WATER BUREAU
SPECIAL MEETING
555 Main Street, Hartford
Tuesday, June 14, 2023

Present: Commissioners Andrew Adil, Peter Gardow, Jean Holloway, Dominic Pane and Alvin Taylor (5)

Remote Attendance: Commissioner Clifford Avery Buell (1)

Absent: Commissioners Kyle Anderson, Dimple Desai, Diane Lewis, Jon Petoskey, Pasquale Salemi, Michael Carrier and District Chairman William DiBella (7)

Also Present:
Commissioner Richard Bush
Commissioner Joan Gentile (Remote Attendance)
Scott W. Jellison, Chief Executive Officer
John S. Mirtle, District Clerk
Christopher Levesque, Chief Operating Officer
Kelly Shane, Chief Administrative Officer (Remote Attendance)
Jamie Harlow, Director of Human Resources (Remote Attendance)
Susan Negrelli, Director of Engineering
David Rutty, Director of Operations
Robert Schwarm, Director of Information Systems (Remote Attendance)
Tom Tyler, Director of Facilities
Jessica Coelho, Project Manager
David Banker, Senior Project Manager
Jason Waterbury, Manager of Engineering Services
Jim Randazzo, Manager of Water Treatment and Supply (Remote Attendance)
Ray Baral, Assistant Manager of Water Treatment
Chris Parisan, Water Treatment Plant Superintendent
Trevor Roberts, Water Treatment Plant Operations Supervisor
Carrie Blardo, Assistant to the Chief Executive Officer (Remote Attendance)
Julie Price, Executive Assistant
David Baker, IT Consultant (Remote Attendance)
Dylan Pecego, IT Consultant (Remote Attendance)
Joseph Szerejko, Independent Consumer Advocate (Remote Attendance)

CALL TO ORDER

The meeting was called to order by Chairman Pane at 4:07 PM.

NO QUORUM PRESENT

District Clerk John S. Mirtle called the roll and declared that a quorum of the Water Bureau was not present.

PUBLIC COMMENTS RELATIVE TO AGENDA ITEMS

No one from the public appeared to be heard.

APPROVAL OF MEETING MINUTES

The approval of meeting minutes was postponed due to lack of quorum.

Commissioner Holloway entered the meeting at 4:08 PM.

RAW WATER MASTER PLAN

Director of Engineering Susan Negrelli introduced the Raw Water Master Plan discussion which was led by Project Manager Jessica Coelho. The presentation outlined the work over the last six years to prepare the raw water master plan and gave the Water Bureau recommendations on how to move forward with the plan.

Agenda

- Master Planning Project
  - Objective
  - Team
  - Timeline
  - Overview & History of the MDC Raw Water System
  - Overview & History of MDC Water Treatment Facilities
- System Priorities & Limitations
- Transmission Main Alternatives
- Treatment Plant Alternatives
- Condition Assessments
- Final Evaluation of Alternatives
- Recommendation:
  - Implementation Plan

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Objective

To efficiently plan and prioritize the next 30+ years of capital spending based on raw water transmission, treatment, and distribution systems needs and our long-term goals.

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Master Planning Project

Team

- Engineering & Planning
- Water Treatment & Supply
- AECOM (consultant)

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Master Planning Project

2017-2018
-Hired Consultant
-Workshops
-Site Visits
-Initial Plan

2019
Condition Assessments

2020-2021
-AECOM Presentations
-AECOM Revised Reports

2022-2023
-Risk Matrix
-Project Phasing
-Financial Analyses
-Final Alternative Selection

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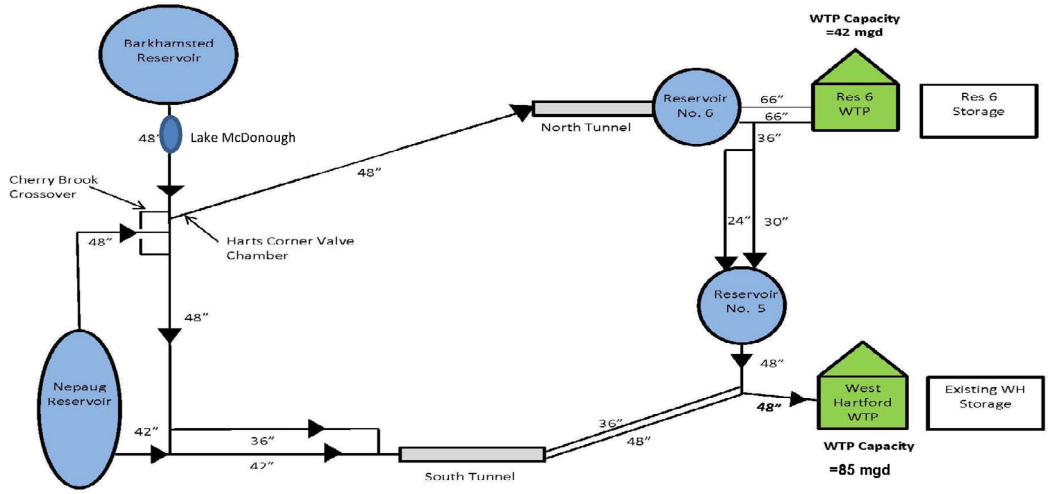
MDC Raw Water System Overview



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Nepaug 1 Pipeline (1913)

7

Barkhamsted-Nepaug Pipeline (1940)

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South Talcott Mountain Conduit (1913)

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West Hartford Water Treatment Plant
Filter Beds 1-8 (1917)

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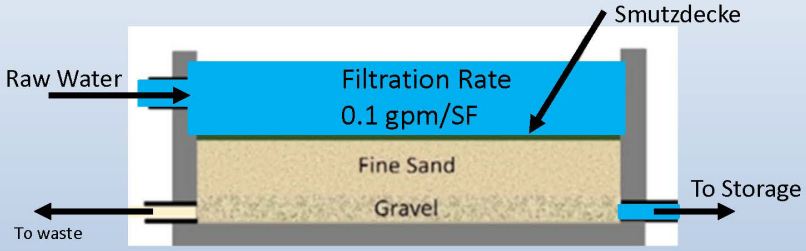
Master Planning Project

