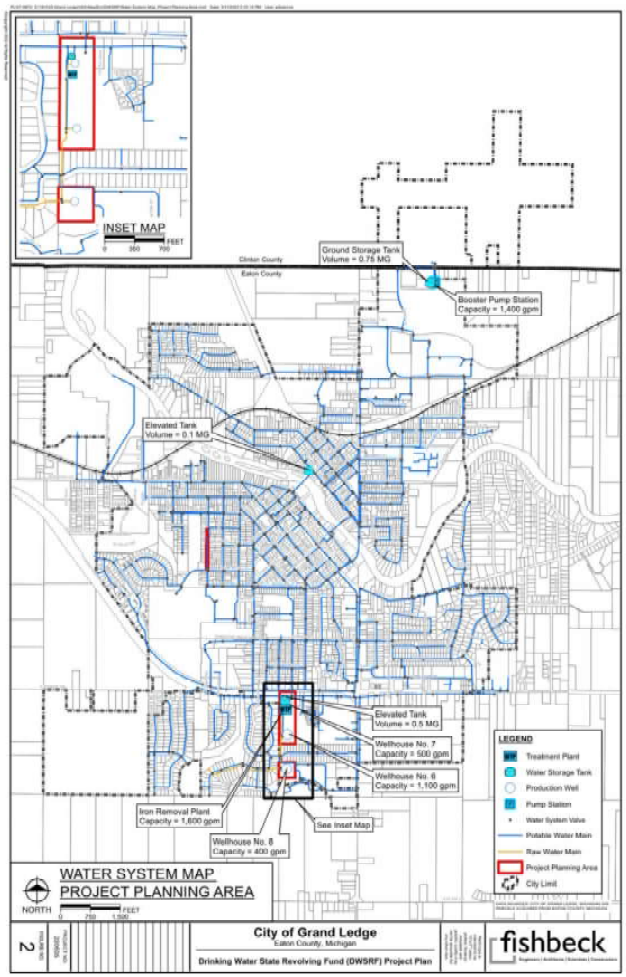
Diagram of Aeralater Unit

- Existing Treatment Processes
  - Aeralater
    - Combines Aeration, Detention and Filtration in one unit
  - Chemical Feed Systems
    - Chlorine gas for disinfection
    - Fluoride for dental health
    - Phosphate for corrosion control
  - Clearwell for finished water storage
  - High service pumps convey water from clearwell to the distribution system

Raw Water Supply Overview

Interior of Wellhouse No. 6

- Four existing wells
  - Well No. 2 (Standby well)
  - Well No. 6
  - Well No. 7
  - Well No. 8 (Limited Capacity)
- Development of wells to meet future capacity is ongoing

