



The Metropolitan District

water supply · environmental services · geographic information

**STRATEGIC PLANNING COMMITTEE
SPECIAL MEETING
WEDNESDAY, MARCH 8, 2023
4:00 PM**

Location

Board Room
District Headquarters
555 Main Street, Hartford

Dial In #: (415)-655-0001

Access Code: 43808661#

[Meeting Video Link](#)

Commissioners:

Adil	Healy
Anderson	Hoffman
Avedisian (C)	Lester
Bazzano	Mandyck
Bush	Pane
Currey	Petoskey
Desai	Salemi
DiBella (Ex-Officio)	Taylor
Gale	Torres
Gentile	Woulfe

Quorum: 10

1. CALL TO ORDER
2. PUBLIC COMMENTS RELATIVE TO AGENDA ITEMS
3. APPROVAL OF MEETING MINUTES OF FEBRUARY 21, 2023
4. REPORT RE: 2003 BARRINGTON WELLES MANAGEMENT STUDY UPDATE - WASTEWATER, MAINTENANCE AND ENVIRONMENT, HEALTH & SAFETY (EH&S)
5. OPPORTUNITY FOR GENERAL PUBLIC COMMENTS
6. ADJOURNMENT

**STRATEGIC PLANNING COMMITTEE
SPECIAL MEETING
The Metropolitan District
February 21, 2023**

PRESENT: Commissioners Andrew Adil, Kyle Anderson, John Avedisian, John Bazzano, Richard Bush, Donald Currey, John Gale, Joan Gentile, Allen Hoffman, Alvin Taylor, James Woulfe and District Chairman William A. DiBella (12)

**REMOTE
ATTENDANCE:** Commissioner Dominic M. Pane (1)

ABSENT: Commissioners Dimple Desai, James Healy, Byron Lester, Jacqueline Mandyck, Jon Petoskey, Pasquale Salemi and Calixto Torres (7)

**ALSO
PRESENT:** Commissioner Maureen Magnan (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)
Susan Negrelli, Director of Engineering
Robert Schwarm, Director of Information Technology
David Rutty, Director of Operations
Tom Tyler, Director of Facilities
Piotr Krzyk, Financial Analyst
Lisa Madison, Manager of Procurement
Nick Salemi, Communications Administrator
Carrie Blardo, Assistant to Chief Executive Officer
Victoria S. Escoriza, Executive Assistant
David Baker, IT Consultant (Remote Attendance)
Wayne Brelsford, IT Consultant (Remote Attendance)

CALL TO ORDER

Chairperson Avedisian called the meeting to order at 4:02 PM

PUBLIC COMMENTS RELATIVE TO AGENDA ITEMS

No one from the public appeared to be heard.

APPROVAL OF MINUTES

On motion made by Commissioner Adil and duly seconded, the meeting minutes of the Strategic Planning Committee meeting of February 8, 2023 were approved.

Commissioner Gale entered the meeting at 4:09 PM

**2003 BARRINGTON WELLES MANAGEMENT STUDY UPDATE
COMMAND CENTER AND UTILITY SERVICES DEPARTMENTS**

Chris Levesque, Chief Operating Officer, and Susan Negrelli, Director of Engineering, led a presentation regarding the Engineering and Construction departments.

Susan Negrelli gave an overview of the organizational structure of the departments. Michael Curley spoke on technical services. Jason Waterbury discussed project design and the sewer model. Jeff Davis reviewed construction and inspections. Jennifer Ottalagana discussed the technical services development. Josh Macculloch reviewed horizontal infrastructure and the paving program. David Banker discussed the water meter program and the water system model. Alex Cosentino spoke about energy projects. Lastly, Alan Pelletier spoke about large projects at the water pollution control facilities.

METROPOLITAN DISTRICT COMMISSION
2003 MANAGEMENT STUDY ANALYSIS

ENGINEERING & PLANNING DEPARTMENT



1

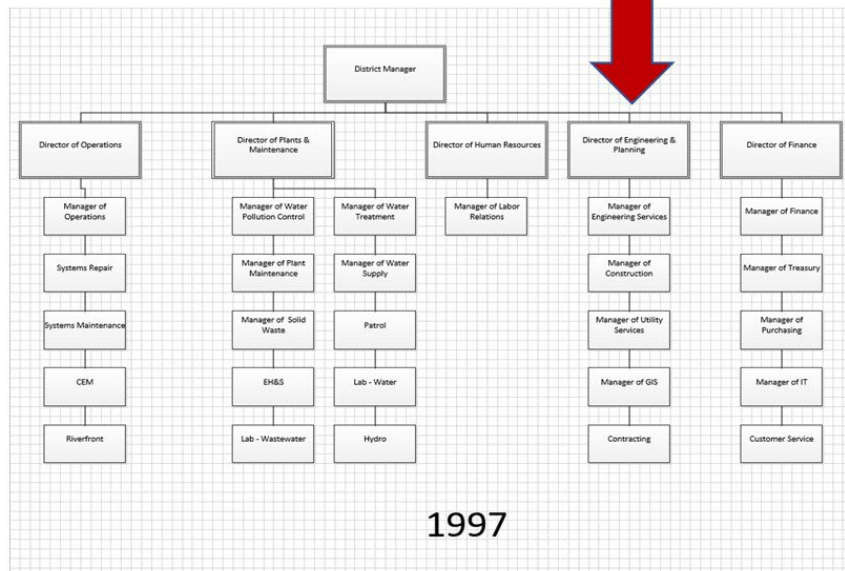
ENGINEERING & PLANNING DEPARTMENT

INTRODUCTIONS:

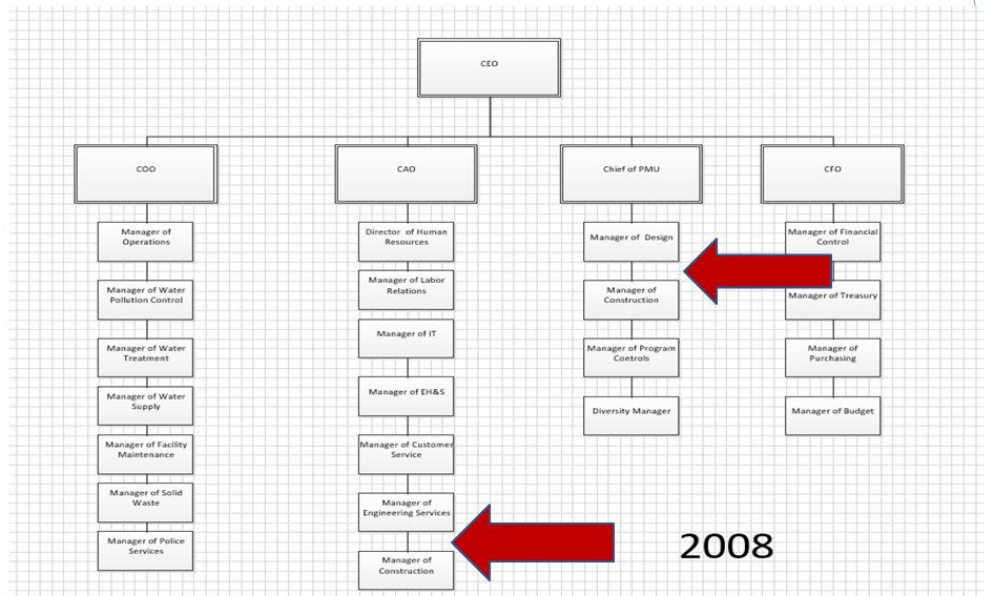
- ▶ Susan Negrelli, Director of Engineering
 - ▶ Michael Curley, Manager of Technical Services
 - ▶ 12 staff
 - ▶ Sr. Project Managers: David Banker & Jennifer Ottalagana
 - ▶ Jason Waterbury, Manager of Engineering Services
 - ▶ 11 staff
 - ▶ Sr. Project Managers: Alex Cosentino, Josh MacCulloch & Alan Pelletier
 - ▶ Jeffrey Davis, Manager of Construction & Inspection Services
 - ▶ 15 staff