Treatment Plants - Existing Conditions

WH WTP - SLOW SAND FILTERS



Actual Capacity: 74 MGD

Harrow a filter every 6-8 wks

Recondition a filter every 11 yrs

Downtime 30-60 days

Recent Max Production: 62.5 MGD

Typical Usage: 36 MGD, about 70% of MDC consumption

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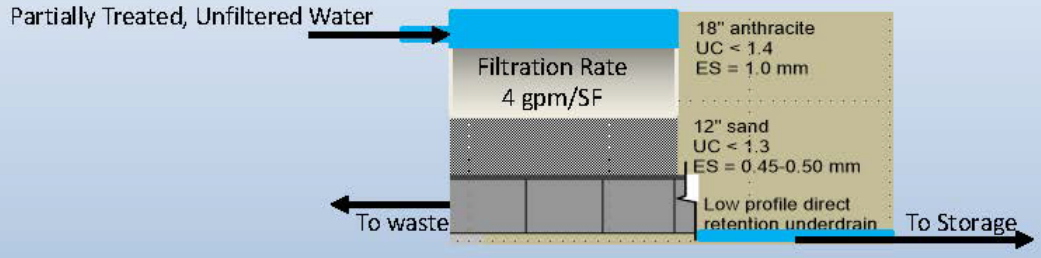
Master Planning Project

Treatment Plants - Existing Conditions

RES6 WTP - RAPID FILTRATION



Design Capacity: 42 MGD

Backwash filter every 72-96 hours (seasonal)

Downtime 15-30 minutes

Recent Max Production: 30 MGD

Typical Usage: 8-15 MGD, about 30% of MDC consumption

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System Priorities & Limitations

Transmission - Pipelines under bodies of water

- Farmington River Crossings (Nepaug Upper & Lower, Cherry Brook Upper & Lower)
- Lake McDonough Crossing

*Expensive and/or disruptive failures

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Farmington River Crossing

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System Priorities & Limitations

Treatment – West Hartford WTP

- Requires large footprint
- Requires extensive labor for cleaning and harrowing beds
- Future Regulatory compliance
  - Treatment Process Limitations (organics → DBPs, Chlorine Residuals)
  - Filter washwater discharge
  - 6 & 9 MG Basins at West Hartford WTP

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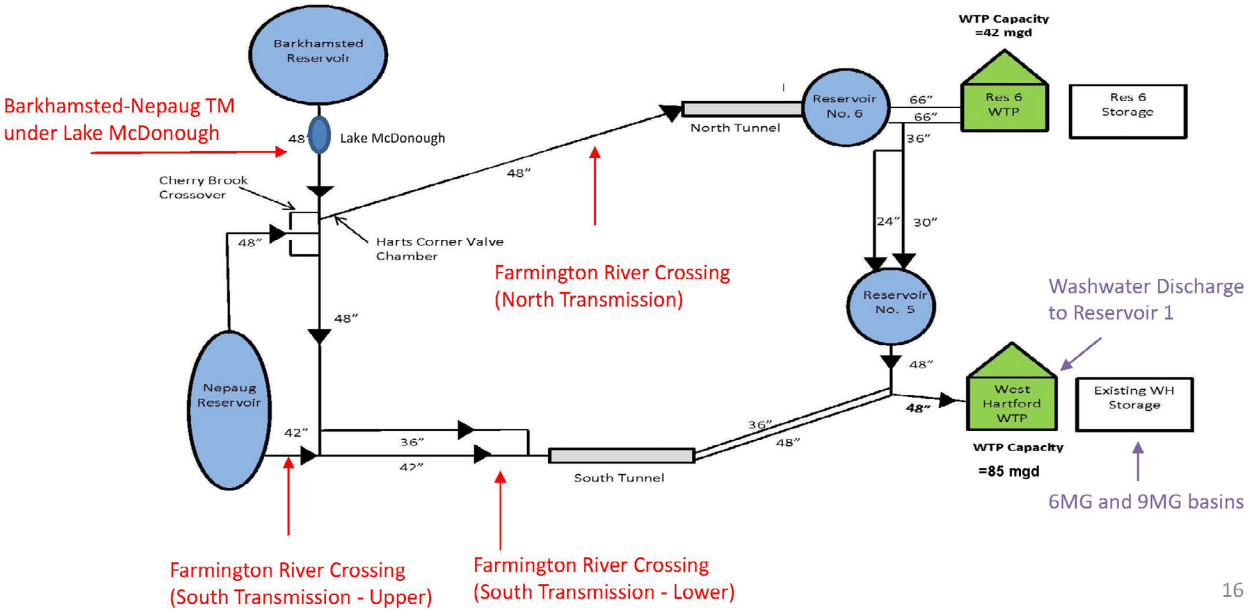
MDC Raw Water System



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Transmission Decisions:

1. No Action (Maintain Status Quo)
2. Rehabilitate
3. Replace
4. Abandon

Treatment Decisions:

1. No Action (Maintain Status Quo)
2. Rehabilitate
3. Replace on same site
4. Replace in new location

INITIAL EVALUATION

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Transmission Main Alternatives

1) **No Action** (Maintain Status Quo)
   Repair leaks and breaks as needed
   *N/A if building a plant in Reservoir 6 – capacity restraints
2) **Rehabilitate** via trenchless technology
3) **Replace** all transmission mains
4) **Abandon** transmission mains in place

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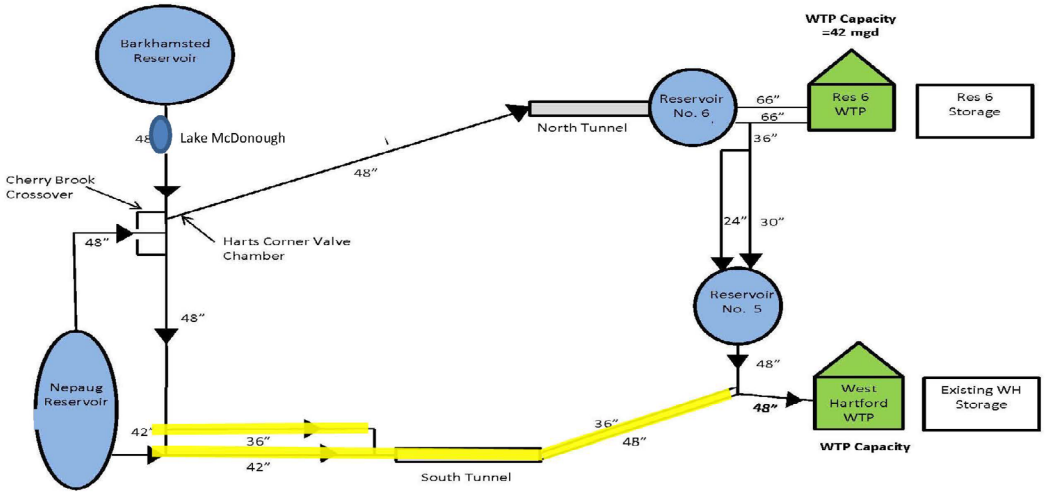
MDC Raw Water System



