

WATER MASTER PLAN UPDATE

Board Workshop -- BOWC and GLWA

**CDM
Smith**®



July 8, 2015

Agenda

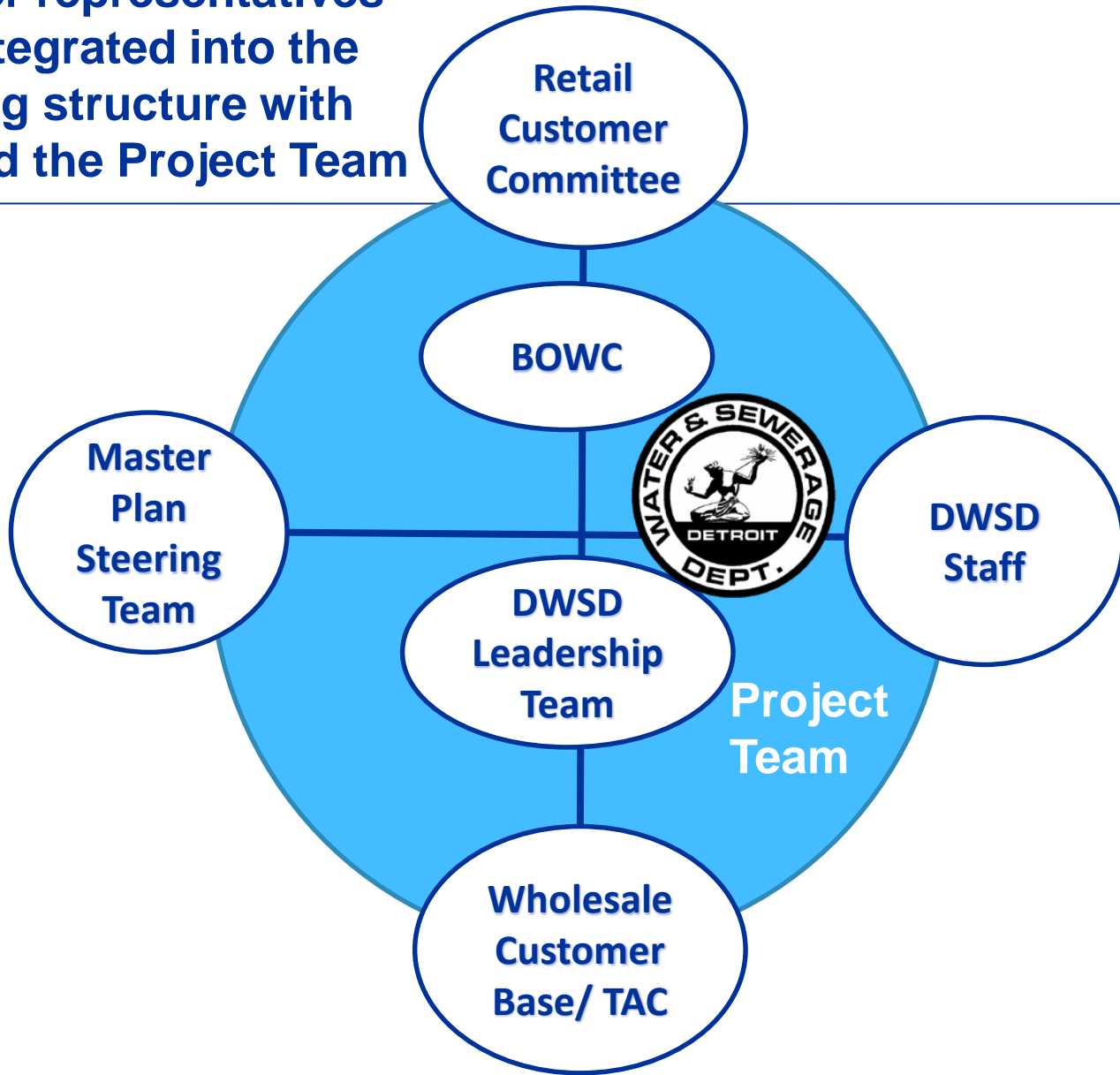
The Water Master Plan Update was prepared in collaboration with customers to assure high quality and reliable water supply. The 20-year plan meets regional financial objectives by right-sizing the system for projected water sales. It also has flexibility for multiple growth scenarios and regulatory change in the future.