2

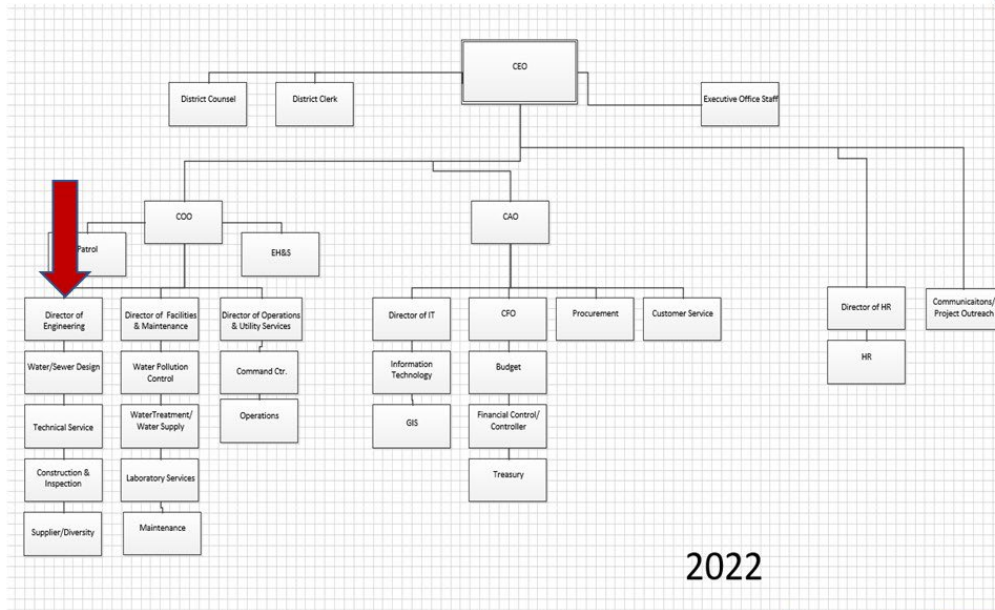
1-REORGANIZE DISTRICT HUMAN RESOURCES



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1-REORGANIZE DISTRICT HUMAN RESOURCES



Engineering & Planning Department Staff
(2000-2022)



1-REORGANIZE DISTRICT ENGINEERING & CONSTRUCTION

- In 2006, the District formed the CWP PMU which had the objective of building the foundation for the upcoming activities of the Consent Order and Decree. The Engineering department was merged with the CWP PMU division in 2010. Upon the merging, the need to reorganize the unit to maintain focus on the regulatory CWP requirements as well as kickstart the annual capital improvement plan.
- The department was organized into three main groups; Technical Services, Design and Construction.
 - Technical Services
 - Design/Engineering
 - Construction & Inspection Services
- Similar to Operations and other departments, engineering staff were cross trained amongst the three divisions.
- The District also created new roles to address the increased workload related to the CWP and Asset Renewal and Replacement projects. The Project Manager and Construction Manager roles were created to address the increase in total number of projects being executed. In anticipation of providing career opportunities within the department and provide a succession plan. A Senior Project Manager position was created in 2018 to lead focused work groups.
- In 2022, the District developed and staffed an engineering group lead by a senior project manager to focus on maintenance engineering, tightening the coordination between plant operations (facilities) and plant maintenance departments. The group will report through Engineering and will be identifying opportunities to improve maintenance functions and metrics as well provide engineering insight into the short-term and long-term needs of our facilities.



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Engineering - Technical Services Michael Curley

- ▶ Capital planning of infrastructure improvements
- ▶ Review and management of system expansions through developer permits
- ▶ Management of engineering standards and manuals
- ▶ Management of engineering records
- ▶ Regulatory reporting



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Engineering - Design

Jason Waterbury

- ▶ Design and execution of capital improvements, including CIP funded and Clean Water/IP Funded
- ▶ Management of various consultants performing design & construction phase tasks
- ▶ Implementation of Water Asset Management Program, with a goal of 10 miles per year in water main replacements
- ▶ Implementation of Sewer Asset Management Program, with the repair and rehabilitation of sanitary sewers as identified by the CMOM Program, typically in conjunction with Member Town Paving Programs
- ▶ Implementation of WPCF and WT capital projects, as coordinated with facilities' personnel
- ▶ Implementation of projects, as required by DEEP Consent Order and EPA Consent Decree
- ▶ Review of Engineering Design Proposals, such as responses to Requests for Services (RFS) and responses to Requests for Qualifications (RFQ)
- ▶ Management of Annual Capital Improvement Plan (CIP) Budget Process and Tracking Spend

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Engineering - Construction & Inspection Services

Jeffrey Davis

- ▶ Management of construction and inspection services, including MDC and consultant staff
- ▶ Ensure that new MDC infrastructure is constructed to the District's high standards
- ▶ Review and approve contractor payment applications, change orders and contractor evaluations
- ▶ Collect, assemble, review and sign Certificates of Completion on new infrastructure
- ▶ Participate in discussions regarding disputes with contractors
- ▶ Ensure that construction projects are performed with the least amount of customer disruption possible
- ▶ Ensure that proper notification is provided to customers
- ▶ Ensure that construction projects are performed in a safe manner

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2-BUSINESS PROCESS IMPROVEMENT PROGRAM COMMUNICATIONS

The Clean Water Project

- ▶ The CWP required improved outreach coordination with stakeholders and increased public interaction more so than any project in MDC history
- ▶ This need was the impetus for creation of the Communications Department
- ▶ As part of the development of a comprehensive outreach strategy for project areas, MDC Communications staff streamlined templates and processes for our construction notification process with flyers, and public meetings
- ▶ The lessons learned were then integrated across the entire District for use on all water and sewer Capital Improvement Projects going forward beyond the Clean Water Project. Engineering and Communications work side-by-side and meet regularly to update our project outreach needs.



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2-BUSINESS PROCESS IMPROVEMENT PROGRAM COMMITTEES

- ▶ As part of the Clean Water Project, the District Engineering Department adopted Engineers Joint Contract Documents Committee (EJCDC) and Construction Specification Institute (CSI) for all contract documents. This has streamlined the District's ability to facilitate new projects in a timely manner while maintaining consistent contract documents for use by District staff, consultants and contractors. The District has developed a periodic review of each of standards and makes adjustments as needed through the Standards Committee. Such standards have avoided errors and omissions related to incomplete documents and requirements not identified in original contracts.
- ▶ The District has also developed standards for the following to maintain consistency for District staff, consultants, contractors and developers:
 - ▶ Guidance Manual - Developer's Permit Agreements (DPA)
 - ▶ Project Delivery Manual
 - ▶ Construction Inspection Manual
 - ▶ Guidance Document for Preparation of MDC Record Drawings
 - ▶ Sanitary and Storm Sewer Service Connection Manual
 - ▶ Water Service Connection Manual
 - ▶ Materials Standards Committee

This document has important legal consequences, consultation with an attorney is encouraged with respect to its use as a modification. This document should be subject to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by:
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE
and
Issued and Published Jointly by:



THE METROPOLITAN DISTRICT APPROVED MATERIALS			
All materials used in the construction of a new or existing project must be approved by the District Engineering Department. Materials must be approved by the District Engineering Department. All materials must be manufactured in the United States. Materials must be approved by the District Engineering Department. All materials must be manufactured in the United States. Materials must be approved by the District Engineering Department. All materials must be manufactured in the United States.			
SANITARY SEWER & STORM DRAIN INSTALLATIONS			
PROJECT	DESCRIPTION	DATE	APPROVED
2019-00001	Sanitary Sewer	2019-01-01	2019-01-01
2019-00002	Storm Drain	2019-01-01	2019-01-01
2019-00003	Sanitary Sewer	2019-01-01	2019-01-01
2019-00004	Storm Drain	2019-01-01	2019-01-01
2019-00005	Sanitary Sewer	2019-01-01	2019-01-01
2019-00006	Storm Drain	2019-01-01	2019-01-01
2019-00007	Sanitary Sewer	2019-01-01	2019-01-01
2019-00008	Storm Drain	2019-01-01	2019-01-01
2019-00009	Sanitary Sewer	2019-01-01	2019-01-01
2019-00010	Storm Drain	2019-01-01	2019-01-01
2019-00011	Sanitary Sewer	2019-01-01	2019-01-01
2019-00012	Storm Drain	2019-01-01	2019-01-01
2019-00013	Sanitary Sewer	2019-01-01	2019-01-01
2019-00014	Storm Drain	2019-01-01	2019-01-01
2019-00015	Sanitary Sewer	2019-01-01	2019-01-01
2019-00016	Storm Drain	2019-01-01	2019-01-01
2019-00017	Sanitary Sewer	2019-01-01	2019-01-01
2019-00018	Storm Drain	2019-01-01	2019-01-01
2019-00019	Sanitary Sewer	2019-01-01	2019-01-01
2019-00020	Storm Drain	2019-01-01	2019-01-01