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Treatment Plant Alternatives

1) **No Action** (Maintain Status Quo)
2) **Rehabilitate** (Structurally) to Extend Useful Life
   Technology stays the same
3) **Replace** – Build a new plant on West Hartford site
4) **Replace** – Build a new plant at Reservoir 6 site
   Treatment solely in the north
   → Transmission requires capacity upgrades
   → Transmission requires pump station

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		A = Upgrades All* Transmission		B = Abandon Southern Transmission
Rehab WHF Plant	1A	• Structural Upgrades to WH Water Treatment Plant • Upgrade All Existing Transmission	1B	• Structural Upgrades to WH Water Treatment Plant • New Northern Transmission • Abandon Southern Transmission
New Plant Res 6	2A	• New Water Treatment Plant at Res 6 • Abandon WH Water Treatment Plant • New Raw Water Pump Station • New Treated Water Pump Station • Upgrade All Existing Transmission	2B	• New Water Treatment Plant at Res 6 • Abandon WH Water Treatment Plant • New Raw Water Pump Station • New Northern Transmission Mains • Abandon Southern Transmission
New Plant WH	3A	• Replace WH Water Treatment Plant • Upgrade All Existing Transmission	3B	• Replace WH Water Treatment Plant • New Northern Transmission Mains • Abandon Southern Transmission

*For comparison purposes. Later slides will evaluate more transmission options

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Next Steps

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Condition Assessments

- Transmission Mains
  - Barkhamsted-Nepaug Pipeline
  - Lake McDonough
- South Talcott Mountain Tunnel and Conduits
- West Hartford Water Treatment Plant

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Condition Assessments
Barkhamsted-Nepaug Pipeline

- Visual Inspection
- Ultrasonic Thickness Testing
  - Underground piping
  - Accessible pipes
- Interior Pipe Inspection

Photo: Exposed Dresser Coupling

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Condition Assessments
Barkhamsted-Nepaug Pipeline

Photo: Steel Mains within Saville Dam Gatehouse

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Condition Assessments

Barkhamsted-Nepaug Pipeline

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Condition Assessments

Barkhamsted-Nepaug Pipeline

Figure 19: Image of joint at Station 03+41 (left); Image of transition at Station 12+17 (right)

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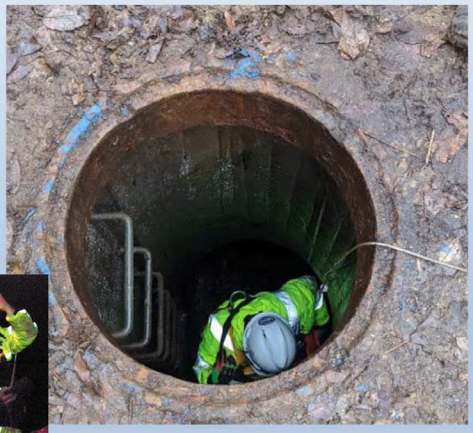
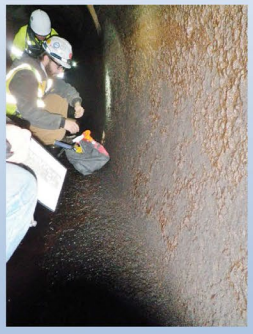
Condition Assessments
South Talcott Mountain Tunnel & Conduits

Manned Inspection

- Visual inspections and concrete core testing





Photos: Sampling and Inspecting within Tunnel

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Condition Assessments
WH Water Treatment Plant

- Concrete cores
- Visual inspections
  - pipe gallery
  - slow sand filter beds
- Ultrasonic Thickness Testing
  - Accessible pipes within gallery
  - Underground piping

Photo: Corroded Pipe

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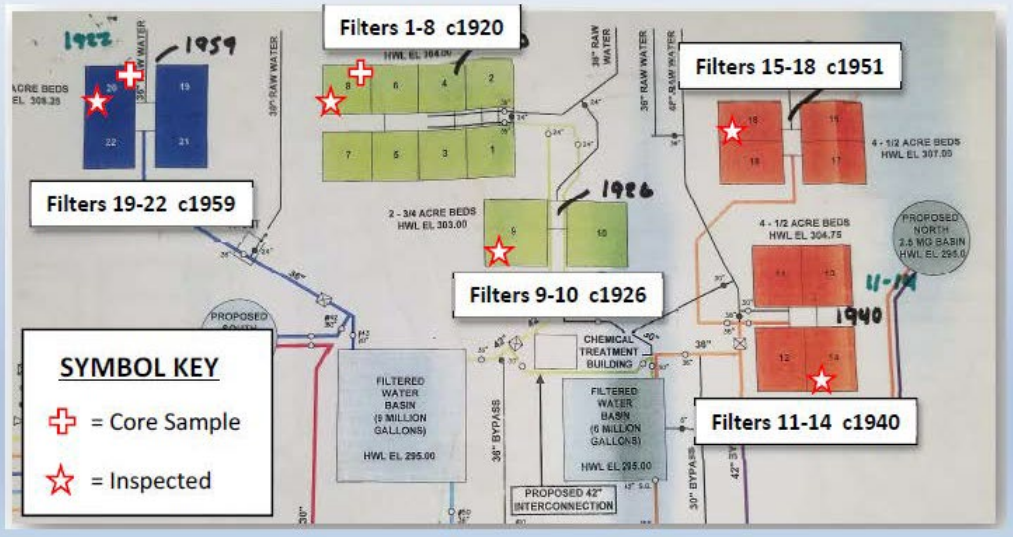
Condition Assessments
WH Water Treatment Plant



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Condition Assessments
WH Filters Water Treatment Plant

Photos: Test Pit Location Map; Exposed Yard Piping

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Condition Assessment Conclusions

Transmission Mains

Photo: Damaged Exterior Coating

Defects Discovered
- Exterior coating on dam piping
- Known aging appurtenances

Recommended Improvements
- Remove & replace coating (abatement involved)
- Continued assessments
- Appurtenance replacements/modifications

Extend Useful Life 20-30 Years: ± $2.5 Million

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Condition Assessment Conclusions

Tunnel & Conduits

Defects Discovered
- Damaged overflow weir deck
- Minor root intrusion

Photo: Rotted Wooden Protective Deck at Weir

Recommended Improvements
- Repair overflow weir deck
- Monitor & Assess

Extend Useful Life 20-30 Years : ± $200,000

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Condition Assessment Conclusions

