

City of Grand Ledge Wastewater Treatment Plant and Sanitary Sewer System Improvements

CWSRF Project Plan Public Hearing



Public Hearing Contents

- Description of the water quality problems to be addressed by the project 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
- Collection System Overview
- Treatment Plant Overview
- Water Quality Problems Addressed
- Alternatives Considered
- Principal Alternatives
- Monetary Evaluation
- Social and Environmental Impacts Evaluation
- Next Steps



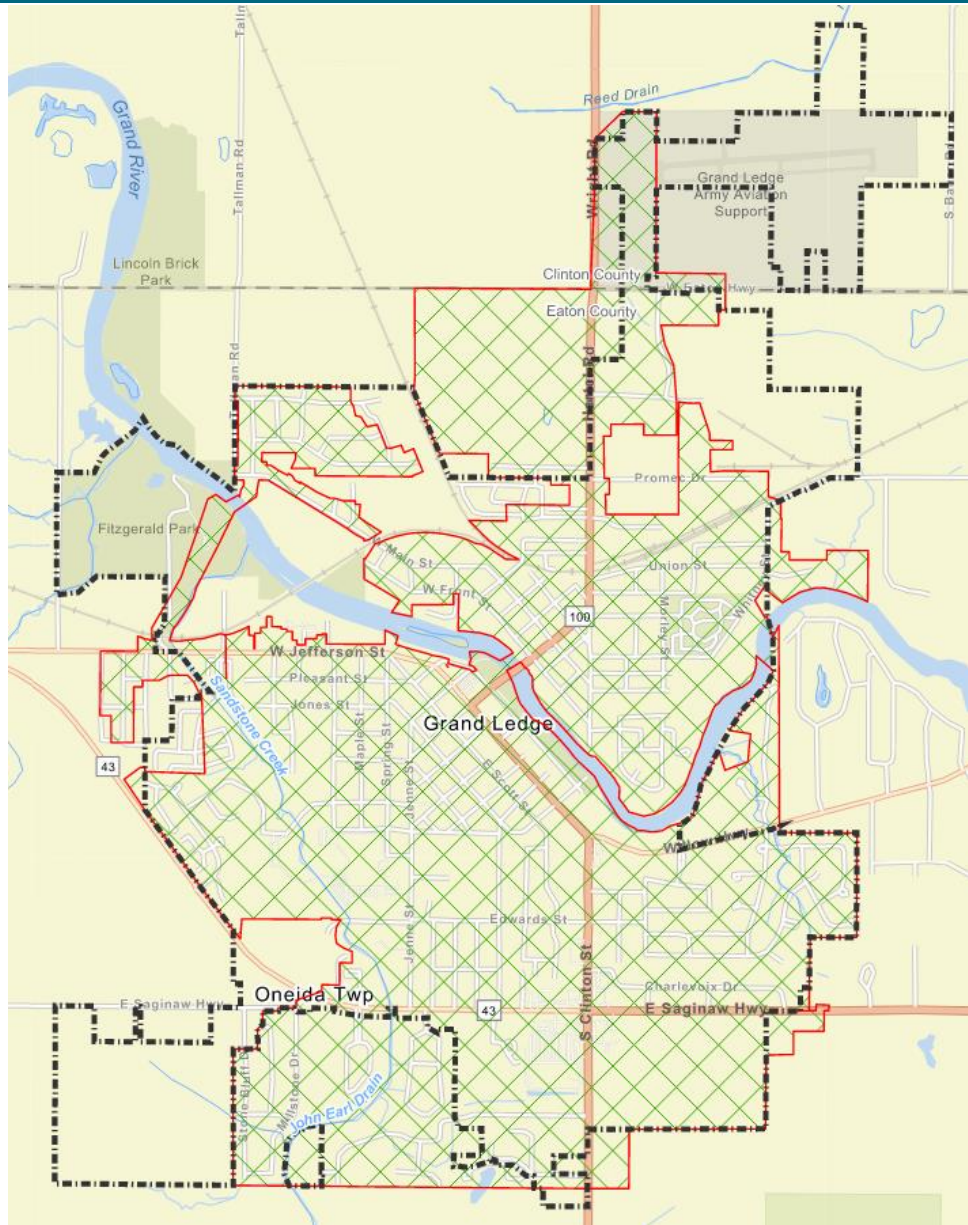
Existing Aeration Tanks

Clean Water State Revolving Fund (CWSRF)

- Came from 1987 amendments to the Clean 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 and wastewater systems.