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Technical Services - Development

- ▶ DPA Guidance Manual
 - ▶ Availability & Capacity Analysis
 - ▶ Schedule of Charges
 - ▶ MDC Design Standards
 - ▶ Timelines for Completion
 - ▶ Reimbursable Accounts
 - ▶ Expanding MDC Infrastructure at no cost to District
- ▶ Water & Sewer Petition Projects
- ▶ Encroachment Agreements
- ▶ Protecting MDC Infrastructure
- ▶ Utility Coordination - Towns & DOT

THE METROPOLITAN DISTRICT

GUIDANCE MANUAL

Developer's Permit-Agreements (DPA)

July 2020

The Metropolitan District
555 Main Street
Hartford, CT 06142
860.278.7850
www.themdc.org

2418 Main Street, Rocky Hill (Formerly Ames Headquarters)

Schedule of Charges

ABC Analysis - Water & Sewer	
\$540 per utility (water & sewer)	\$1,080
Water Connection Charges	
\$95.00 per front foot	
Water Connection Charge Total	*previously paid
Sewer Connection Charges	
1) \$111.50 per foot	
Frontage total	*previously paid
use	*previously paid
it	\$352,535
Acceage total	N/A
ction Charge Total	\$352,535
Water Services	
	\$1,100 + \$4,960 = \$6,060
	\$1,100 + \$14,840 = \$15,940
Hydrants	
(new hydrants)	\$540 per hydrant
optional)	\$140 per hydrant
records	
e = meter charge	

es 1 lot.
ust be paid at the time of permitting at Utility Services.
e dependent on whether the owner requests MDC maintenance
e billed).
mestic and 6" fire) off of Pratt Street and 8" fire service and 12"
et to be used for existing buildings.
al (within 20' easement) serving the adjacent property will need to
y required negotiations with property owner up to Owner).
still approved P&Z plans have been submitted and reviewed by our

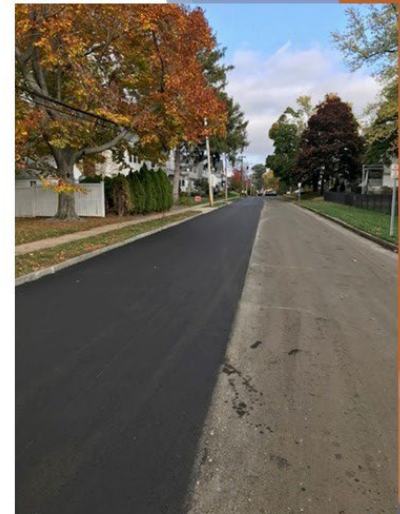
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or the formal Availability & Capacity Analysis by Technical Services:
l condensation information. Fire pumps that are directly
m require surge control.
i issued, plans may be submitted to Utility Services for review.
yes are paid and connection charge agreement is signed, any new
sued.



2-BUSINESS PROCESS IMPROVEMENT PROGRAM PAVING PROGRAM

Paving Program and Coordination with Town Paving Schedules

- ▶ Throughout the year, the District is coordinating with the Towns' Engineering and Public Works departments to identify required infrastructure work in advance of the their paving work. Below is a list of activities regularly conducted in advance of the work.
 - ▶ Schedule meetings with Towns
 - ▶ Receive and adjust schedule to Town changes in priority/streets
 - ▶ Sewer Lateral Replacement based on lateral condition assessment (Depression Log/Dye Tests, Private Lateral Inspections)
 - ▶ Water Service Renewal/Replacements based on age and material (**average of 170 wrought iron service replacements per year in last 3 years**)
 - ▶ Sewer Repairs (Point/Lining) based on CCTV inspections (**over 18 miles of sewer repairs/lining coordinated with town paving in last 3 years**)
 - ▶ Water Main Replacement based on age and break history (**over 7 miles of water main replacement coordinated with town paving in last 3 years**)
 - ▶ Valve and Hydrant Replacement based on age and operability
 - ▶ Manhole Rehabilitation based on condition assessment
 - ▶ Customer Outreach for Service Replacement Program
- ▶ If the Town and the District have shared interest in the street, the costs of rehabilitation can be shared to reduce overall costs for each. This has allowed the Towns to complete more streets and the District to extend its rehabilitation and replacement budget to perform more needed work.

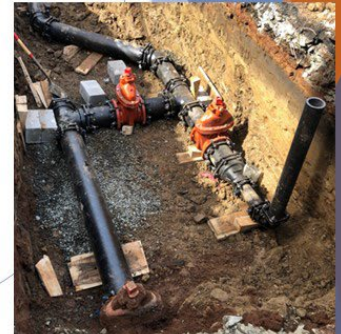


2-BUSINESS PROCESS IMPROVEMENT PROGRAM

CAPITAL IMPROVEMENT EXECUTION

The Engineering Department has been executing a number of cost saving measures over the past 5 years to drive down the cost of each new installation, which include:

- ▶ Soil Disposal Handling - **over \$4 million in savings in 5 years**
- ▶ Accelerated Contracts/Minimized Design - **estimated \$6 million in design fee savings in 5 years**
- ▶ Pavement Restoration via State Contracts
- ▶ Materials Procurement Contracts
 - ▶ Savings of 30% from contractor supplied
- ▶ Use of Flagging Services
 - ▶ Police Officer \$600-\$1,300 per day vs. Typical Flagger \$300-400 per day
 - ▶ Flaggers in lieu of police where allowed by individual towns and reduction to minimum required - **estimated savings in 2020 alone of over \$800K**
 - ▶ Use of flaggers by Operations - **annual savings of \$300k+**



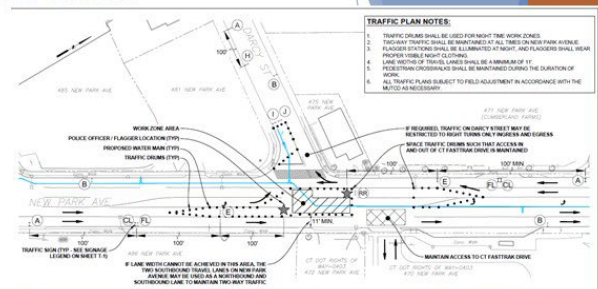
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2-BUSINESS PROCESS IMPROVEMENT PROGRAM

TRAFFIC & OUTREACH

Traffic Control by Team Traffic

- ▶ Review & prepare traffic plans
- ▶ Discussion at Pre-bid
- ▶ Inspection & update of patterns as needed in field during construction
- ▶ Weekly project updates
- ▶ Maintain traffic alert website



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2-BUSINESS PROCESS IMPROVEMENT PROGRAM

TRAFFIC & OUTREACH

Outreach by MDC Communications

- ▶ Project oriented outreach
- ▶ Starts with outreach assessment in design
- ▶ Construction, rehabilitation & easement clearing projects
- ▶ Via emails, letters, flyers and community meetings
- ▶ Includes residents, businesses, neighborhood associations & municipal officials
- ▶ Maintain communication log for project



Visit us on Twitter @MDC_Hartford
ALERT @MDC_Hartford about road closures or delays in your area



Like us on Facebook
www.facebook.com/HartfordMDC



Follow MDC traffic @HartfordMDC



The Metropolitan District
300 Main Street
Hartford, CT 06103
(860) 278-7850
www.mdcct.org

CONSTRUCTION NOTICE

Field Work Beginning in Your Area

Beginning the week of September 14th, the Metropolitan District (MDC) and their consultant, Snyder Civil Engineering, LLC, will be performing field survey work on or near your property to take measurements in the road near catch basins and manholes.

This work is being done to gather information necessary for the preliminary design of water main improvements in your neighborhood.

Please note that this work may require the surveyors to be on your private property. They will not need to do any work inside your home or business for any of these field activities.

Schedules are subject to change based on weather conditions and unforeseen construction activities. MDC Staff, Contractors and Consultants must be properly identified and show ID upon request.