West Hartford Water Treatment Plant

Defects Discovered
- –Treatment process for filter wash-water
- –Pipe gallery fixtures (corroded and tuberculated), aging valves, non-compliant tanks and aging filter beds

Recommended Improvements
- –New treatment process
- –Replacement/repairs
- –Continued assessments

Photos: Baffle deterioration

Extend Useful Life 20-30 Years : ± $90 Million

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Final Evaluation - Priority Projects

- Design & Construct 5MG tank at WH WTP
- Reservoir 6 WTP Upgrades & Maintenance
- Design & Construct New and/or Redundant Pipelines
  - Farmington River Crossing - Upper
  - Elizabeth Park Transmission Main within the distribution system
- Lake McDonough By-pass System
- Transmission Appurtenances
- New Water Treatment Facility
  - Preliminary Study & Pilot Design

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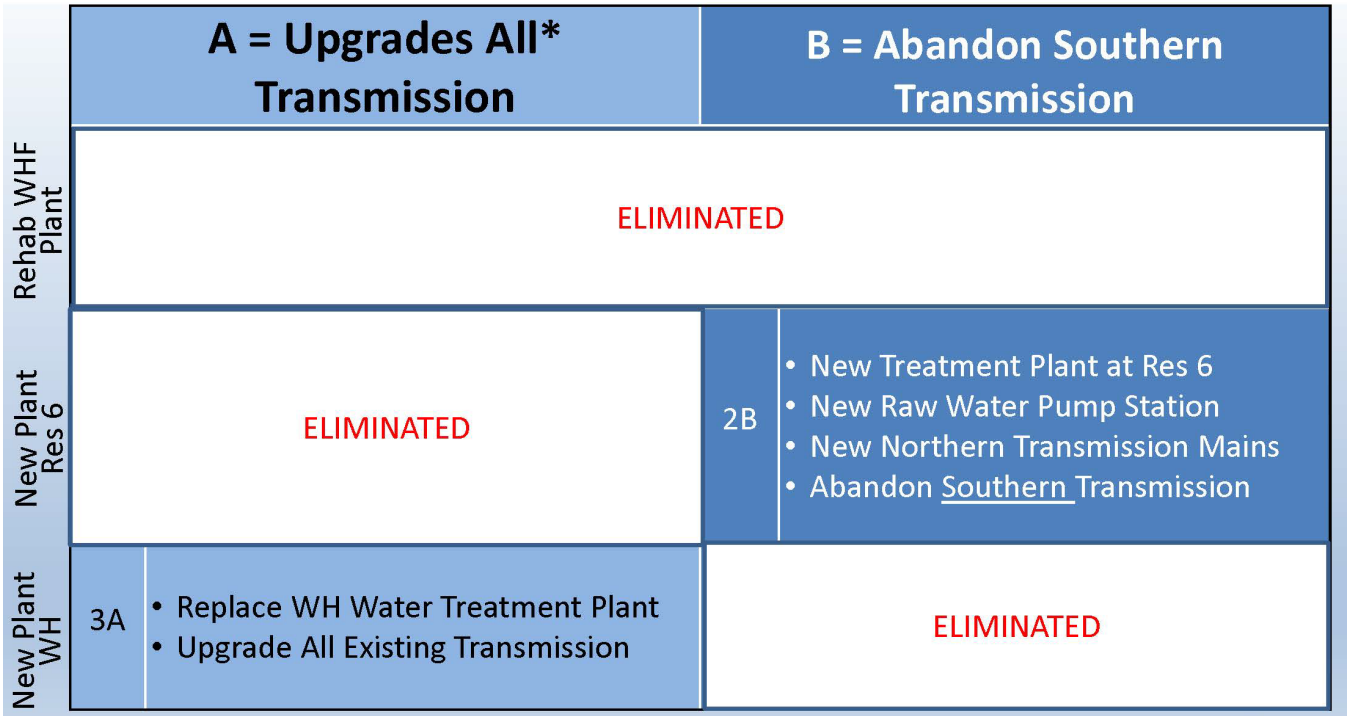

Final Evaluation

Option 1 (2B)	Option 2 (3A)
Install a new water treatment plant at **Reservoir 6 site**	Replace the treatment plant at **West Hartford site**
Abandon Southern Transmission Mains	Upgrade Southern Transmission Mains
Install new Transmission Mains w/ increased capacity to the north	Upgrade remaining Transmission Mains
Install New Pump Station & Force Mains	

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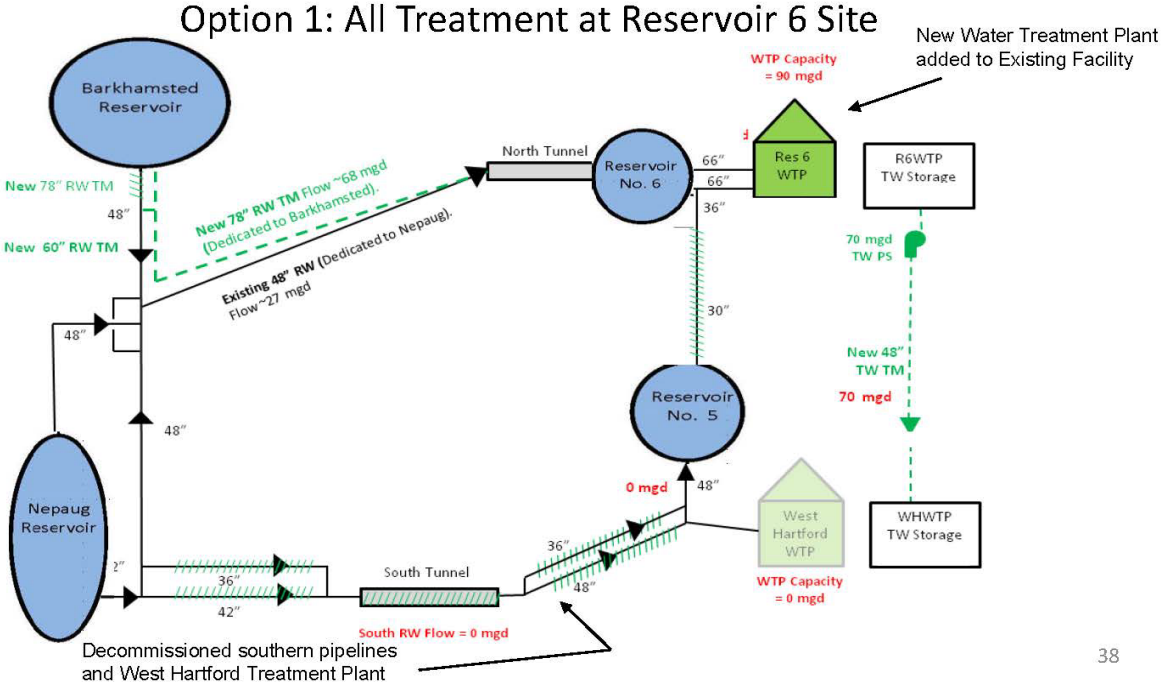
Alternative Evaluation