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY



Collection System Overview

- Originally combined storm and sanitary sewer system
- Separated in 1991
- Persistent high flows associated with wet weather events
- West River Pump Station pumps a large portion of flow into an interceptor sewer to the WWTP



Aerial View of Existing WWTP

Wastewater Treatment Plant Overview

- **Treatment Processes**
 - Retention Basin
 - Mechanical Bar Screen
 - Aerated Grit Removal
 - Intermediate Pump Station
 - Primary Clarification
 - Aeration
 - Secondary Clarification
 - Chlorine Disinfection
- **Solids Handling**
 - Lime stabilize biosolids from primary and secondary clarifiers
 - Biosolids storage and liquid land application

Need for Project – Collection System

- History of overflows from the collection system
 - Russell Street Manhole
 - West River Pump Station (WRPS)
 - Interceptor Sewer to WWTP
- Violation Notice from EGLE received on March 11, 2021
- Need to convey the 25-year, 24-hour design storm to the WWTP without overflow

Need for Project - WWTP

- **Available Capacity of Existing WWTP**
 - Designed to treat 1.5 MGD
 - Exceeding biological treatment capacity
 - At ~73% of hydraulic capacity
 - Discharges from the retention treatment basin during wet weather events
 - WWTP capacity is a limiting factor for new residential, commercial, and industrial development
- **Aging Infrastructure – Mechanical equipment from 1975**
- **Ineffective Treatment – Grit removal**
- **Chemical Handling – Lime for solids stabilization and chlorine for disinfection**