If you have questions or concerns, please contact:

Project Manager
(860) 278-7850 ext. 3600

Engineering Consultant
(860) 555-5555

After hours, please call the MDC Command Center at (860) 278-7850 ext. 3600

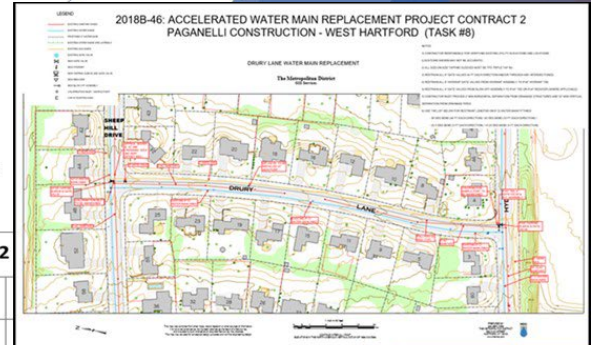
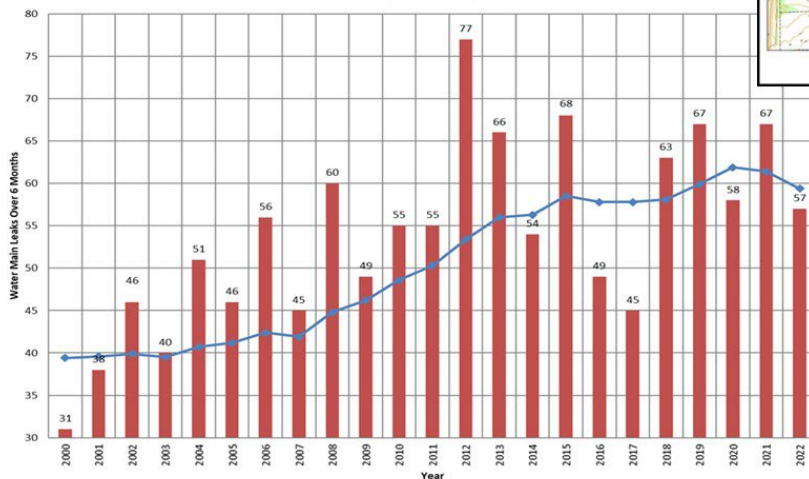
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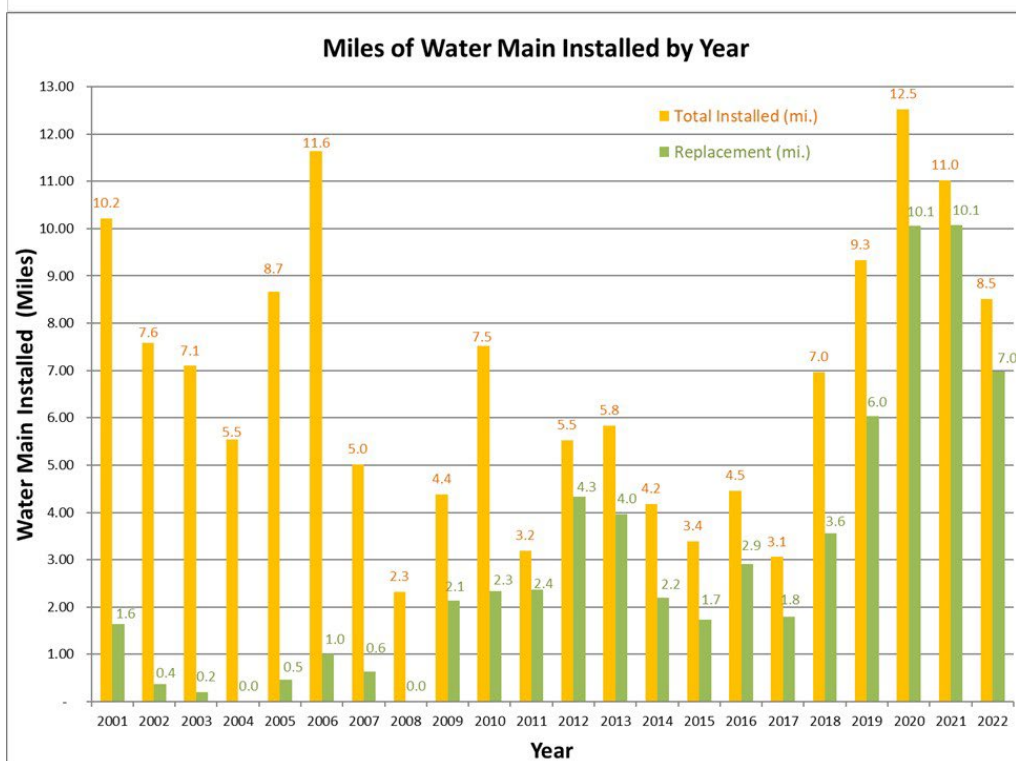
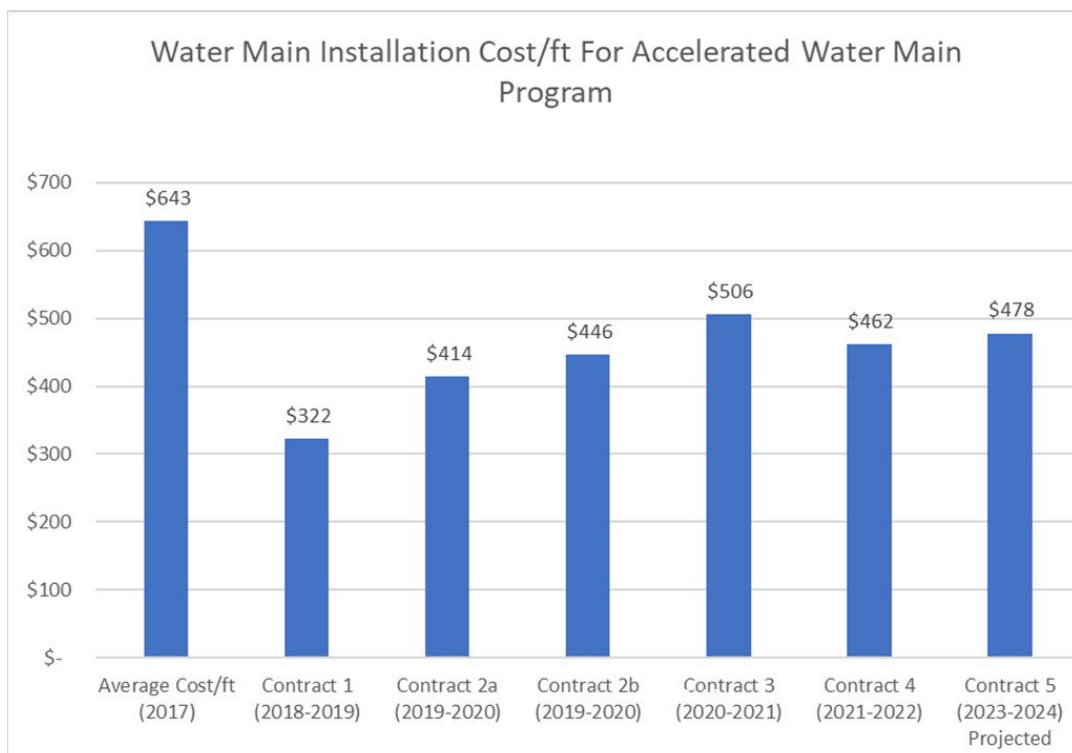
3-PERFORMANCE MEASUREMENT PLAN

ENGINEERING

- ▶ To address the rising number of water main breaks and aging of water distribution system, the E&P Dept. along with Operations and Procurement developed the Accelerated Water Main Replacement Committee in 2017 with goal of replacing approximately 10 miles of water main per year.