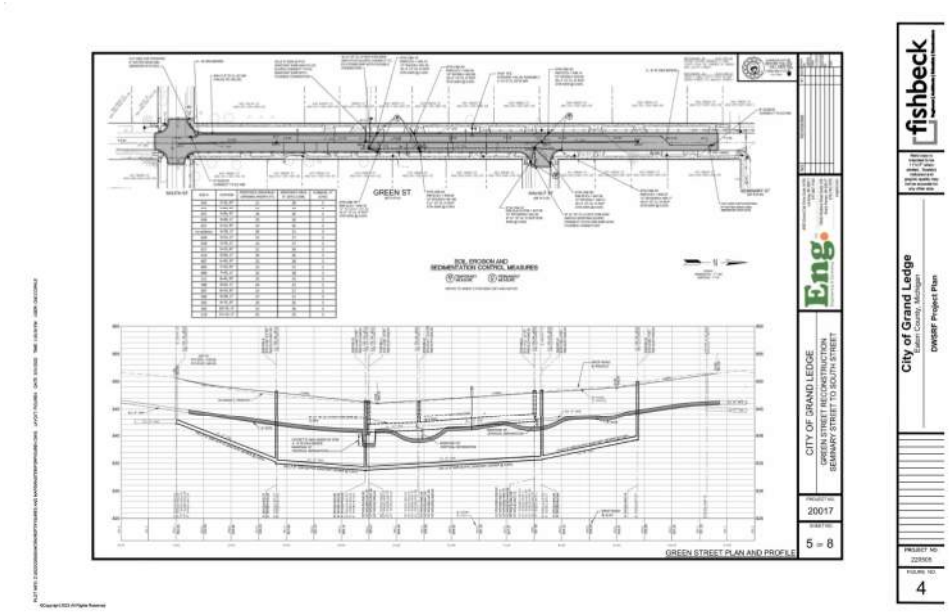


Distribution System Map

Need for Project – Distribution System

- Parts of City distribution system over 100 years old
- Regular replacement is needed to keep the system in good condition
- Older water main can cause hydraulic and water quality issues.

Distribution System Improvements



- Water main replacement on Green Street from Seminary Street to South Street
- Replace 1974 6-inch water main with new 8-inch water main
- Efficiency in replacing sanitary main, water main, storm and street

Need for Project - WTP

- Available Capacity of Current WTP
  - Designed to treat 2.30 MGD
  - One filter in Aeralater is no longer operational, reducing capacity to 1.73 MGD
- Aging Infrastructure – Aeralater was leaking and not operating well
- Current WTP not set up to treat radium
- Addition of radium treatment pushed by State regulators
- A new plant would allow for potential future addition of softening

Alternatives Considered

- Alternative 1 – No Action
  - Does not address need for project; not a principal alternative.
- Alternative 2 – Optimization of Existing Facilities
  - Existing facilities are beyond useful life and at risk of failure.
- Alternative 3 - Regional Alternative
  - This was looked at as part of separate study. Capital cost was excessive.
- Alternative 4 – Construction of New WTP
  - New iron removal plant with initial capacity of 2.85 MGD, radium removal, backwash equalization basin, controls upgrades at all remote sites

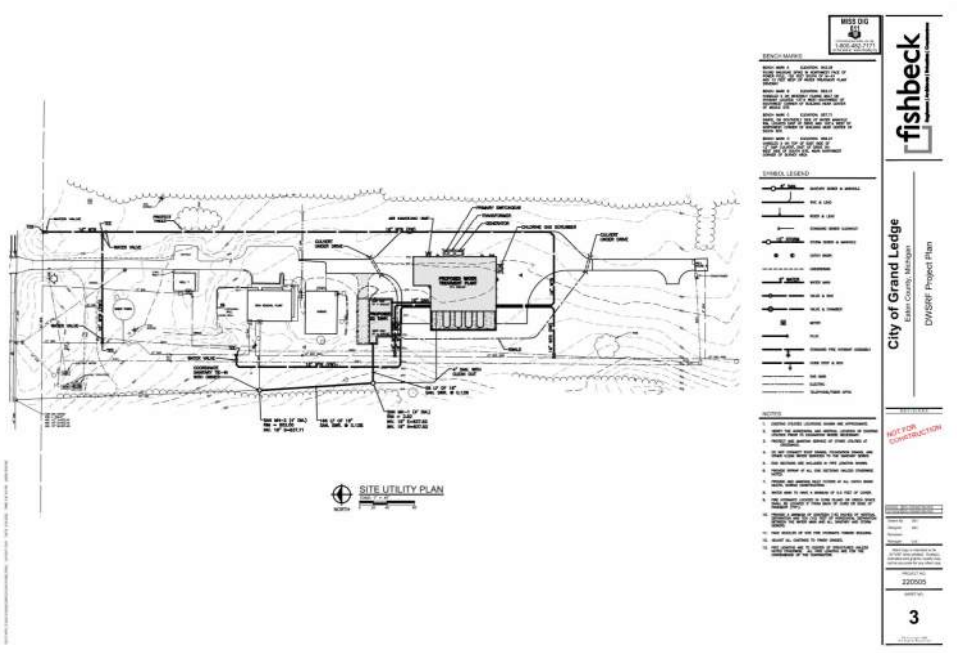
Treatment Alternative	Net Present Value*
Iron Removal (with allowance for future softening expansion)	$12,215,000
RO Softening	$33,798,000
IX Softening	$25,088,000
Lime Softening	$33,031,000
LBWL Supply Alt. 1	$49,139,000
LBWL Supply Alt. 2	$41,334,000
LBWL Supply Alt. 3	$56,717,000