- Customer Involvement
- Planning Process
- Financial Benefit
- Five Year Priorities
- Water Sales and Future Scenarios
- Longer Term Goals

Customer involvement and review guided the planning process

- The previous master plan was completed in 2004.
- That plan anticipated service to 6 million people and recommended a \$9 billion CIP through 2050.
- By 2010, DWSD and its customers were concerned that the previous plan was no longer applicable.
- Wholesale customer committee formed in 2011 to develop a scope of work for a new plan and to steer its development.
- City of Detroit retail customer committee formed in 2013 to advise on water planning issues within the City

**Customer representatives
were integrated into the
planning structure with
DWSD and the Project Team**





Customer Communication Plan

Wholesale Customers
(demographics, demands, data, collaboration, etc.)

DWSD/
Project
Team

MPST

In the Cloud @
www.dwsd.org
&
www.dwsdoutreach.org

Retail
Quarterly

Committee
and
Neighborhood

TAC
Quarterly

Agenda
Topics
Quarterly

Analytical
Work
Group

Monthly
Deliverable
Reviews

Rates
Work
Group

Deliverable
Review as
needed

Best
Practices

Survey
Leads

(Master Plan
Steering Team)

The plan was developed in a step-by-step process based on 'business case' principles

- **First Five Year Priorities:** existing situation and near term needs *March 2014*
- **Market Plan:** population projections, opportunities for service area growth, water use trends; multiple scenarios *September 2014*
- **Product Plan:** water quality issues, regulatory compliance, future regulations; number of water plants needed *December 2014*
- **Delivery Plan:** most efficient way to deliver water from the source to the customers *March 2015*
- **Financial Plan:** cost to implement; impact on rates *April 2015*

The plan provides substantial financial benefits

- Right-sizes treatment plants = \$455 million savings
- Reduces booster pumping stations = \$40 million savings
- Enables energy cost reduction of \$4 million per year
- Provides blueprint for DWSD-Retail annual CIP of \$25 million for water main renewal (renewal rate of 1% of system annually)
- Total CIP is \$2.9 billion (20 years) compared to \$9 billion (50 years) in the previous master plan
- CIP was incorporated into “Lease Feasibility Study” prepared by Plante Moran