Option 1: All Treatment at Reservoir 6 Site



Alternative Evaluation

Option 1: All Treatment at Reservoir 6 Site

Treatment Upgrades

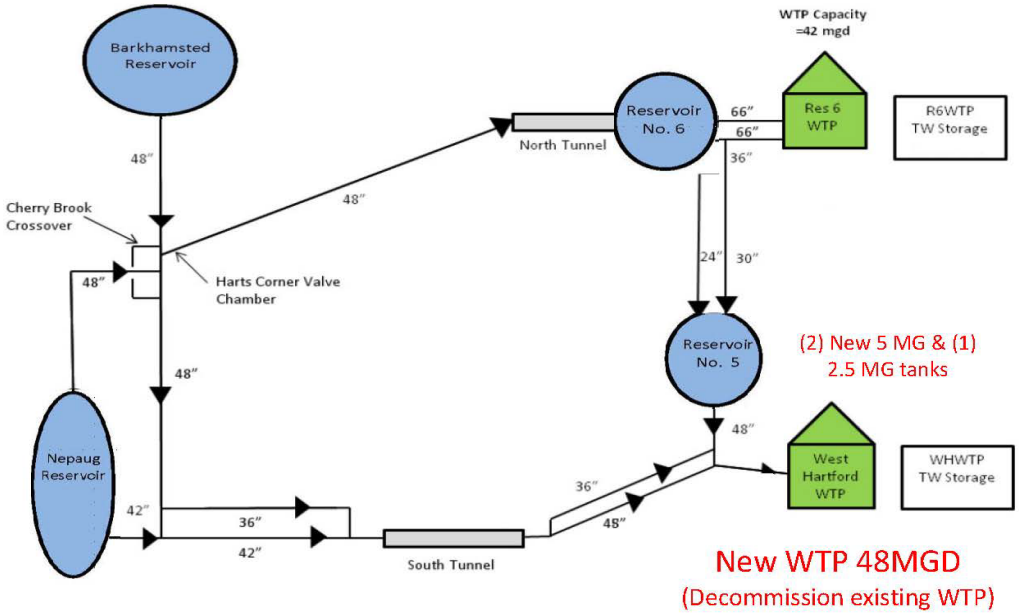
- New 48 MGD plant (@ Res6)
  - (2) 1.45 MG chlorine contact storage tanks
  - Backwash pump station
  - Electrical and chemical buildings
  - DAF sludge holding tank
  - Spent wash water equalization tank and pump station
- WH WTP Improvements:
  - 2.5 MG tank
  - (2) 5 MG tanks
  - Demolish slow sand filters, buildings, & piping

Transmission Upgrades

- New Transmission Main Installations:
  - 78-in Barkhamsted to Lake
  - 60-in to Harts Corner
  - 78-in to North Talcott Mountain Tunnel
- New Treated Water Pump Station
  - 4 turbine pumps (1 standby) 900 HP 23.2MGD @160' TDH variable speed drive
- New 48-in force main from Res6 WTP to WH storage
- Abandon Southern Transmission

Alternative Evaluation

Option 2: Treatment at both WHF and Reservoir 6



Alternative Evaluation

Option 2: Treatment at both WH and Reservoir 6

Treatment Upgrades

- New 48 MGD plant (@ WH)
  - 2 (5) MG tank
  - (3) residual lagoons
  - Backwash pump station
  - Electrical and chemical buildings
  - Decant/recycle pump station
  - 2.5 MG tank
  - (2) spent wash water ponds
  - Demolish filters

Transmission Upgrades

- New Transmission Main Installations:
  - 36-in & 48 in Supply Lines
  - River Crossings
  - 42-in Nepaug 3
  - 48-in Barkhamsted-Nepaug
  - 48-in Cherry Brook
  - 36-in Cherry Brook crossover
  - 48-in Collinsville Bypass

As-needed Upgrades

Alternative Evaluation

Reservoir 6 Existing Water Treatment Facility
Recommended Upgrades

- Underdrain Replacement
- Main filter building generator & HVAC
- Decant building valve replacement
- Flocculator & Sluice gate replacements
- Intake house sluice gate replacement
- Raw Water Vault butterfly valve replacement
- Misc. yard piping rehab

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Treatment Alternative Locations

Option 1: Reservoir 6 WTP Site	Option 2: West Hartford WTP Site
Required before WTP operational • increased capacity • pump station	N/A – changes to transmission layout not required
New plant by Year 2046	New plant by Year 2036
Centralized treatment location	Multiple treatment locations

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Cost Comparison
Priority & Required Projects

Option 1 Reservoir 6 WTP Site		Option 2 West Hartford WTP Site	
Priority Projects (Years 0-6)	$47M	Priority Projects (Years 0-6)	$47M
Required Projects (Years 7-28) Plant & Tanks Remaining River Crossings Interim WH WTP Upgrades Increased Transmission Capacity *Referendum up to $600M*	$660M	Required Projects (Year 7-18) Plant & Tanks Remaining River Crossings *Referendum up to $200M*	$264M
Subtotal: Required Projects	$707M	Subtotal: Required Projects	$311M