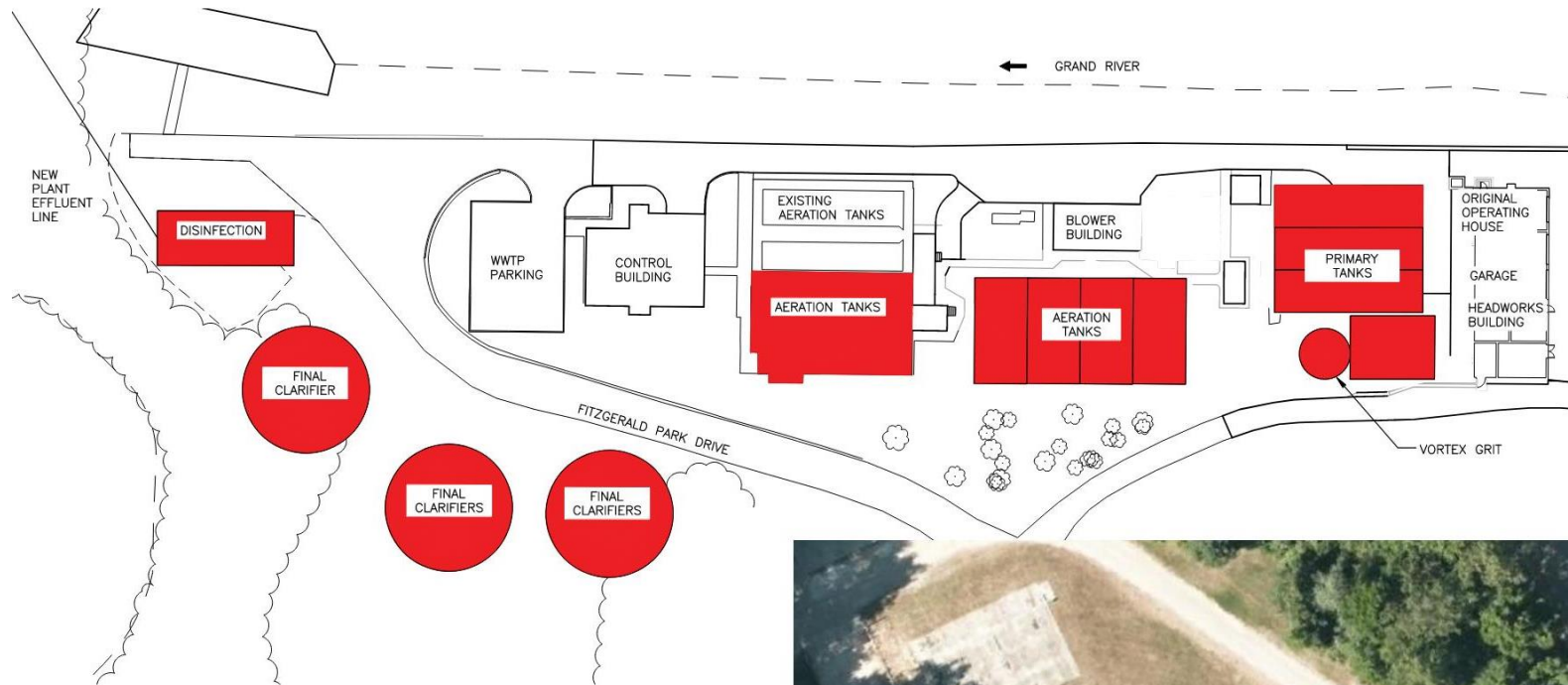
Alternatives Considered

- **Alternative 1 – No Action**
 - Does not address need for project; not a principal alternative.
- **Alternative 2 – Optimization of Existing Facilities: Expansion of Conventional Activated Sludge**
 - Principal alternative
- **Alternative 3 – Optimization of Existing Facilities: Conversion to Extended Aeration**
 - Principal alternative
- **Alternative 4 – Optimization of Existing Facilities: Conversion to Membrane Bioreactors (MBR)**
 - Principal alternative
- **Alternative 5 – Regional Alternative: Connection to Existing Regional WWTP**
 - Capacity limitations, cost of service, loss of autonomy; not a principal alternative.
- **Alternative 6 – Construction of New Satellite WWTP**
 - Collection system modification, operational difficulties, restrictive additional NPDES permit; not a principal alternative.

Principal Alternatives

- Alternative 2 – Optimization of Existing Facilities: Expansion of Conventional Activated Sludge
- Alternative 3 – Optimization of Existing Facilities: Conversion to Extended Aeration
- Alternative 4 – Optimization of Existing Facilities: Conversion to MBR

Alternative 2 – Conventional Activated Sludge



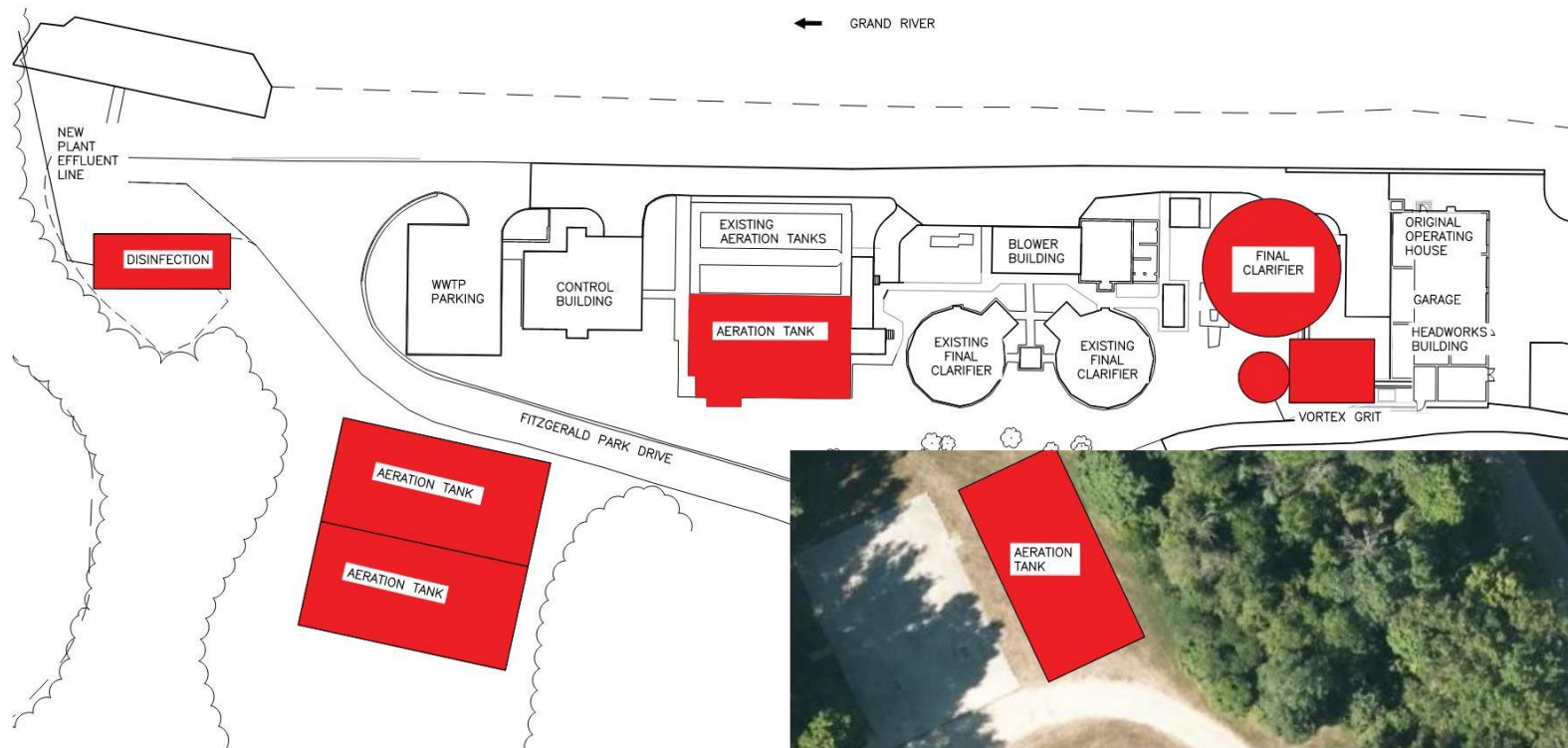
ALTERNATIVE 2 SITE MAP
 SCALE: 1" = 50'