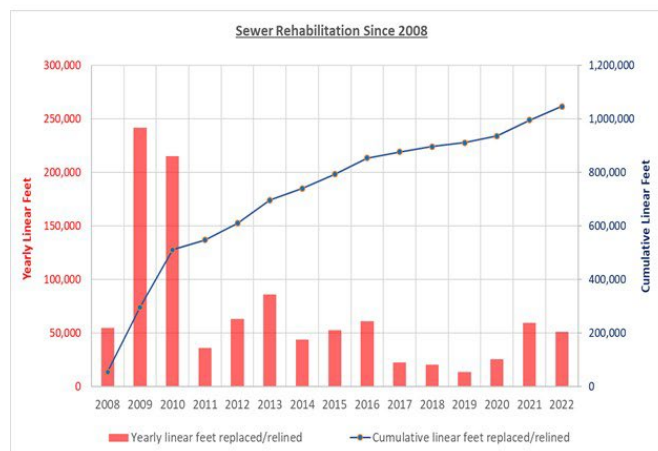
Water Main Leaks from April to September (Summer), 2000-2022





ENGINEERING

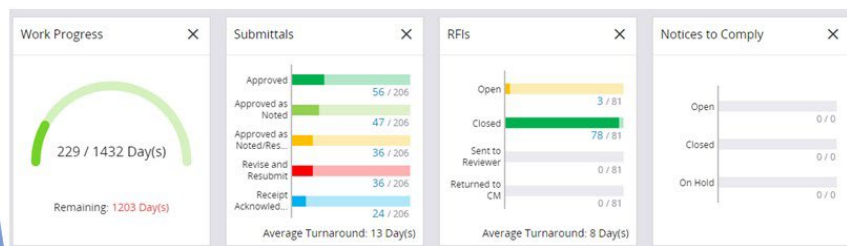
- Similarly to the Accelerated Water Main Replacement Program, the District has been able to address sewer defects as well as address inflow and infiltration concerns throughout the District more efficiently over the past few years. This has allowed the Engineering department to maintain pace with Towns' paving programs as well as address failing infrastructure during the period of the Integrated Plan being approved. From 2008, the District has rehabilitated >17% of the sewer collection system and will be aggressively rehabilitating additional sewers under the Integrated Plan.



		Sewer Rehabilitation (%)			Sewer Age (years)		
Town	Miles	Completed	Recommended	Total	Prior to CWP (2005)	If Infrastructure Ignored (2043)	After If Ignored (2043)
Bloomfield	118	6%	35%	41%	34 yrs	70 yrs	50 yrs
East Hartford	168	3%	23%	26%	45 yrs	81 yrs	62 yrs
Hartford	217	5%	67%	72%	74 yrs	107 yrs	39 yrs
Newington	128	27%	14%	41%	38 yrs	64 yrs	54 yrs
Rocky Hill	90	7%	10%	17%	30 yrs	65 yrs	59 yrs
West Hartford	223	36%	43%	79%	53 yrs	69 yrs	38 yrs
Wethersfield	122	32%	22%	54%	45 yrs	63 yrs	47 yrs
Windsor	152	18%	12%	30%	36 yrs	62 yrs	53 yrs
Total	1,218	17%	33%	50%	50 yrs	75 yrs	49 yrs

ENGINEERING

- Engineering
 - E&P has a Standards Committee which routinely meets to update material specifications for use on District products to ensure only the correct materials are used on construction projects as well coordinate with material specifications for material contracts.
 - Project statuses are measured throughout the project (Milestones, Construction Documentation, etc.) utilizing Project Sight software.

[illegible]

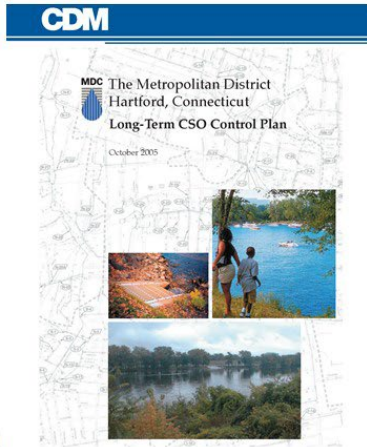
CIP PRIORITIZATION & PORTFOLIO REVIEW BOARD

- [illegible]

- ▶ Planning/Regulatory:
 - ▶ Water Master Plan
 - ▶ LCRR
 - ▶ CSO Long-Term Control Plan/Integrated Plan
- ▶ Large Capital Projects (In Design)
 - ▶ New North Branch Interceptor (NNBI) Replacement
 - ▶ North Branch Park River Drainage Study
 - ▶ South Hartford Conveyance & Storage Tunnel (SHCST) - Wethersfield Cove CSO Elimination Projects
 - ▶ Large Diameter Sewer Rehabilitation Program
 - ▶ East Hartford Water Main Replacements
 - ▶ Silas Deane Water Main Replacement
 - ▶ Water Main Asset Management Program
 - ▶ Rocky Hill WPCF Headworks
 - ▶ Poquonock WPCF BNR
 - ▶ Brookside Sewer Pump Station Replacement
 - ▶ Orchard Street Water Pump Station Upgrades

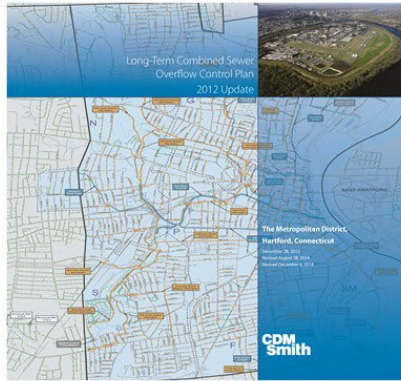
4-INTEGRATED PLANNING PROCESS

INTEGRATED PLANNING AND LONG TERM CONTROL PLAN



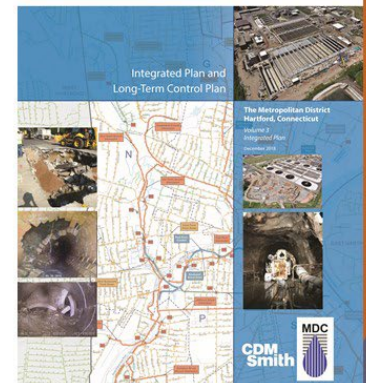
2005 CSO LTCP (2007 Approval):

- ▶ Primary Consent Order Solution = Full Separation



2012 CSO LTCP (2015 Approval):

- Primary Consent Order Solution = Tunnels

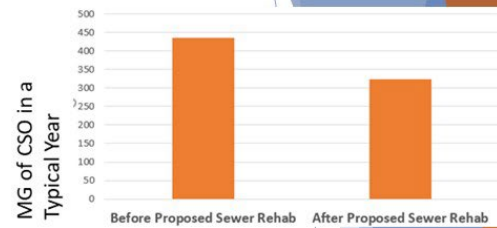
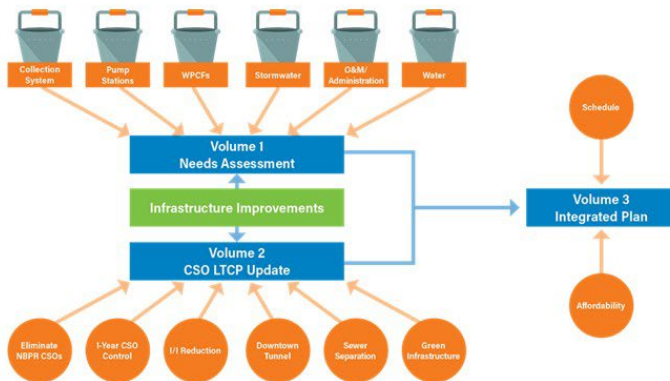


2018 CSO LTCP/IP (2022 Approval):

- Consent Order Compliance via use of:
 - South Tunnel
 - Downtown Tunnel
 - CMOM Activities (Rehabilitation/Cleaning)
 - Separation

4-INTEGRATED PLANNING PROCESS

INTEGRATED PLANNING AND LONG TERM CONTROL PLAN



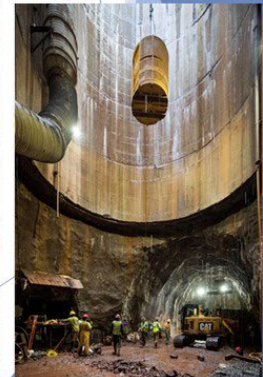
4-INTEGRATED PLANNING PROCESS

INTEGRATED PLAN AND LONG TERM CONTROL PLAN

- The District has executed on average \$100M of work annually in its efforts to meet the Consent Order and Consent Decree requirements since 2007. These efforts have only been possible through significant planning and execution of a multidecade plan and with the ability to adjust with evolving conditions.



