

COVID, ARPA AND RATES OH MY!!

Issues and Impacts on New Bedford's
Integrated Plan Implementation

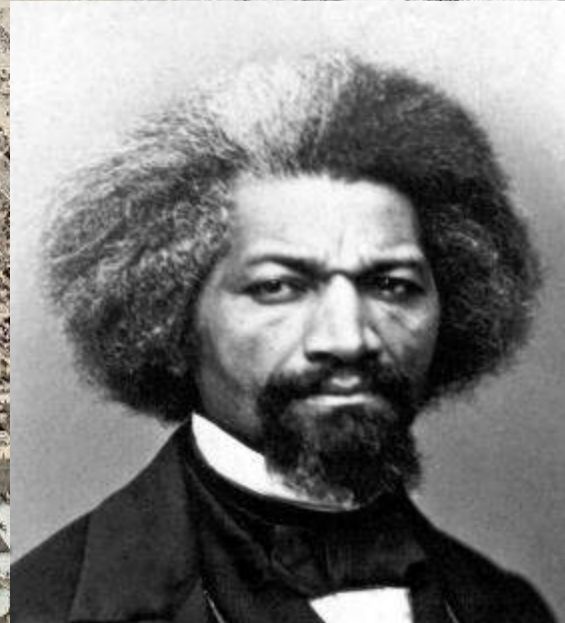
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City Engineer
City of New Bedford, Massachusetts



Presented by J. & W. R. WING & CO., 111 Union Street.



Herman Melville



Frederick Douglass





Presentation Outline

- Background
- Why did New Bedford do an IP?
- Overview of the IP
- Implementation Challenges



New Bedford Collection System Stats

- System constructed primarily between 1850s and 1960s
- Serves 100,000 people in 3 communities
- 75 MGD Wastewater Treatment Plant
- 350 miles of pipe (6-96 in.)
- 29 pumping stations
- 11.5 miles of force/pressure mains
- 74 regulators flowing to 27 outfalls
- *4 dams and 1 hurricane barrier??!*
- Intertwined network of interceptors, weirs, and pumping stations configured to maximize flow capture and conveyance to City's WWTP
- Outfalls susceptible to tidal/tailwater conditions and stormwater flows from partially separated areas



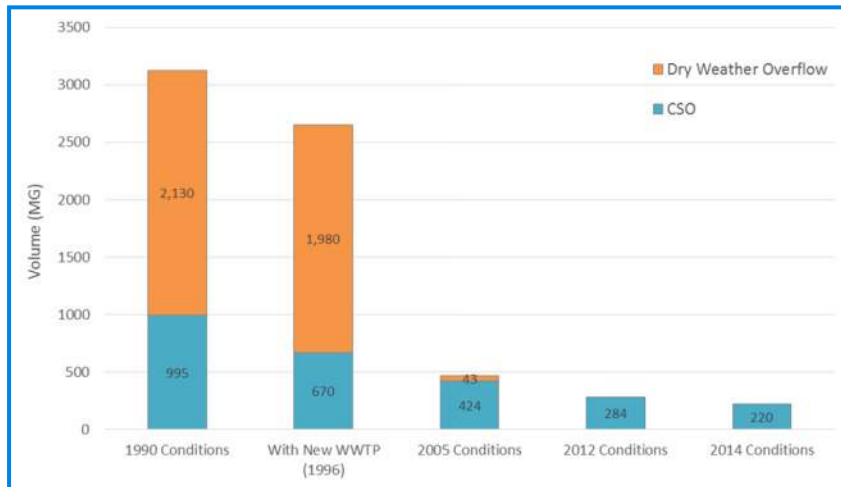
Early 1990's, the City got to work...

- Extensive system improvements
 - Treatment plant, pump stations, conveyance, regulators
- Wastewater Division established
- System maintenance, inspection, preventative measures
- Began to address dry and wet weather discharge
 - **3.2 billion gallons per year**



City's continuing efforts...

- Since 1990's, **\$250 million** dedicated to system improvements, reducing CSO's by **90%!**
- 12,000 acres of shellfishing beds opened
- Updated Baseline Condition in 2006
- 43-percent reduction in shellfishing bed closures
- Increased safe use of beaches and other resources

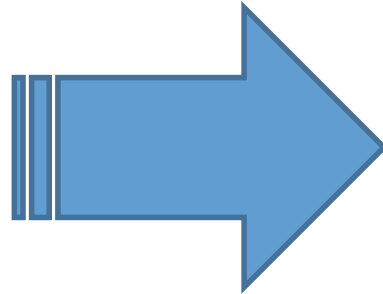


Where do we go from here?