Projects in the current 5-year CIP initiate master plan update recommendations

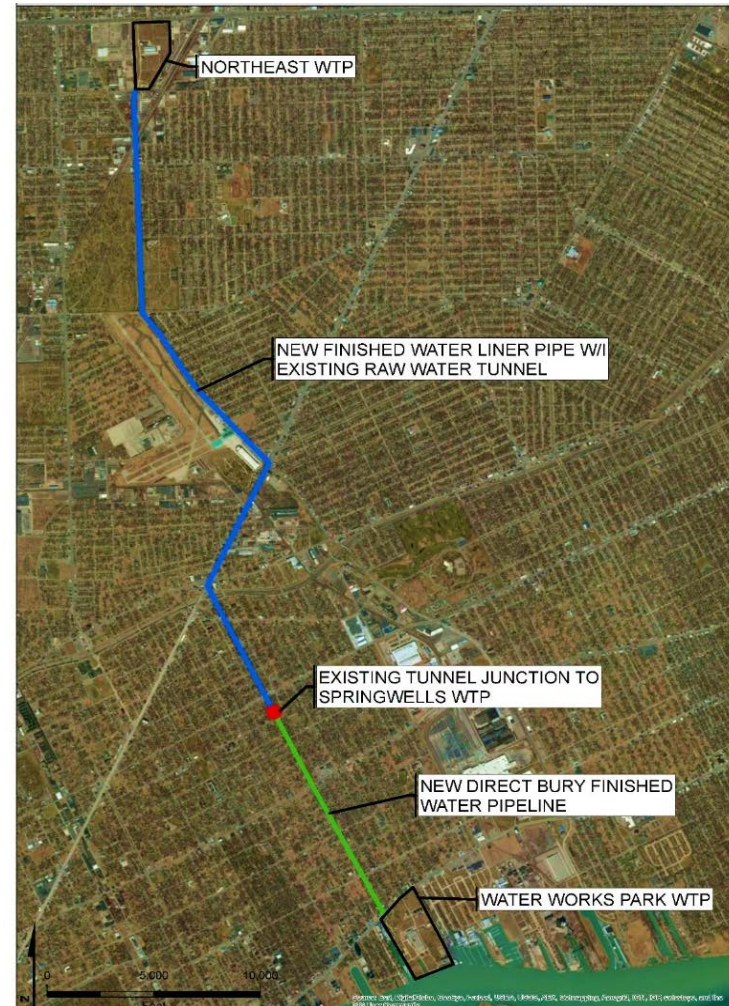
Type	Active Projects	Under Procurement	New Projects
WWP Yard Piping		\$35,000,000	
Garland Main		\$ 2,700,000	\$71,000,000
Detroit Distribution	\$21,000,000	\$12,700,000	\$50,000,000
Detroit Retail Meters			\$20,000,000
Production Meters			\$12,900,000
Intakes / Tunnels	Inspection		\$ 4,000,000

Priorities for the first five years will produce cost savings and increased reliability

- Rehabilitation of plant production meters will improve accuracy of measurement and reduce non revenue water.
- Removing excess equipment from service immediately will reduce maintenance, repair and replacement costs.
- Transmission improvements from Water Works Park and Lake Huron will allow repurposing of the Northeast plant.
- Re-evaluation of Southwest WTP repurposing in 2020 will be based on the most current demand projections.
- A pilot program for new water main technologies in Detroit will reduce costs from over \$300 per foot to \$200 per foot.
- Asset management based CIP planning will maximize service life of equipment and cost-effectiveness of upgrades.

Repurposing of the Northeast plant can be expedited and completed by 2019

- New transmission main along Jefferson and Garland, and in existing tunnel, provides 150 MGD to Northeast high lift station
- Includes priority yard piping upgrade at Water Works Park
- Optimizes Water Works Park high lift station for low demand and high demand
- Inspection: ongoing
- Design: 18 months
- Construction: 30 to 36 months