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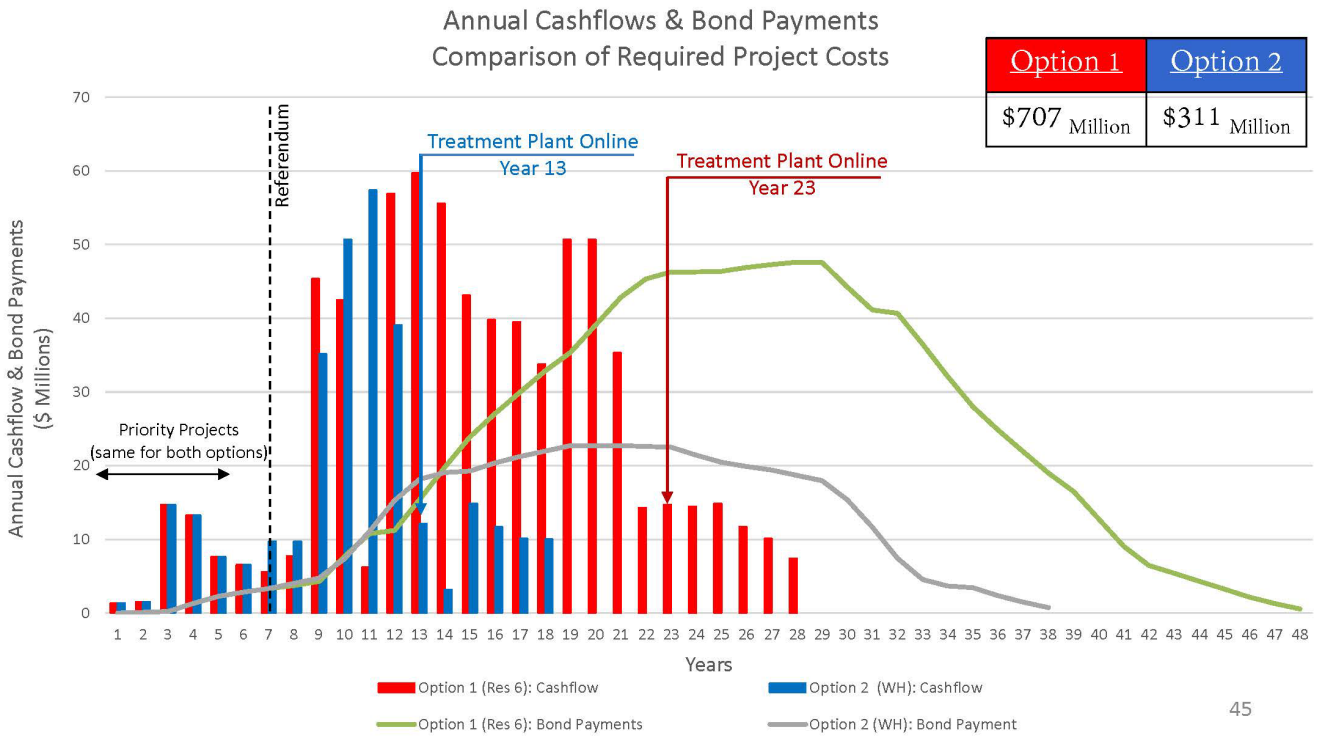

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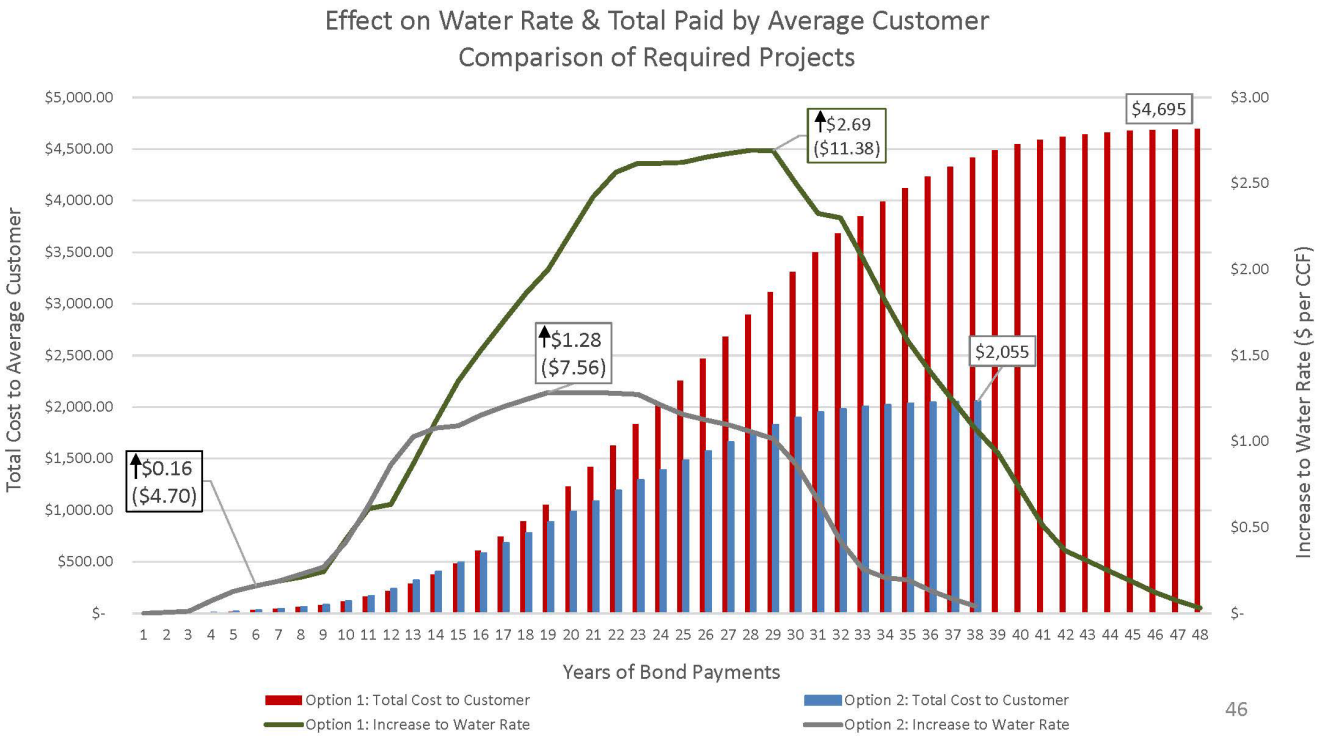

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Cost Comparison

Required & Priority Projects

Plus Condition-Dependent Projects

Option 1 Reservoir 6 WTP Site		Option 2 West Hartford WTP Site	
Subtotal: Required Projects	$707M	Subtotal: Required Projects	$311M
Condition-Dependent Transmission Upgrades (Years 29-35)	$0-233M	Condition-Dependent Transmission Upgrades (Years 19-30)	$0-336
Maximum Total: All Projects	Up to $940M	Maximum Total: All Projects	Up to $647M