- 2012 Administrative Order – CSO and CMOM Activities
- Solid Reputation with Regulatory Agencies
- Proactive Approach = Own Schedule and Projects
- Integrated Strategy



Integrated Planning

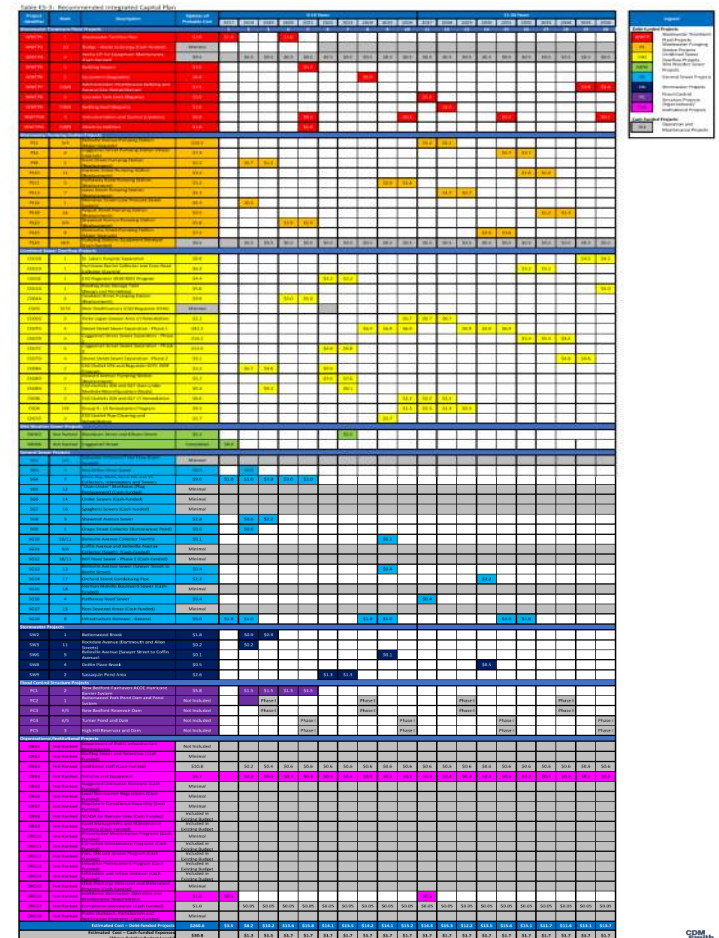


- Integrate CMOM and asset management activities into CSO and stormwater programs
- Avoid “silo” approach to planning
- What is the real priority?
- Financial
- Schedule

