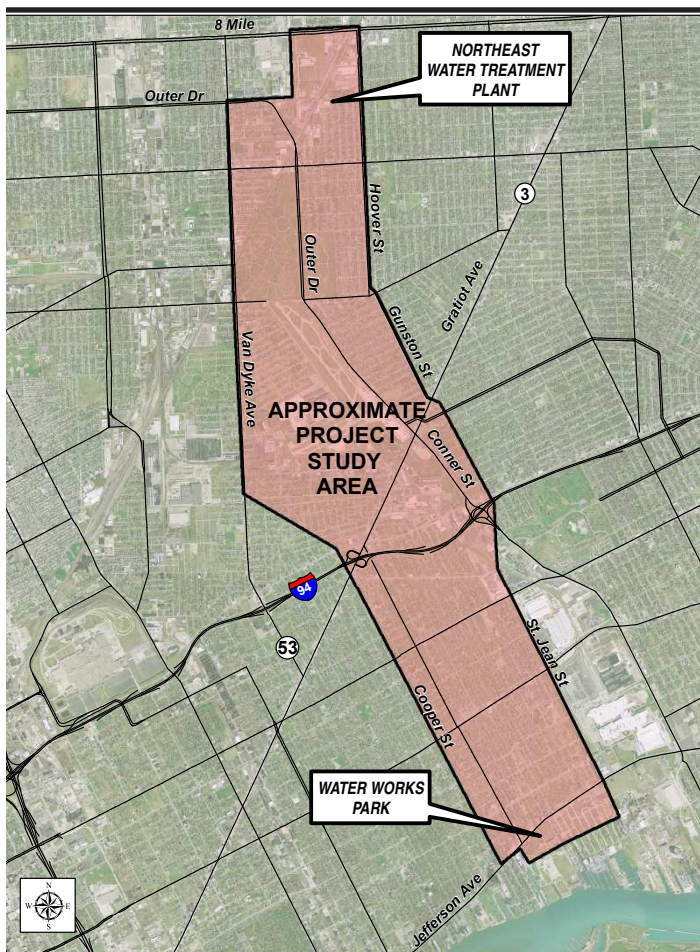


# **GREAT LAKES WATER AUTHORITY**

## **Waterworks Park to Northeast Transmission Main Project**

**Project Plan  
April 11, 2018**

## Waterworks Park to Northeast Transmission Main Project



### Proposed Improvements

Construction of the Waterworks Park to Northeast water transmission main is an integral part of GLWA's Master Plan, and part of a series of interdependent projects to align the treatment capacity with projected system demands while providing system resiliency and redundancy for the City of Detroit and parts of southern Macomb and Oakland counties. The series of projects were evaluated on a life-cycle cost basis and were selected based on their combined ability to meet the regulatory requirements and GLWA's operational goals to reliably provide high quality drinking water.

The recommended plan calls for delivery capacity of 160 million gallons per day (MGD) of finished water from the Waterworks Park Water Treatment Plant to the Northeast Water Treatment Plant and discontinuing water treatment operations and converting the Northeast facility to a booster pump station. The Northeast WTP would need extensive capital improvements to maintain water treatment. The Waterworks Park WTP has a capacity of 240 MGD, but in the plant's current service area the average daily demand is approximately 80 MGD and the peak demand is approximately 130 MGD.

### Summary of Project Need

GLWA owns and operates five (5) water treatment plants and over 800 miles of transmission main. These plants have a design capacity of 1,720 MGD. They are compliant with current regulatory requirements, and produce high quality water. However, there is approximately 700 MGD excess capacity relative to projected water demands during the planning period. Therefore, the 2015 Water Master Plan Update (WMPU) recommended decommissioning treatment at the Northeast WTP as part of a program to align treatment capacity with system demand.

The repurposed Northeast facility will operate in the future as a ground level reservoir and booster pump station that receives treated water primarily from Waterworks Park WTP. Finished water would be delivered to the repurposed Northeast booster pump station from the Waterworks Park WTP through a proposed water main between the two facilities. The design flow rate of the transmission main to the Northeast facility is 160 MGD.