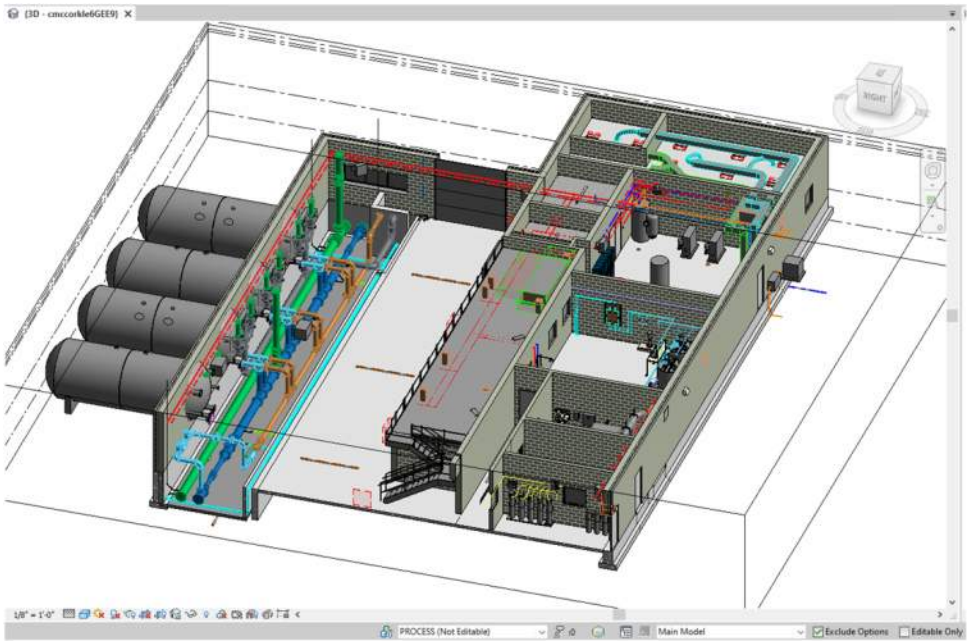
* - Net present values were calculated as part of three 2020 studies. Provided for comparison purposes only.