***Developing the right solution
Water and Non-water Related Obligations Paid by Rate Payer***

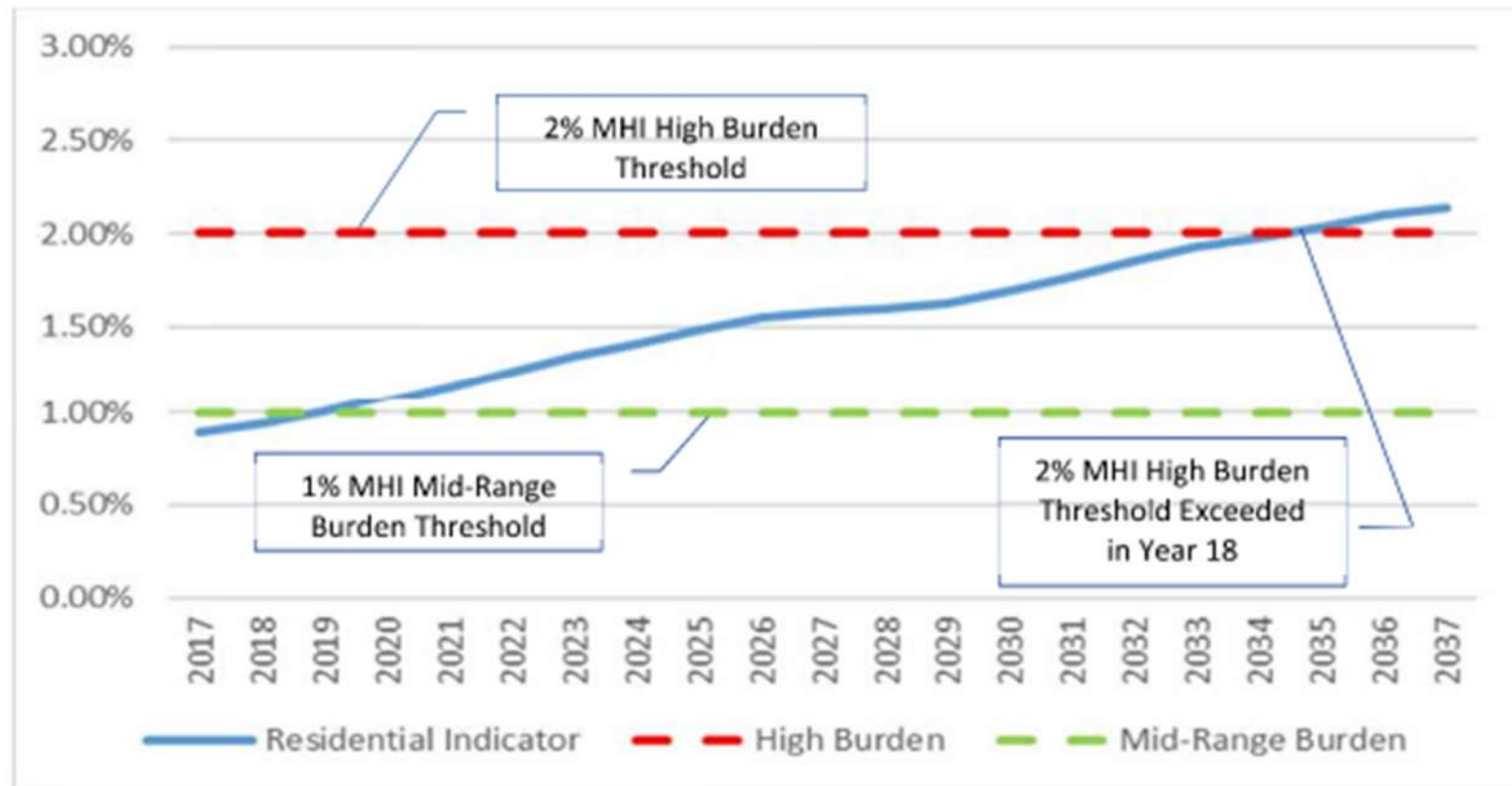
A “Whale” of a Plan

- Water and non-water related obligations
- EPA and DEP Requirements
- Adaptive management strategy
- Green and gray approaches
- Capital Improvement Plan
 - Water, roads, sewer, stormwater
 - Holistic Approach
 - Long Term Look Ahead
 - Financial Planning



The Integrated Capital Plan and CSO Control Program will affect the social, environmental, and economic welfare of New Bedford

Program Financial Burdens

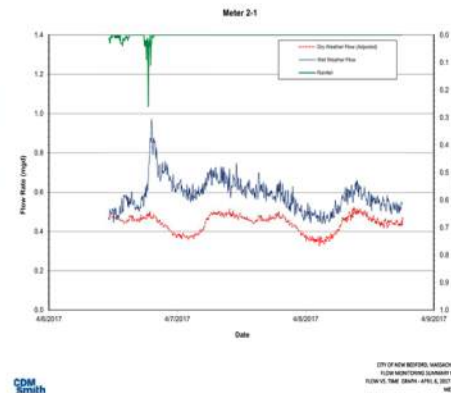


Criteria	FY 2017	FY 2022	FY 2027	FY 2032	FY 2037
Estimated Household Bill	\$342	\$522	\$703	\$890	\$1,106
MHI	\$38,495	\$41,470	\$44,675	\$48,127	\$51,847
Residential Indicator (as a percent of MHI)	0.89 percent	1.26 percent	1.57 percent	1.85 percent	2.13 percent

A Tale of Two Time Periods

Projects starting between 2016 and 2019

- 3 yrs of rate increases
- \$25 million spent over 8 projects – SRF funded
- Started some work ahead of schedule
- Included both planning and construction work
- To date, All work completed on schedule and budget
- Market conditions and construction costs