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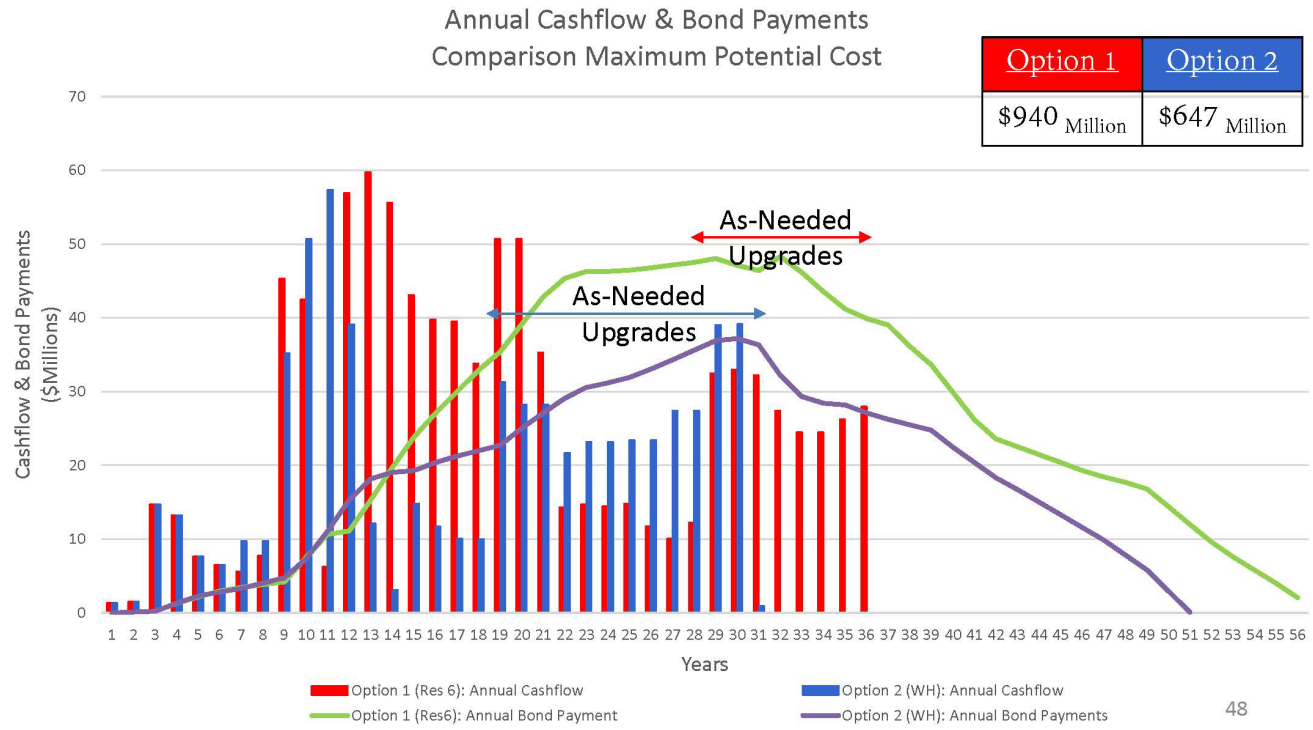
Annual Cashflow & Bond Payments
Comparison Maximum Potential Cost
Option 1
$940 Million
Option 2
$647 Million
As-Needed Upgrades
As-Needed Upgrades
Cashflow & Bond Payments ($Millions)
Years
Option 1 (Res 6): Annual Cashflow
Option 1 (Res6): Annual Bond Payment
Option 2 (WH): Annual Cashflow
Option 2 (WH): Annual Bond Payments

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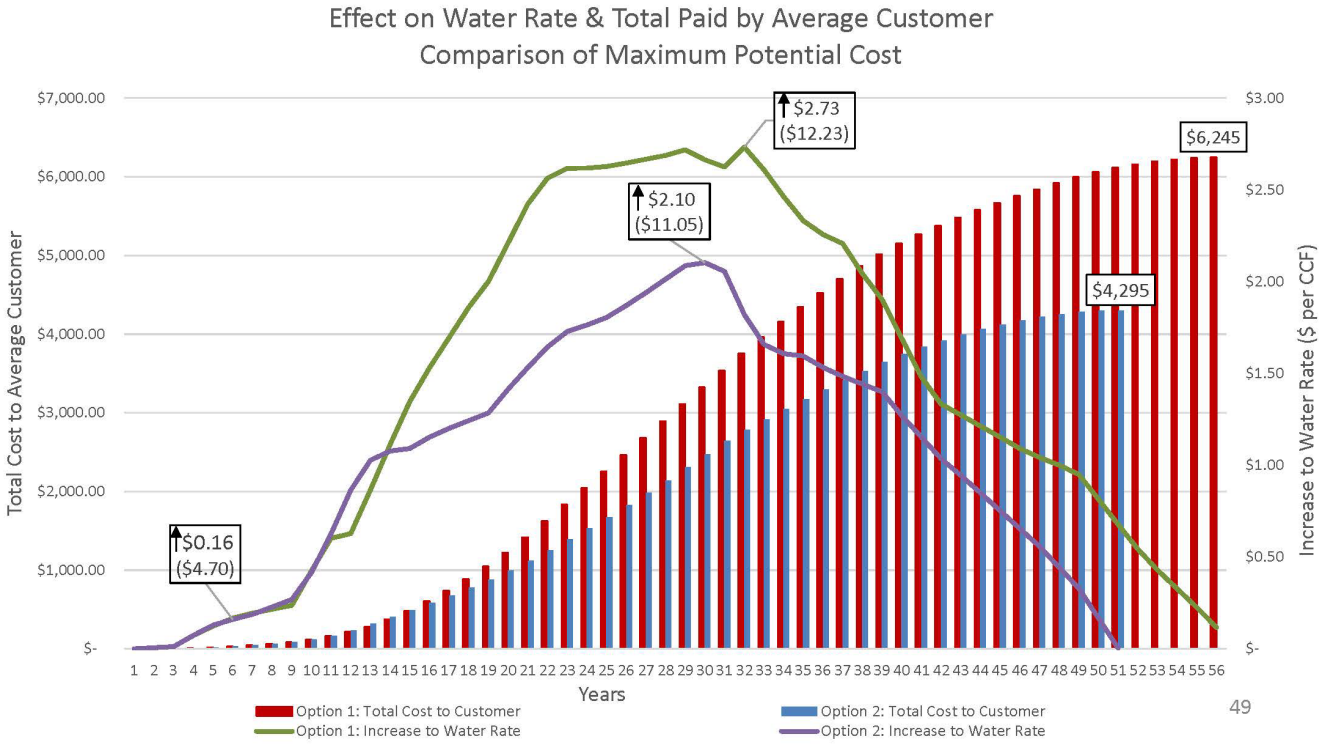
Effect on Water Rate & Total Paid by Average Customer
Comparison of Maximum Potential Cost
$0.16 ($4.70)
$2.10 ($11.05)
$2.73 ($12.23)
$4,295
$6,245
Total Cost to Average Customer
Increase to Water Rate ($ per CCF)
Years
Option 1: Total Cost to Customer
Option 1: Increase to Water Rate
Option 2: Total Cost to Customer
Option 2: Increase to Water Rate

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Annual Operating Costs

Plant	Existing Operations	Option 1	Option 2
West Hartford WTP			
Energy, Labor, Chemicals, Equipment	$3.0M	<$0.5M	$2.8M
Reservoir 6 WTP			
Energy, Labor, Chemicals, Equipment	$1.5M	$5.3M	$1.7M
Total	$4.5M	$5.8M	$4.5M

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Recommendation

Install a new Water Treatment Plant in **West Hartford**.