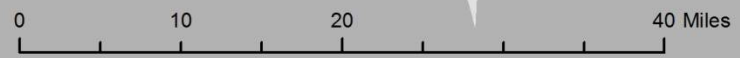
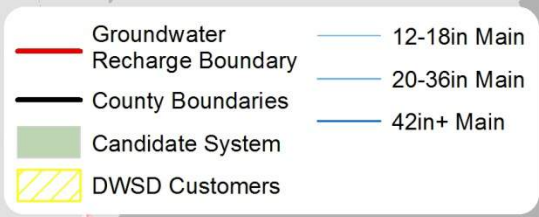
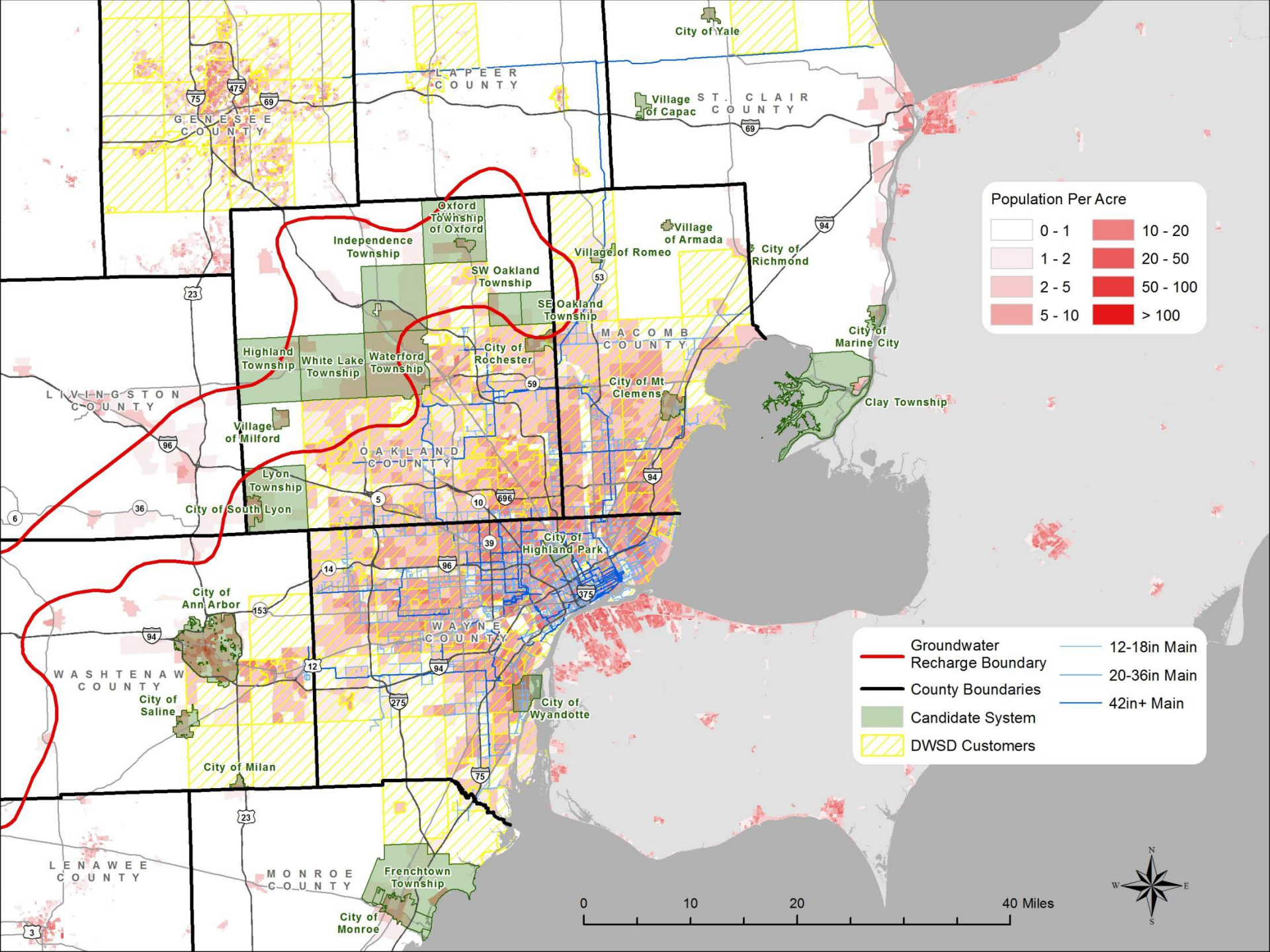
Pilot program for water main renewal in Detroit will provide new construction options