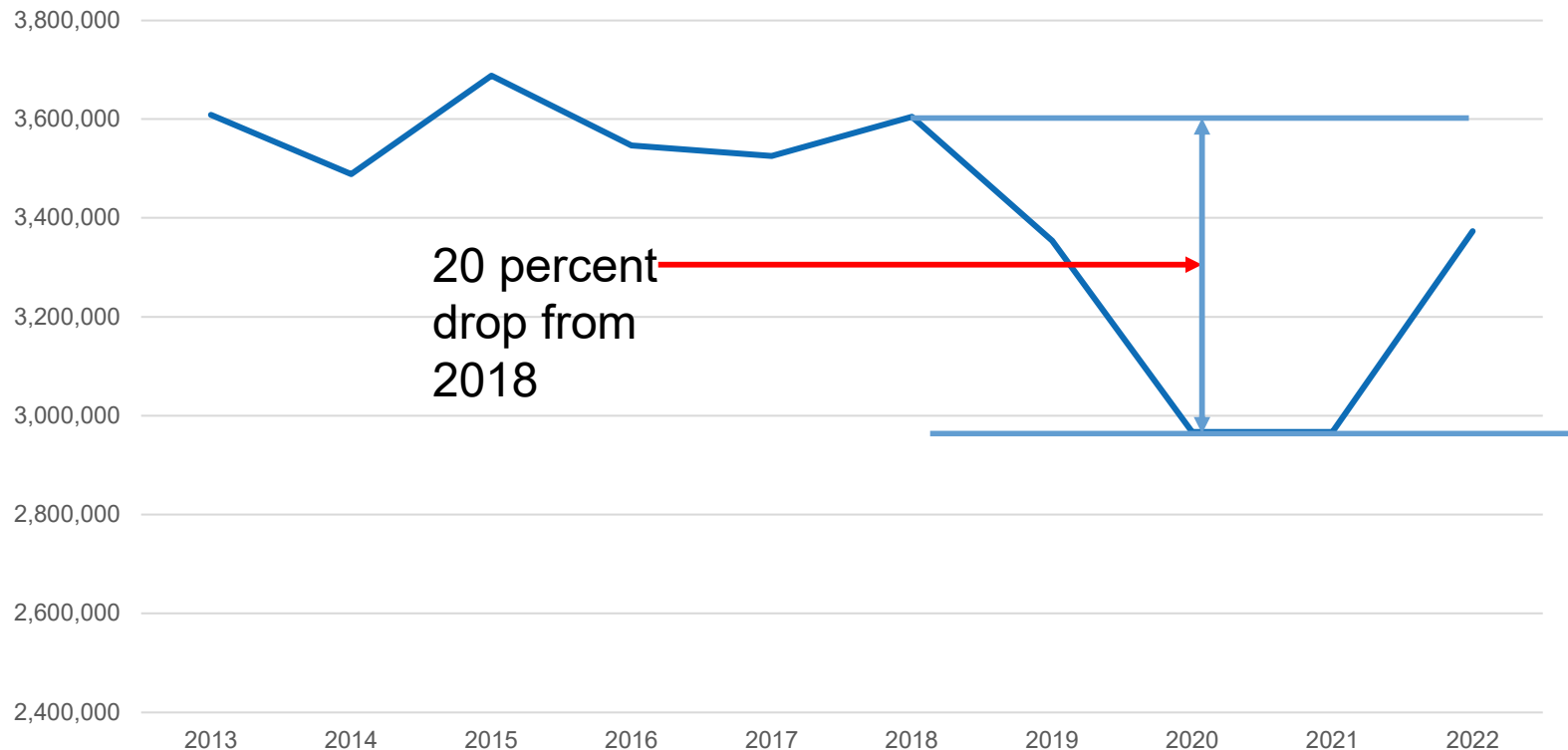
A Tale of Two Time Periods

Projects starting in 2019 through 2022

- AO issued in 2019 establishing schedule
- Schedule delays
 - Lag in rate increases in 2019 and 2020
- COVID
 - Rate spiral – significantly declining revenues
 - Physical ability to complete field programs
 - Impact to rate payers
- Politics
- ARPA – unknowns with funding, timing, use of money