LEGEND			
	EDGE OF WATER		LIGHT
	SHRUBS		GUY ANCHOR
	DECIDUOUS TREE		UTILITY POLE
	HEDGE EDGE OF WOODS		SIGN
			GRAVEL SURFACE
			PAVED SURFACE
			CURB & GUTTER
			FENCE



SOLIDS STORAGE AREA
 SCALE: 1" = 50'

Alternative 3 – Extended Aeration



ALTERNATIVE 3 SITE MAP

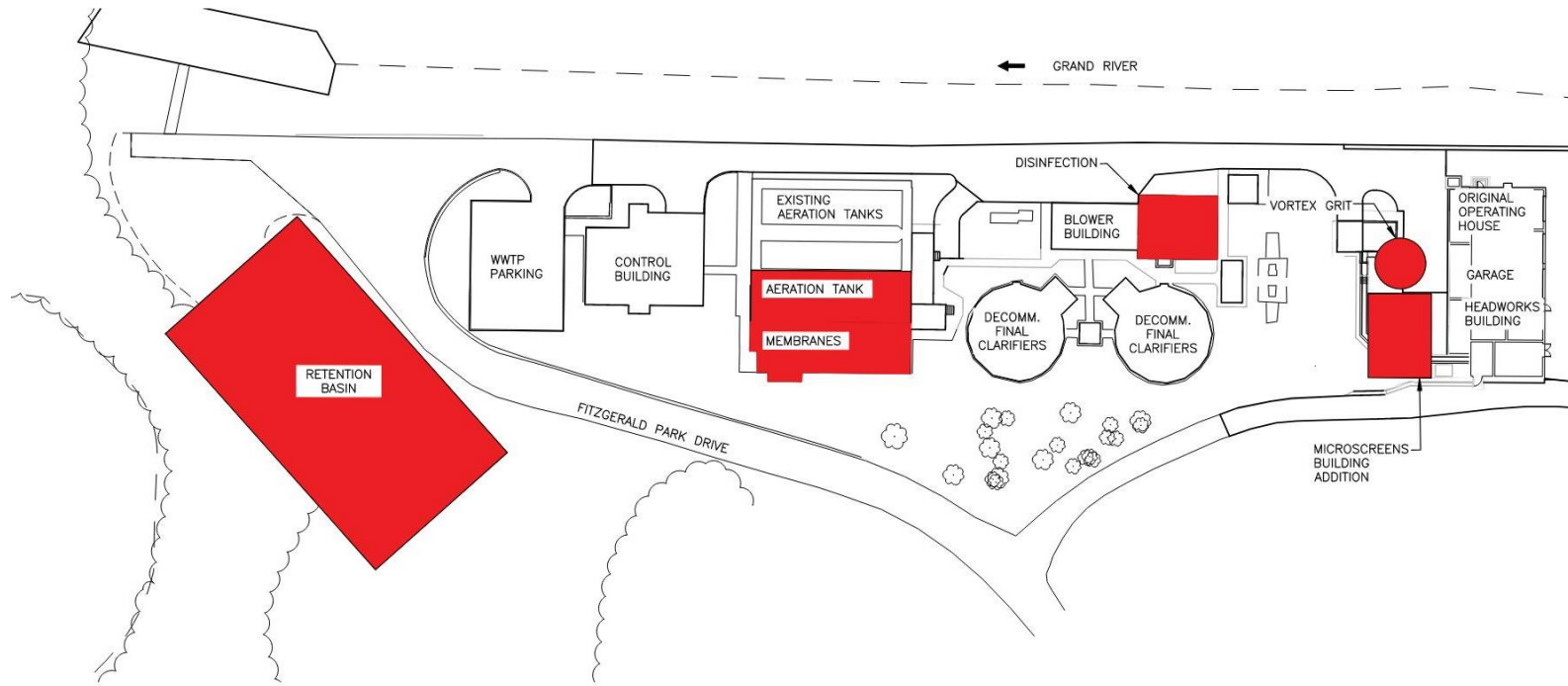
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LEGEND			
	EDGE OF WATER		LIGHT
	SHRUBS		GUY ANCHOR
	DECIDUOUS TREE		UTILITY POLE
	HEDGE EDGE OF WOODS		SIGN
			GRAVEL SURFACE
			PAVED SURFACE
			CURB & GUTTER
			FENCE