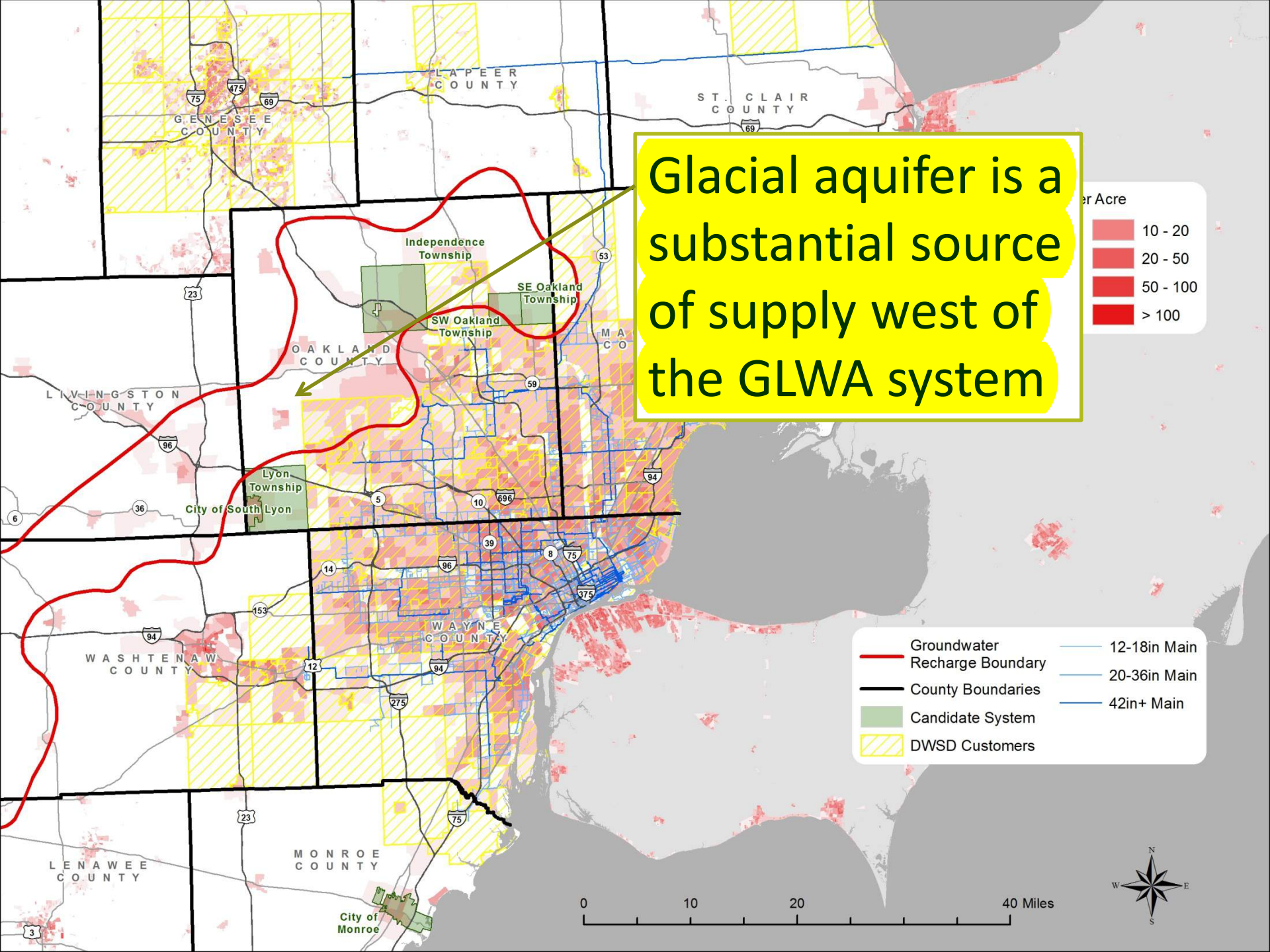
- DWSD has traditionally used open-cut construction and ductile iron pipe
- Variety in development type and density provides opportunity for a new mix of technologies
- Reduce the cost of water distribution mains from over \$300 per foot to \$200 per foot



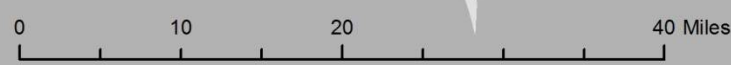
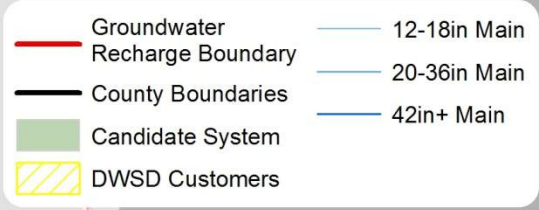
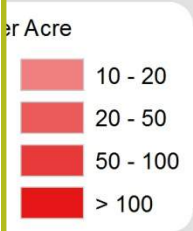
Future growth and marketing scenarios will guide implementation toward long term goals