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4-INTEGRATED PLANNING PROCESS

ENERGY MANAGEMENT

- Strategic Energy Management: The District recognizes that effective energy management is integral to both controlling our energy costs and protecting the environment. Components of the District's Energy Management efforts include:
 - Electricity and Natural Gas Third Party Procurement Program
 - Facility Project "Green Alternatives" Evaluations
 - Eversource Strategic Energy Management (SEM) Program
 - Demand Response and Capacity Tag Program Evaluation and Participation
 - Virtual Net Metering Provisional Program
 - Renewable Energy / Distributed Generation Evaluations
 - Poquonock WPCF Solar Installation

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6-REVENUE IMPROVEMENT TEAMS

RENEWABLE ENERGY EVALUATIONS - WIND/SOLAR

- ▶ The District recognizes the importance of staying current with utility trends. Participation in various trade groups, attending conferences, etc. allows for a free exchange of ideas and tremendous learning opportunities about what other utilities are doing. Energy use is a constant theme within these discussion.
- ▶ The District has taken, and continues to take, a proactive stance in looking at alternative energy.
 - ▶ Wind power (both traditional turbine and newer 'egg beater' style technologies) was investigated to determine if any District properties would be viable, however this was determined to not be feasible.
 - ▶ A small solar facility was constructed at the Poquonock WPCF. While the economics of this project were not in the District's favor due to development costs, many valuable lessons were learned. There have been subsequent solar reviews done, but due to the limitations that public entities have regarding tax incentives, no additional solar installations have proceeded.
 - ▶ The District recently investigated the possibility of a direct connection to Eversource's high voltage transmission lines. This would in essence make the District a small-scale electric utility. Due to the cost and complexities presented by this, as explained by Eversource, it is unlikely this is an economically viable options for the District.
 - ▶ The District is currently investigating virtual net metering, which holds promise for cost savings.
 - ▶ The Hartford WPCF is currently being evaluated by the District for a large scale battery installation that could be used for demand response and peak shaving.



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4-INTEGRATED PLANNING PROCESS

ENERGY MANAGEMENT

- ▶ Facility Specific Improvements and capitalizing on EnergizeCT grant programs. Over the past few years the District has been able to upgrade existing facilities with electrical (lighting) and mechanical (HVAC and Controls) improvements. Below are the improvements to date, the financial incentives received, annual cost savings and environmental impact.

Project	Project Cost	Incentive Amount	Incentive %	Annual kWh Savings	Annual Savings	Simple Payback (Years)
HWPCF Lighting	\$ 598,980.00	\$ 269,541.00	45%	748,309	\$ 127,212.53	2.59
Rossi Building Lighting	\$ 161,954.06	\$ 97,172.44	60%	185,664	\$ 31,562.88	2.05
Barkhamsted Lighting	\$ 49,223.52	\$ 22,150.58	45%	64,884	\$ 11,030.28	2.45
Reservoir No. 6 Lighting	\$ 128,174.39	\$ 76,904.65	60%	188,452	\$ 32,036.84	1.60
Collinsville Lighting	\$ 63,132.14	\$ 36,451.25	58%	66,275	\$ 11,266.75	2.37
West Hartford Filter Lighting	\$ 100,403.29	\$ 45,181.48	45%	129,372	\$ 21,993.24	2.51
West Branch Lighting	\$ 47,842.43	\$ 23,041.25	48%	46,856	\$ 7,965.52	3.11
Headquarters Lighting and HVAC	\$ 437,187.18	\$ 166,462.40	38%	256,096	\$ 43,536.32	6.22
CEM Lighting	\$ 88,670.00	\$ 35,294.21	40%	83,428	\$ 14,182.76	3.76
125 Maxim Road Lighting	\$ 105,316.78	\$ 31,339.93	30%	137,509	\$ 23,376.53	3.16
Totals	\$ 1,780,883.79	\$ 803,539.19	45%	1,906,845	\$ 324,163.65	3.01
Notes						
Savings do not account for reduction in O&M costs to maintain lighting (>15 Year Life of each fixture)						
Lighting improvements provided improved workspace lighting which contributes to a safer workplace						
Reduction in Air Pollution (Over 10 Year Period)						
CO2	17,648,992.36	lbs				
NOx	5,764.28	lbs				
SOx	6,796.96	lbs				

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4-INTEGRATED PLANNING PROCESS

RELIABILITY MAINTENANCE ENGINEERING

- ▶ Provide engineering support for Facilities and Maintenance - WPCFs, WTPs, Pump Stations
- ▶ Greater integration of Engineering into Maintenance function
- ▶ RELIABILITY-CENTERED MAINTENANCE
 - ▶ Determine maintenance requirements of an asset in its current operating context
 - ▶ “Perform the right maintenance at the right time”
= Most effective use of maintenance dollars



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6-REVENUE IMPROVEMENT TEAMS

- Created a Water review team to account for accurate billing of municipal and private water company connections, fire and combination services, X-Conn survey services, etc.
- Created a Sewer review team to evaluate billing methods for satellite communities and accuracy of metering and adherence to contracts and implementing metering improvements.
- Creation of Customer Service Charge for Sewer and Cost of Service evaluation for additional revenue improvements are anticipated in 2024 as the District validates all known sewer connections to identified customers.
- Review of DPA fees and collection process
 - Fees are being applied more accurately and timely for services rendered to support Developer Projects
- Correct Meter Size Billing and Installation of Meters on Fire and Combination Services
 - Utility Services and Operations with Engineering have been addressing new fire services and existing combination services that consume large volumes of water through proper meter sizing and installation of meters on services previously not metered.
- High Strength / High Use Fee
 - Accounts are evaluated based on High Use and/or High strength discharge to the District sewer collection system. Users are required to pay additional fees associated with the contaminant concentrations and volumes discharged and ultimately conveyed and treated by the District.
- Annual Review of cost of service fees and rates
 - As an integral part of the budgeting process, the finance department reviews and updates its cost of service models to adjust water and sewer related fees and rates to ensure all customers are billed appropriately.

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2-BUSINESS PROCESS IMPROVEMENT PROGRAM METER MANAGEMENT

Past

- ▶ Telephone, Walking & Post Card
- ▶ Quarterly Reads
- ▶ High Estimation
- ▶ Mechanical Meters
- ▶ Paper Work Orders
- ▶ 65 Reading Cycles

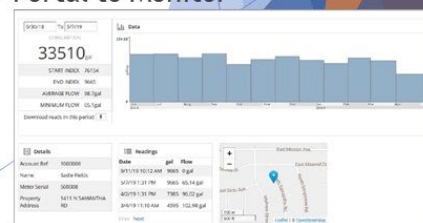
Present

- ▶ Drive By Reading once per month
- ▶ Ultrasonic Meters
- ▶ Electronic Work Orders
- ▶ 21 Reading Cycles



Future

- ▶ Fixed Network Daily & Hourly Readings
- ▶ Tracking Flow Vs Consumption
- ▶ Contact Customers - High Consumption/Leak
- ▶ Customer Portal to Monitor Usage



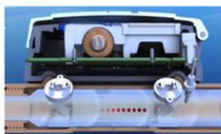
2-BUSINESS PROCESS IMPROVEMENT PROGRAM METER MANAGEMENT

Additional Initiatives

- ▶ No Access Meter Pit Installations
- ▶ Fire Meter Pit Installations
- ▶ Convert existing reading endpoint to Fixed Network AMI
- ▶ Water/Sewer Inventory mapping all water & sewer services

Move to Ultrasonic Meters from Turbine & Positive Displacement

- Utilized on 1 1/2" & 2" Meters in 2016
- Utilized on 3" & larger in 2018
- Contracts for 5/8" to 2" in 2020
- No moving parts
- Improved accuracy at low & high flows
- No maintenance – meter blockage
- FM (fire rated) meters for combination and dedicated fire services
- Improved warnings – meter tamper, empty pipe, leak, burst pipe



Advanced Meter Infrastructure

- Utilize a fixed network radio or cellular system to provide daily meter readings
- Hourly metered consumption
- Detect customer leaks, meter tampering, others in real time
- Improve staff safety, reduce repair time
- Improve customer service, reduce credits



7-DEVELOP INFRASTRUCTURE MEGA-PROCESS

A. Enhance Engineering & Planning's capabilities to effectively support the Water and Wastewater lines of business through the Develop Infrastructure mega-process. This includes load forecasting, system planning and the CIP program, as well as the engineering and construction of large scale projects. This applies to both long-term capacity additions and infrastructure replacements. Other actions include:

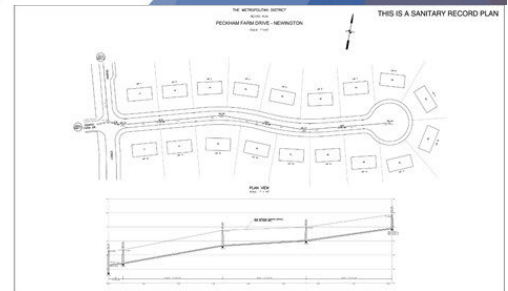
- Re-establish and end-to-end integrated system planning and forecasting capability to methodically address the long-term capital additions and replacement requirements for each line of business.
- Staff engineers in water, wastewater, operations and cold waste would provide operations and maintenance engineering support, manage smaller scale projects and interface with Engineering & Planning regarding facility improvement requirements.
- Redesign the District's drafting process in conjunction with the District-wide process improvement program. Consider outsourcing drafting for the purpose of eliminating backlog of drafting work.
- Consider further development of the District's GIS capability by integrating the system with SAP. Using the GIS as a platform, provide interactive location, equipment, design and account information throughout the District.