- ✓ Lower cost
- ✓ Flexibility of schedule
- ✓ Address priorities sooner

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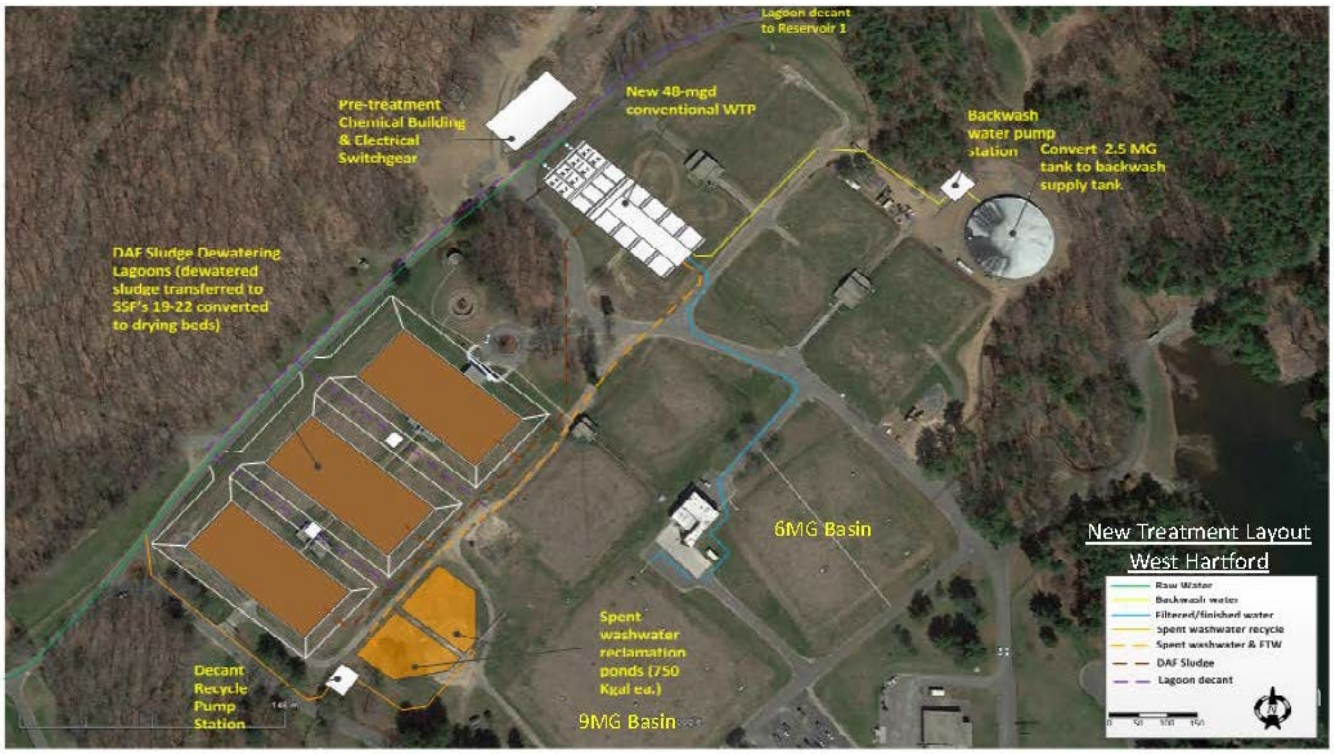

Implementation Plan

Phase 1: 2023-2029

$47M

Project	Year
Design & Construct 5MG tank at WH WTP	2023-2025
Reservoir 6 WTP Upgrades & Maintenance	2023-2024
Design & Construct "Upper" River Transmission Main X-ing	2024-2026
Design & Construct Lake McDonough By-pass	2024-2026
Design & Construct Elizabeth Park Transmission Main	2025-2027
Transmission Appurtenances	2025-2027
Referendum	*2028*
New Water Treatment Facility (Preliminary Design)	2024-2029

Implementation Plan

Phase 2: 2030-2043

$264M

Project	Year
Construct New Treatment Plant & Abandon ex.	2029-2035
Design & Construct Supply Lines	2031-2034
Design & Construct Storage Tanks	2035-2038
Design & Construct "Lower" River Crossing	2036-2040
Reservoir 6 WTP Upgrades	2035-2040
Planning – Transmission Mains*	2041-2043

*35 miles of Transmission Mains remaining after river crossings are built

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Recommended Plan

Future Phases: 20+ Years

Remaining 35 miles of Transmission Mains

- Continue condition assessments to determine:
  - No action (status quo)
  - Replacement
  - Trenchless structural lining
  - Combination of options

$0-336M

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Conclusion

Proceed with Option 2 as follows:

- Complete priority projects
- Prepare for a future referendum
- Design & build a new plant in West Hartford
- Address remaining priority infrastructure
- Continue to assess aging infrastructure

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Thank you!

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OPPORTUNITY FOR GENERAL PUBLIC COMMENTS

No one from the public appeared to be heard.

COMMISSIONER REQUESTS FOR FUTURE AGENDA ITEMS

Commissioner Pane requested Chief Executive Officer Scott Jellison briefly discuss the possible future sale of land in Glastonbury that will be on a future meeting agenda. CEO Jellison explained that the new town manager of Glastonbury called the MDC asking if there was any interest in selling some of the District owned land in Glastonbury to the town that was removed from a prior sale a few years ago. There remains approximately 188 acres owned by the District, the largest parcel being approximately 133 acres at the Cold Brook Reservoir.

Commissioner Pane stated that the Water Master Plan be discussed again at the next Water Bureau meeting so that other Commissioners are able to see portions of the presentation and ask any additional questions.

Commissioner Gardow requested that the industrial rate discussion be added onto the next agenda, since it had been on the May meeting agenda but the meeting was cancelled due to lack of quorum.

ADJOURNMENT

The meeting was adjourned at 5:25 PM

ATTEST:

John S. Mirtle
District Clerk

_____
Date of Approval