- The recommended plan provides flexibility to respond to higher than expected, or lower than expected, water sales
- GLWA can market and sell more water: the Market Plan identified potential future customers to expand the service area.
- Candidate future customers based on projected population growth, existing water supply quality and quantity
- New types of water service were considered:
 - Seasonal or emergency water service
 - Raw water supply
 - Low pressure water service (new customer provides booster station)



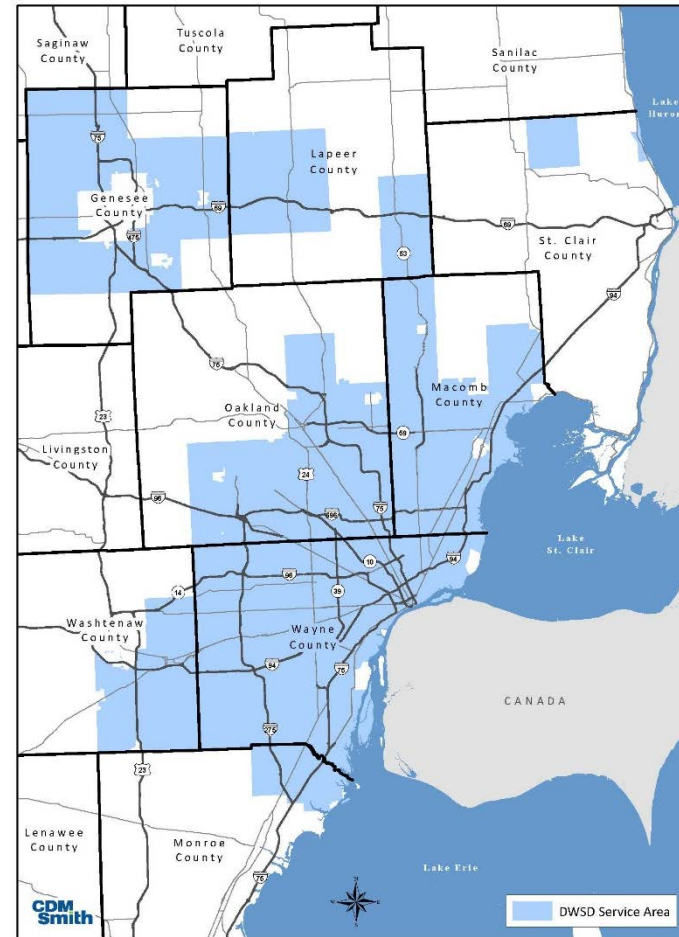


Glacial aquifer is a substantial source of supply west of the GLWA system



The plan provides flexibility for future service area and water sales scenarios

- Growth projections from existing customers were vetted with independent population projections
- Assumption is that Genesee County will exit the system on June 30, 2017
- 1,040 MGD system maximum day demand
- If growth occurs, use cost-effective expansion capability at Lake Huron, Water Works Park and other plants