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7-DEVELOP INFRASTRUCTURE MEGA-PROCESS ENGINEERING

- Portfolio Review Board process was created in 2021 to allow for the sharing of knowledge and need for projects to move forward with all directors and chiefs involved in process.
- Engineers in facilities, maintenance areas currently work for E&P Dept, not operating departments so that centralized engineering services can be achieved. All project requests come through PRB for approval.
- Drafting back-log is currently being reduced whereby all new pipeline installations are surveyed real-time as pipe and materials enter the ground. The data is collected and stored in ESRI Field Maps which utilizes a GIS map created by The MDC GIS Department specifically for collecting field data. We are then updating record drawings with the field data continuously as the project progresses. So far we have been able to create record drawings and have them out for review prior to the completion paperwork being signed and the new water main being put into service (see photo below).
- E&P developed an Asset Management program which utilizes data such as pipe material, age, soil, break history to prioritize water mains for replacement. Also factored into decision making process is Town paving programs.
- E&P Dept. was not functioning in an efficient manner prior to 2006 so the Project Management Unit (PMU) was created to move forward projects associated with the Clean Water Project as mandated through our consent order and consent decree. Annual CIP and CWP spend has increased significantly over the years, while staff in E&P and/or PMU has steadily decreased.



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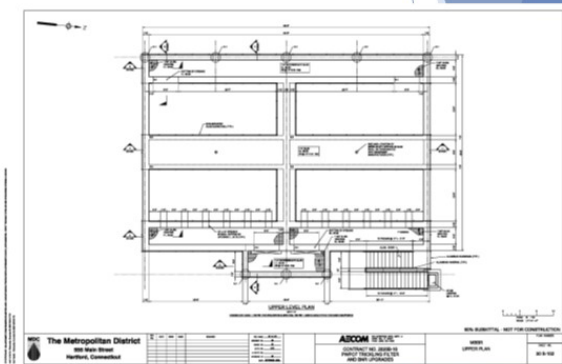
7-DEVELOP INFRASTRUCTURE MEGA-PROCESS ENGINEERING (CONT)

- E&P reestablished a number of guideline and procedure manuals to guide staff. See listing below.
 - Procedures & Guidelines Issued:
 - Standard Details
 - Design Checklists for Pipeline Projects
 - Planned Bypass Pumping & Lateral Lining Guidelines
 - Water Main Service Connections during Construction Guidance
 - Pre-bid Agenda Guidelines
 - Maintenance & Protection of Traffic Guidelines
 - Specification Guidelines
 - Lessons Learned Database
 - Procedure for Requesting Operations Work Orders That Require Service Interruption
 - Guidelines for Filling, Flushing, Sterilizing & Sampling New Water Mains
- Manuals Issued:
 - Project Delivery Manual (2015 & 2023)
 - DPA Manual (revised 2020)
 - Construction Inspection Manual
- Specification Updates were done in 2014, 2015, 2017 and 2023

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DESIGN COLLABORATION

- Key to success is the collaboration with WPC and maintenance staff
 - During each design submittal MDC staff participate in workshops with design engineers
 - Providing input, experience, and “lessons learned”
 - During construction MDC staff participate in submittal reviews
 - MDC staff participate in workshops to review operations SCADA control strategies
 - MDC staff participate in training workshops to review operations and safety of new equipment
 - FDE and inspection collect important equipment data to incorporate into SAP and eO&M



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HWPCF - INFLUENT PUMP STATION (IPS)

- Increased wet weather treatment capacity
- Part of the MDC CWP to reduce CSOs (CT DEEP Consent Order)
- 6 - 42 MGD submersible pumps
- 5 - 0.25 inch fine screens
- 4 - vortex grit
- 3 - 2.5Mv diesel generators
- \$77.7M Construction Cost



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HWPCF - DUAL USE PRIMARY CLARIFIERS (DUPC)

- Increased wet weather treatment capacity
- Part of the MDC CWP to reduce CSOs (CT DEEP Consent Order)
- Eight (8) new dual use primary tanks (dry/wet weather)
- New Chemical Storage and electrical buildings
- New wet weather disinfection tanks
- New effluent pump station
- \$153.8M Construction Cost



Completed

In Progress - November 2017

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HWPCF - DAFT Rehabilitation

- Part of the HWPCF Solids Master Plan
- Rehabilitation of four (4) DAFT tanks
- Included new process, mechanical, electrical, and controls
- Equipment replacement (~50-ys) and increased reliability and resiliency
- \$13.8M Total Construction Cost



DAFT Tank #1



DAFT Electrical Room



DAFT Pipe Gallery

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Tunnel Pump Station

- Part of the MDC CWP to reduce CSOs
 - (CT DEEP Consent Order)
- Tunnel Pump Station (~ 230 ft) and Control Building
 - 4 - 800 HP pumps
 - 2 - 1,750 kW diesel generators
 - 2,100 ft 54-inch force main connecting IPS
- Grit/Screening Facility
- Odor Control
- \$115M Construction Cost



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EHWPCF - Phase 3A and 3B

- Two phase project to incorporate BNR improvements & Electrical upgrades
- Phase 3A includes new main switchgear and new blowers (completed)
- Phase 3B in progress
 - includes new site electrical
 - replacing aging electrical gear, and
 - aeration tank upgrades to improve BNR
- \$15M Total Construction Cost (both projects)



Future Aeration Upgrades



New Main Switchgear

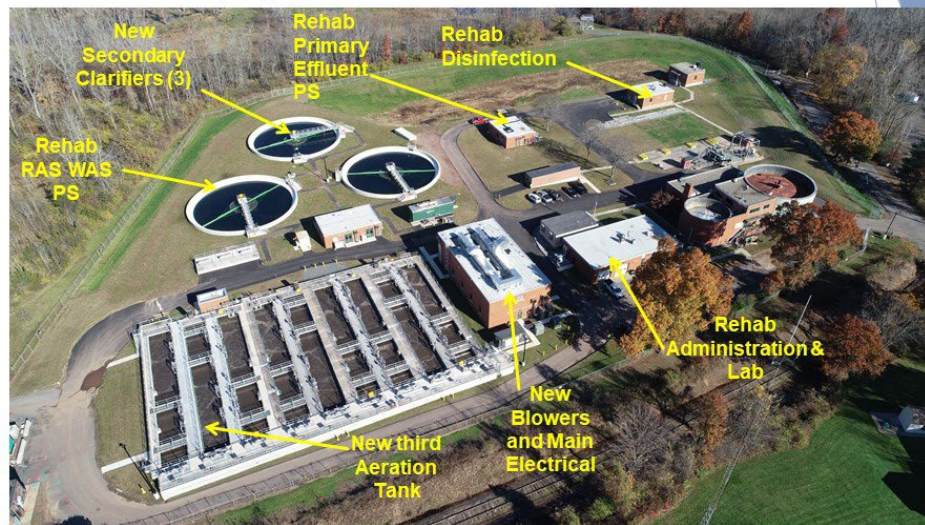


New Turbo Blower

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ROCKY HILL WATER POLLUTION CONTROL FACILITY

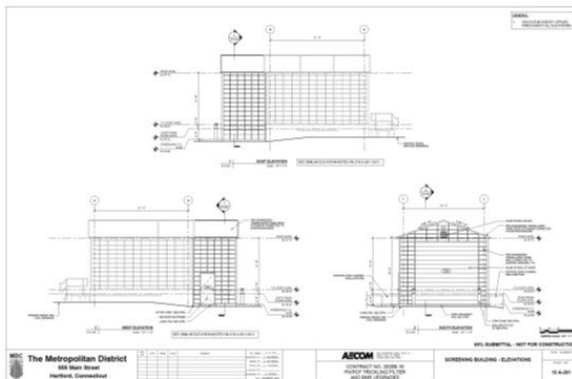
- Increased wet weather treatment capacity
- Part of the solution to reduce SSOs (EPA Consent Degree)
- Incorporated BNR upgrades (CT DEEP General Permit for Nitrogen)
- \$53.8M Total Cost (Design & Construction)