## Potential Alternatives

Four alternatives were considered but three of those would require repairs that are risky and/or costly, with costs ranging in the hundreds of millions of dollars. The selected alternative would convey finished water through a new 81-inch diameter water main from Waterworks Park WTP to the Northeast WTP, which will be repurposed to a booster pump station.

The primary alternatives for the proposed Waterworks Park to Northeast Transmission Main Project considered for implementation by GLWA in the latest Water Master Plan included:

- Alternative 3: New 84-inch plant-plant transmission main, and 36-inch main to Rochester-Imlay
- Alternative 5: New 84-inch plant-plant transmission main, and 36-inch main to Rochester-Romeo
- Alternative 7: Rehabilitate Northeast WTP to 50% capacity, new 36-inch main Rochester-Imlay
- Alternative 8: Rehabilitate Northeast WTP to 50% capacity, new 36-inch main Rochester-Romeo

## Monetary Evaluation – Cost Effectiveness

COST EFFECTIVENESS ANALYSIS FOR ALTERNATIVES 3, 5, 7 AND 8.

Item	Alt. 3	Alt. 5	Alt. 7	Alt. 8
Capital Cost*	\$399,400,000	\$301,703,000	\$413,597,000	\$315,360,000
Interest During Construction	\$54,814,247	\$41,406,166	\$48,774,538	\$37,189,676
Salvage Value (Equip. in 20 years)	\$0	\$0	\$0	\$0
Salvage Value (Pipe/Struct. 20 years)	\$179,300,000	\$133,900,000	\$128,700,000	\$85,300,000
O&M Cost (Annual)**	\$2,500,000	\$2,500,000	\$4,300,000	\$4,300,000
Net Change in O&M Cost (Present Worth)	\$47,000,000	\$47,000,000	\$79,800,000	\$79,800,000
Total Present Worth	\$322,000,000	\$256,300,000	\$413,500,000	\$347,100,000
Equivalent Annual Cost	\$16,959,000	\$13,499,000	\$21,778,000	\$18,281,000

\* Includes construction, engineering (design and construction), plus administrative costs (numbers rounded).

\*\* Estimated average annual change in O&M costs over 20 years.

## Estimated Project Cost

GLWA is applying for a low-interest loan from Michigan's Drinking Water Revolving Fund for a portion of the selected alternative 5. The estimated costs represent only the cost to construct the Waterworks Park to Northeast Transmission Main Project.

ESTIMATED COSTS FOR THE PORTION OF SELECTED ALTERNATIVE 5: Waterworks PARK TO NORTHEAST TRANSMISSION MAIN PROJECT.

Item	Alt. 5
Estimated Construction Cost	\$118,100,000
Engineering Design Consultant Cost	\$14,200,000
GLWA Engineering and Administrative Costs	\$1,400,000
<b>Total</b>	<b>\$133,700,000</b>

\* Based on most recent construction cost estimate.

## Environmental Evaluation

- The proposed improvements will reduce treatment capacity to better align it with projected system water demands.
- Construction is not expected to have lasting adverse effects on the neighborhoods in the project area.
- The project will not detrimentally affect the water and air quality in the project area.
- Implementation of the improvements will also generate construction-related jobs, and local contractors will have an opportunity to bid contract work.

## User Cost Impact

Item	Improvements
Total Cost of Project	\$133,700,000
Annualized Cost of Project (Assuming SRF interest rate of 2.5% over 20 years)	\$8,176,700
Service Area Households (City of Detroit and surrounding communities)	1,136,500
Estimated Household User Cost	+/- \$7.19 / household / year

## Implementation Schedule

Project Activity	Project Milestone
Post Draft DWRF Project Plan and Public Hearing Notice (Start of 30-Notice Period)	March 9, 2018
Public Hearing (32 days after Public Hearing Notice)	April 11, 2018
Submit Project Plan to MDEQ	May 1, 2018
Complete Route Analysis and Preliminary Design	October 1, 2018
Procure Design-Build Construction Contractor	January 1, 2019
Start of Construction	August 13, 2019
Complete Construction	October 30, 2023



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