Other Considerations for Alternative – Monetary Evaluation

Selected WTP Alternative

- Alternative 4 – Construction of a new WTP





Raw Water Supply System

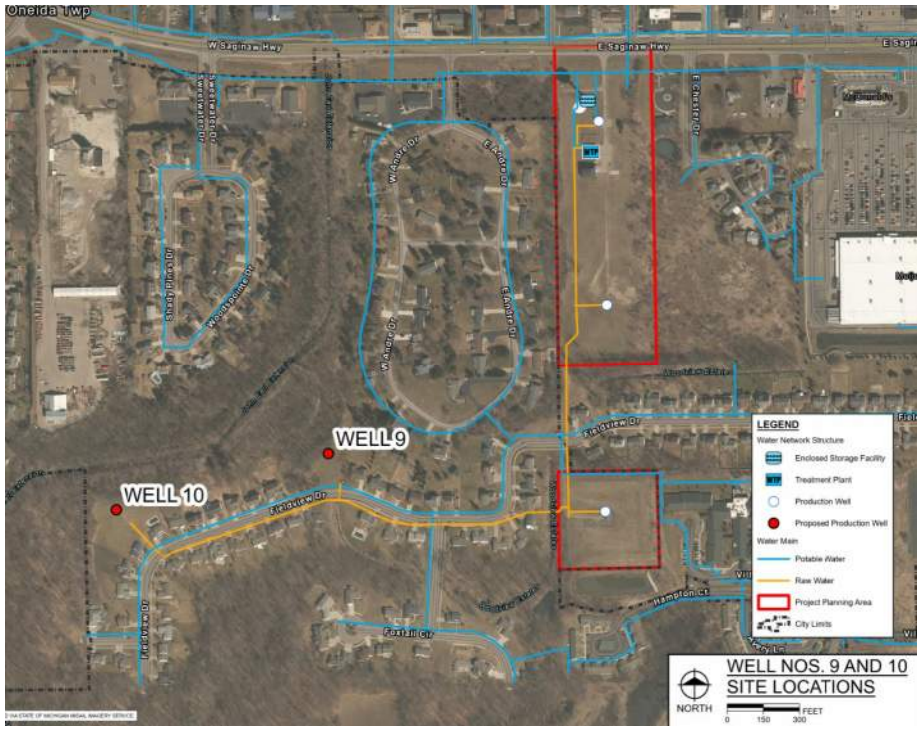
- Available Capacity in Current System
  - Can provide 2.88 MGD but only 1.30 MGD with largest well out of service to the WTP
  - Well Nos. 9 & 10 are located to the southwest of the existing WTP site and are not yet equipped with pumps
  - Locate alternative well sites
- Well No. 2 can only pump to the distribution system not the WTP
- Well No. 7 has somewhat high iron levels
- Well No. 8 is limited in capacity by state regulators

Alternatives Considered

- Alternative 1 – No Action
  - Does not address need for project; not a principal alternative.
- Alternative 2 – Optimization of Existing Facilities
  - Existing facilities are limited in capacity. More wells are needed.
- Alternative 3 - Regional Alternative
  - This was looked at as part of separate study. Capital cost was excessive.
- Alternative 4 – Develop Well Nos. 9 & 10
  - This would be easiest and most inexpensive option but is contingent on acceptance from state regulators.
- Alternative 5 – Develop Alternative Well Sites
  - No specific site(s) have yet been identified.

Selected Raw Water Supply Alternative

- Alternative 4 – Development of Well Nos. 9 & 10



Social and Environmental Impacts Evaluation

Social Impacts

- Short term construction related impacts
  - Construction activities in park space managed to maintain access
- Traffic impacts
- User costs
- Temporary construction job

Environmental Impacts

- Will adhere to local, state, and federal regulations for work within floodplains
  - Mitigated by soil erosion and sedimentation control measures
- Distribution system water quality
  - Remove radium
- Energy and chemical use
- Positive impact to operations and overall water system reliability
- No impact to threatened or endangered species

Recommended Alternatives Estimated Cost

- Capital Cost = $19,957,000
- Finance through SRF
  - 30-year loan – 2.125%
- Costs for Average Water User: $19.00 per month based on 51,666 REU equivalents
  - $17.54 per month for debt repayment
  - $1.46 per month for OM&R

Category	2023 Opinion of Probable Construction Cost
Distribution System Alternative	
Green Street Water Main Replacement*	$198,000
Water Treatment Plant Alternative	
New Water Treatment Plant	$14,957,000
Raw Water Supply System Alternative	
Develop Well Nos. 9 & 10	$4,802,000
Total Estimated Costs	
Total Capital Cost	$19,957,000

* Includes Water Main Replacement and Restoration only

Next Steps

- Project Plan
  - Resolution Adopting a Final Project Plan and Designating an Authorized Project Representative May 23rd, 2022 City Council Meeting
  - Submit Final Project Plan by July 1, 2022
- Develop Milestone Schedule with EGLE project manager
- Final Design: March 2022 – July 2022
- Part I Application to MFA – Financial Review
- Part II Application – SRF program requirements
- Bid Project October 2022 according to Milestone Schedule
  - Part III Application – Bid information and estimated loan disbursement schedule
- Construction: January 2023 – January 2025

Thank You

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