SOLIDS STORAGE AREA
 SCALE: 1" = 50'

Alternative 4 – MBR



ALTERNATIVE 4 SITE MAP
 SCALE: 1" = 50'
 NORTH

LEGEND					
	EDGE OF WATER		LIGHT		GRAVEL SURFACE
	SHRUBS		GUY ANCHOR		PAVED SURFACE
	DECIDUOUS TREE		UTILITY POLE		CURB & GUTTER
	HEDGE EDGE OF WOODS		SIGN		FENCE

Sanitary Sewer System Improvements

- WRPS Wet Weather Pumps
- Forcemain from WRPS to EQ Basin at WWTP Site
- Gravity sewer replacement on Green Street from Seminary Street to South Street

	Alternative 2: Conventional Activated Sludge	Alternative 3: Extended Aeration	Alternative 4: MBR
Capital Cost	\$45,991,000	\$47,980,000	\$34,993,000
Annual OM&R Cost	\$897,507	\$1,021,995	\$1,117,049
Salvage Value	\$15,028,800	\$16,800,000	\$10,279,800
Present Worth of 20 Years of OM&R Cost	\$17,042,000	\$19,406,000	\$21,210,000
Present Worth of Salvage Value	\$13,602,009	\$15,205,057	\$9,303,866
20-Year Total Present Worth	\$49,350,991	\$52,180,943	\$46,899,134

Alternative 4 has the lowest capital cost and the lowest 20-year total present worth.

Principal Alternative – Monetary Evaluation

*Additional information available
in Appendix 6 of the Draft
Project Plan.*

Social and Environmental Impacts Evaluation

Social Impacts

- Short term construction related impacts
 - Construction activities managed to maintain access to adjacent park
- 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
- Land use
 - Prefer smaller footprint
- Effluent water quality
 - Improve water quality in Grand River
- Energy and chemical use
- Positive impact to operations and overall sewer system reliability
- No impact to threatened or endangered species

Recommended: Alternative 4 - MBR

- Capital Cost = \$34,993,000
- Finance through SRF
 - 30-year loan – 2.125%
- Costs for Average Sewer User: \$40.78 per month based on 48,834 Annual REU Equivalents
 - \$32.52 per month for debt repayment
 - \$8.26 per month for OM&R

Category	2023 Opinion of Probable Construction Cost
Flow Retention	\$15,333,000
Preliminary Treatment	\$2,104,000
Primary Treatment	\$2,005,000
Biological Treatment	\$9,134,000
Final Clarification	\$280,000
Disinfection	1,515,000
Solids Handling	\$1,681,000
Sanitary Sewer System Improvements	\$2,941,000
Total Capital Cost	\$34,993,000

Next Steps

- **Project Plan**
 - Resolution Adopting a Final Project Plan and Designating an Authorized Project Representative during the May 23rd, 2022 City Council Meeting
 - Submit Final Project Plan by June 1, 2022
- **Develop Milestone Schedule with EGLE project manager**
- **Final Design: June 2022 – December 2022**
- **Part I Application to MFA – Financial Review**
- **Part II Application – SRF program requirements**
- **Bid Project according to Milestone Schedule**
 - Part III Application – Bid information and estimated loan disbursement schedule
- **Construction: May 2023 – January 2026**

Thank You