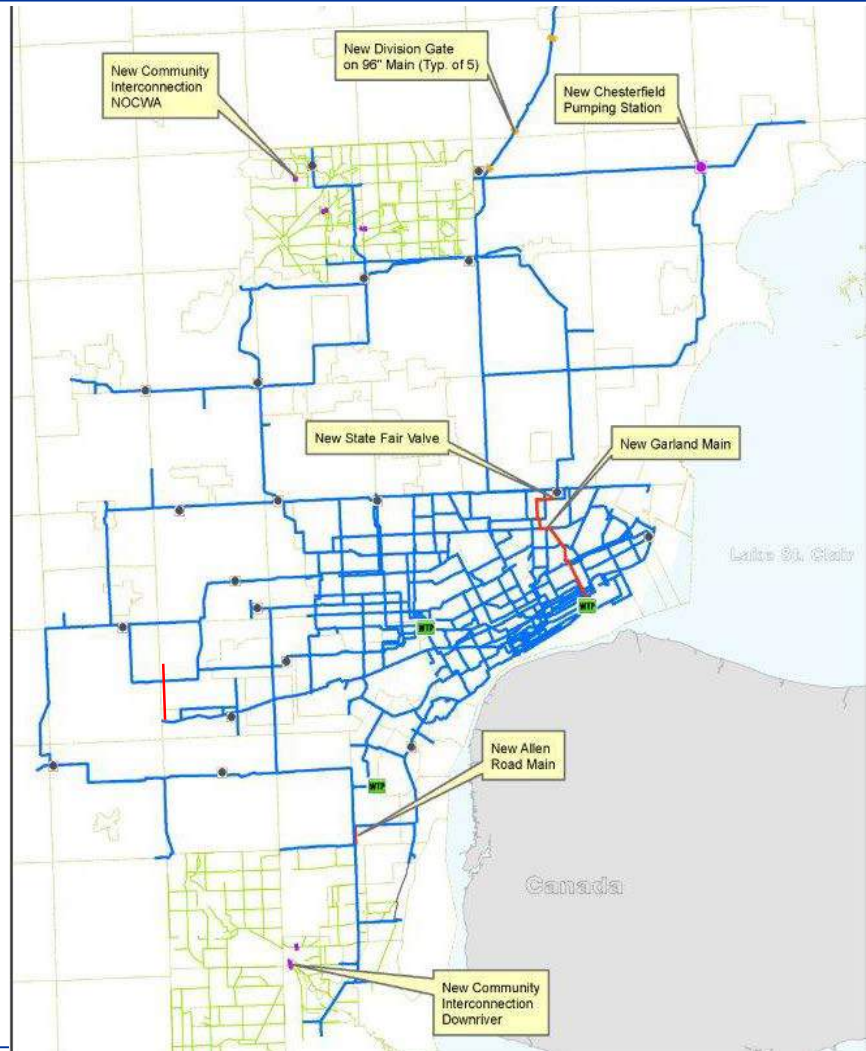


Beyond 2020, continue initiatives in efficiency, reliability, and managing cost of compliance

- Reduce nonrevenue water to 15% by 2035
- Energy monitoring and management program
- Source water protection and emergency response program
- Asset management driven CIP
 - Condition Assessment
 - Retire/Replace/Upgrade Equipment
- Convert Lake Huron to direct filtration process
- Booster pump station decommissioning/optimization
- Wholesale metering for Dearborn and Detroit
- Continue proactive water quality monitoring programs and studies to manage long term cost of regulatory compliance

New mains and interconnections will improve reliability and emergency response

- Transmission system improvements increase redundancy of supply to each operating zone
- Use of inter-customer connections is low cost solution to certain redundancy needs
- Maintain 3 water intakes
- Provides near average day demand with any one plant out of service



Water Master Plan Update Proposed Capital Improvements FY2016 to FY2035 (\$ 1,000)

	GLWA	DWSD-Retail	Total
Treatment	\$887,000		
Buildings and Site	\$330,000		
Power Systems	\$105,000		
High Lift Pumping	\$225,000		
Booster Pumping	\$300,000		
Reservoirs	\$ 82,000		
Transmission	\$460,000		
Distribution		\$ 476,000	
Metering	\$ 50,000	\$ 20,000	
Total	\$2,439,000	\$ 496,000	\$ 2,935,000

Summary

- *The Water Master Plan Update was prepared in collaboration with wholesale and retail customers.*
- *The 20-year plan provides a detailed program of capital improvements and operating recommendations to maintain the region's high quality and reliable water supply.*
- *The plan right-sizes the system for projected water sales.*
- *It also has flexibility for expanding water sales, multiple growth scenarios and regulatory change in the future.*
- *The first five years of the plan were incorporated into the "Lease Feasibility Study" prepared by Plante Moran.*