Consumption



- \$80,000 per week decline in collections
- Projected approximate \$3M in revenue shortfall to meet projected demands for budget and CIP expenses

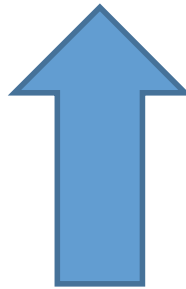
Rate Spiral

Projected Rates – Pre-COVID

	2021	2022	2023	2024	2025
Projected rate increase	5.2%	5.9%	6.0%	10.4%	4.6%

Projected Rates – Post-COVID

	2021	2022	2023	2024	2025
Projected rate increase	0%	25.5%	8.3%	6.5%	11.6%



Exceeded 30% to 40% Increase

Other Implementation Challenges

- Leadership and staff changes
- Regulatory changes
 - NPDES Permit – unknown
 - Division of Marine Fisheries – more stringent regulations
- Some projects are more complex than initially thought
 - IDDE – elimination of illicit connections to remove outfalls
 - Over Under Manholes – elimination to address inflow and CSOs
 - General system complexities
- Shifting priorities
 - Immediate issues that have come up – WWTP roof

Summary

- Think out of the box..
- We have a plan that addresses a wide range of issues using a single tool – but be flexible!!
- Mechanism to encourage change
- Regulatory and leadership buy-in is a must – ability to document results and get rate increases
- Development of integrated strategies based on our needs
- Not one size fits all.. Every community is different..
- Establish strong program management



Acknowledgements



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MassDEP

Massachusetts Department of Environmental Protection

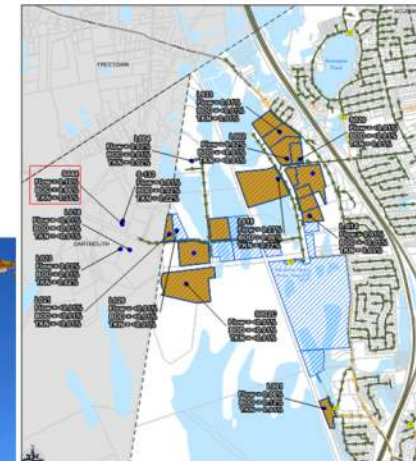
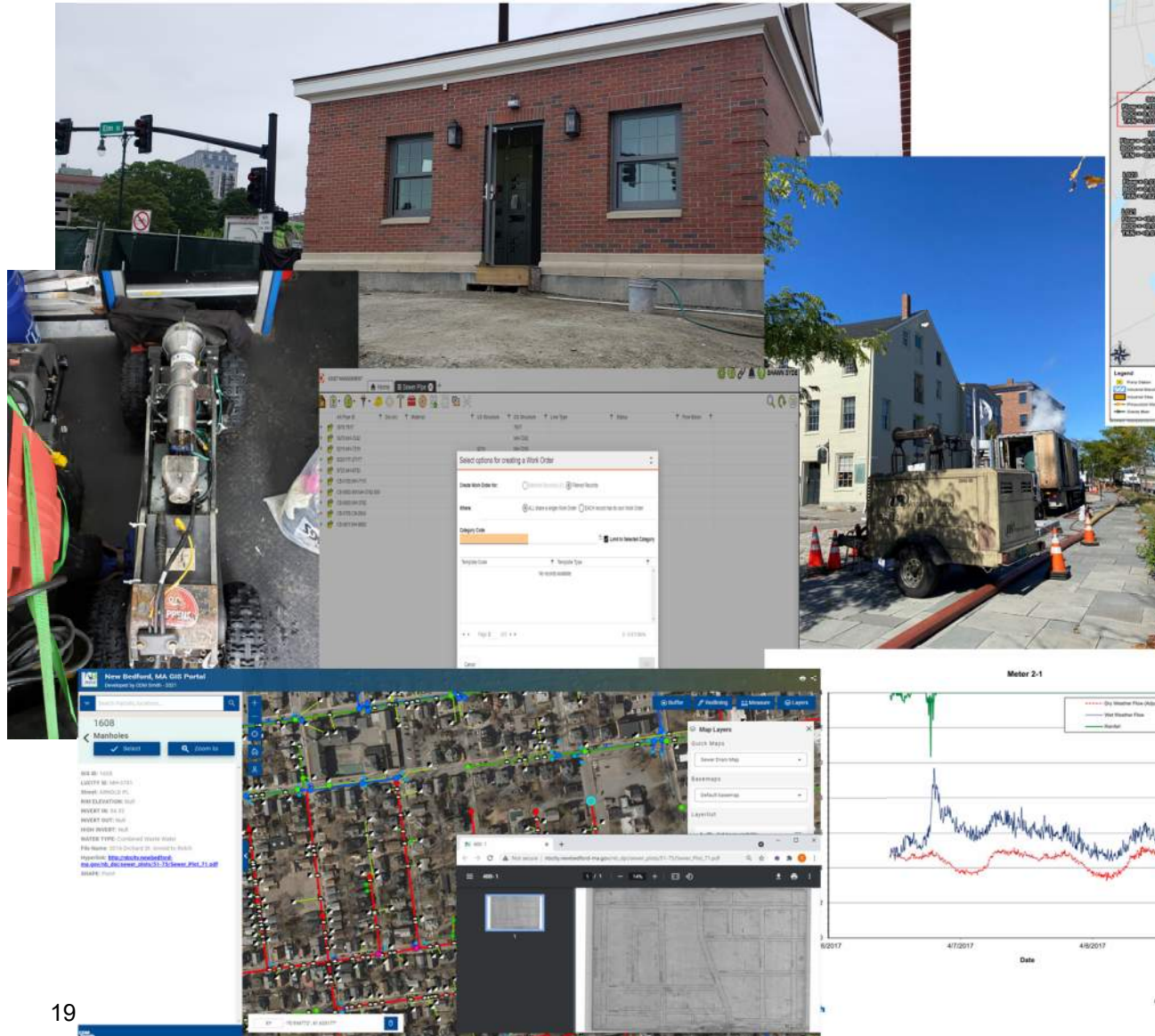