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POQUONOCK WATER POLLUTION CONTROL FACILITY

- Design/construction to replace aging equipment, improve resiliency, and regulatory compliance
- Adds BNR treatment (CT DEEP General Permit Nitrogen)
 - Moving Bed Bio Reactor (MBBR)
 - New Fine screens
- Replacement of electrical system
- Replacement of trickling filter media
- Convert sludge digester to sludge storage
- \$20M Construction Cost



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7-DEVELOP INFRASTRUCTURE MEGA-PROCESS

Water Model & Distribution Tracking

InfoWater Model

- ▶ InfoWater model of all MDC Water Mains
 - ▶ Expanded and re-calibrated over last 10 years
 - ▶ Last update completed December 2022
- ▶ Based on customer consumption and pump station flows
- ▶ Analyzes Max Day, Ave Day & Min Day Scenarios
- ▶ Includes surge analysis software
- ▶ Review domestic & fire demands for new developments
- ▶ Review planned outages for construction and maintenance work
- ▶ Plan for and respond to emergency outages
- ▶ Review alternative for system improvements

Hach WIMS:

- ▶ Data management linked to SCADA system
- ▶ Automatically pulls data and populates reports
- ▶ Tracks Water Quality Samples & water transmission through system

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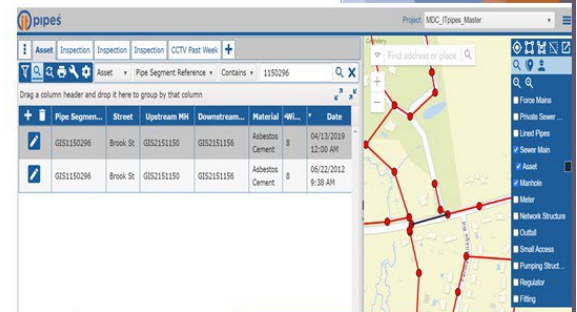
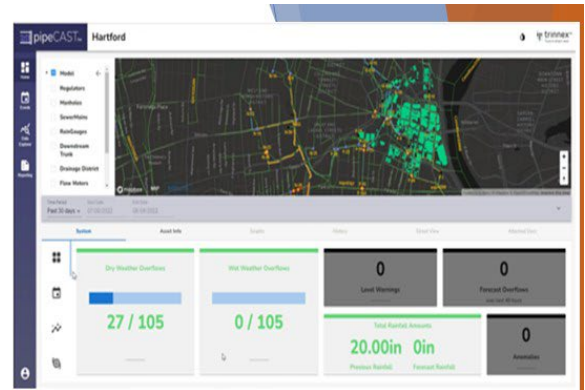
46

7-DEVELOP INFRASTRUCTURE MEGA-PROCESS

ENGINEERING (CONT)

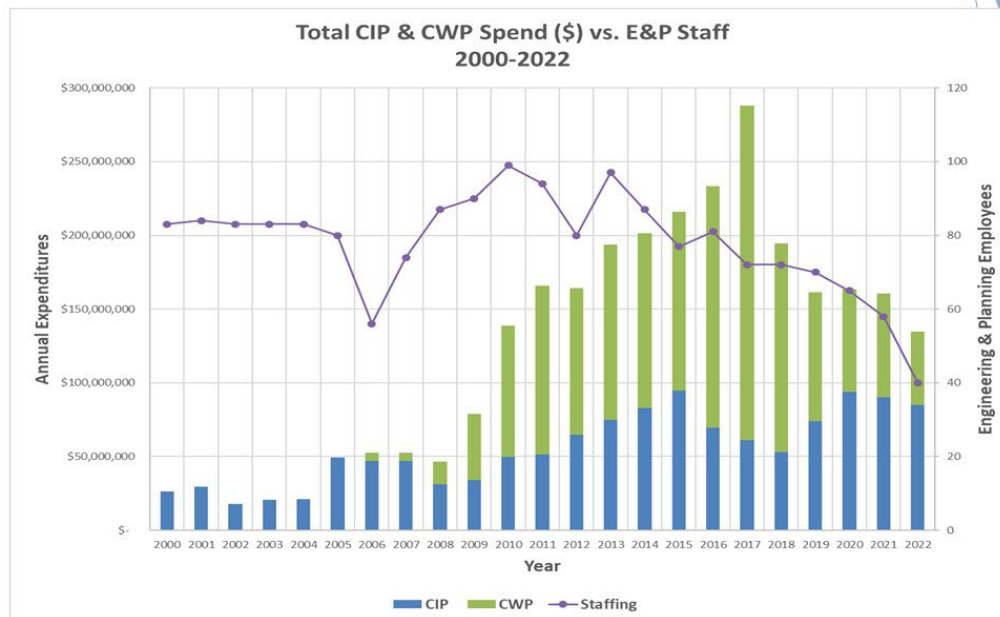
Sewer Modeling & Data Management

- ▶ Sewer SWIMM Model Integrated with PipeCast
 - ▶ InfoSWIM software, includes sanitary sewer collection system contributing to Hartford, Rocky Hill, and Poquonock WPCFs
 - ▶ Expanded and re-calibrated over last 15 years
 - ▶ Web-based PipeCast Platform integrates SWIMM Model with real time data collection
 - ▶ Monitors real time sewer flows for short-term and long-term trending analysis & continuous model improvement
 - ▶ Tracks CSO and SSO sites for active and anticipated overflows
 - ▶ Integrates love and forecast radar to anticipate increased sewer and WPCF flows
- ▶ IT Pipes:
 - ▶ Web-based platform that integrates MDC GIS with CCTV data collection and reports
 - ▶ Drastic reduction in CCTV data research and retrieval
 - ▶ Maintains historical database of CCTV inspections performed by both District personnel and Contractors



7-DEVELOP INFRASTRUCTURE MEGA-PROCESS

ENGINEERING



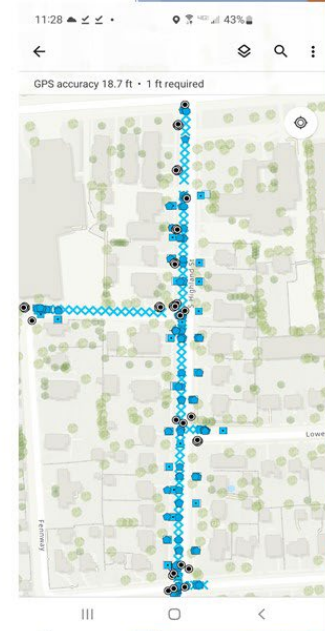
12-WORKFORCE PLAN

FIELD TOOLS - GIS & SAP

- ▶ Utilization of ESRI Collector and Field Maps
 - ▶ The District Operations department utilizes ESRI Collector to collect performance data on a daily basis. The software provides a sleek user interface that allows our maintainer to input objective and subjective data on the assets that are being maintained. The results of the data collection are provided on a Key Performance Indicator dashboard and are utilized for management of daily activities as well as regulatory requirements.
 - ▶ The District Engineering and Construction group has recently developed a process for obtaining highly accurate survey data through simple and efficient GPS tools while infrastructure is being installed. The engineering team worked with the GIS group to develop a system that allows for the results of the data to be populated real time in a mobile application and ultimately used to update the GIS system and historical records. The process has decreased a previously two year process to obtain all final measures and final records to less than two weeks.
 - ▶ As similar tool to the Engineering GPS toolset has been implemented in Utility Services and Operations to record daily modifications to the water and sewer systems so that a typical multi week process to record changes in various systems can be completed in the same day.



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District Chairman DiBella exited the meeting at 4:49 PM

Commissioner Gentile exited the meeting at 5:35 PM

Commissioner Bush exited the meeting at 5:36 PM

OPPORTUNITY FOR GENERAL PUBLIC COMMENTS

No one from the public appeared to be heard.

ADJOURNMENT

The meeting was adjourned at 6:01 PM

ATTEST:

John S. Mirtle, Esq.
District Clerk

Date of Approval