**CDM
Smith**

Beveridge
& Diamond



Questions?



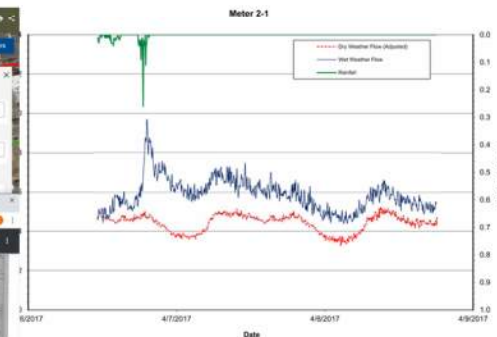
DOUBLE VISION

Digital twins facilitate cost-effective CSO monitoring and reporting

Karlyn Heisen, Amy Corriveau, Shawn T. Syde, and Justin A. Chicco

City of New Bedford in Bristol County, Massachusetts, is on Buzzards Bay, nicknamed "The Big City" during the 19th century, the city was the most important whaling port in the U.S. The city's age and development history has resulted in a large and complex combined sewer system. Sanitary sewer approaches are proving valuable for managing the system's operations, maintenance, and regulatory requirements. In 2015, the city was required to monitor and report CSO activity through its National Pollution Discharge and Elimination System (NPDES) permit. In addition to reporting under the permit, the city must also report CSOs under an older (CWA) law. The U.S. Environmental Protection Agency (EPA) typically requires 10 outfalls with permanent flowmeters to identify the frequency and magnitude of CSOs. The city generally complies with proposed "right to know" legislation. These monitoring and reporting requirements pose significant challenges to CSO communication. Monitoring costs, meter accuracy, system complexity, and other technical issues can limit a community's ability to site CSOs.

The city's collection system has unique characteristics and a configuration that complicates CSO detection. Permanent meters in the city's 27 outfalls is not an option due to stormwater flow. A common installation of CSO regulators, tidal influences, and accessibility issues flowmeters are often considered to provide the best means of reporting overflow are not always the best solution, since storm often have other issues associated with them, they are not installed or maintained properly. Additional challenges include meter calibration, location, difficulty in measuring sudden and intermittent large flows, and existing CSOs, outfall discharge to the outfall pipe.



CITY OF NEW BEDFORD, MASSACHUSETTS
FLOW MONITORING SUMMARY REPORT
FLOW IN 100% GRADE APRIL 2, 2017 FROM
METER 1

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