

# Water Pollution Control System Proposed Design-Build-Operate Contract

Newport City Council Workshop

May 5, 2016



**CDM  
Smith.**

# Presentation Agenda

- Background and System Overview
- Overview of Selection Process for DBO Contract
- Key Elements of the Proposed DBO Contract
  - Water Pollution Control Plant Upgrades
  - Operational Services for Plant, CSO Facilities, Stormwater UV Disinfection, and Pump Stations/Force Mains (Category “A” Assets)
  - Corrective Maintenance & Repair Program
  - Renewal & Replacement Program
  - Interim Category “B” Assets O&M/Support City O&M Transition
- City Management and Operation of Collection and Stormwater Gravity Systems (Category “B” Assets)
  - Sewer system
  - Drainage system
- Questions



# Background

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- Consent Decree to implement recommendations of the 2012 System Master Plan (SMP) by June 30, 2033
- Major Components:
  - Remove private and public inflow sources to achieve a 50% reduction in rainfall-derived inflow
  - Raise six existing weirs in the collection system
  - Install new pump station on Van Zandt Avenue
  - Upsize pumps at Wellington Avenue CSO Facility; upsize existing force main
  - Add dechlorination to Washington Street CSO Facility
  - Install new or upgrade existing stormwater conveyance pipes to convey volumes associated with inflow reduction
  - Evaluate Green Infrastructure and other BMPs to reduce stormwater flow and contamination
  - **Upgrade the Water Pollution Control Plant (WPCP) to 30 MGD capacity to address wet weather flows and mitigate CSOs**
  - Complete periodic CSO Program reassessments
- WPCP Deadlines
  - By **June 30, 2016**: the City shall award a DBO Contract to complete the WPCP Upgrades
  - By **June 28, 2019**: the City shall complete construction & initiate operation of WPCP Upgrades

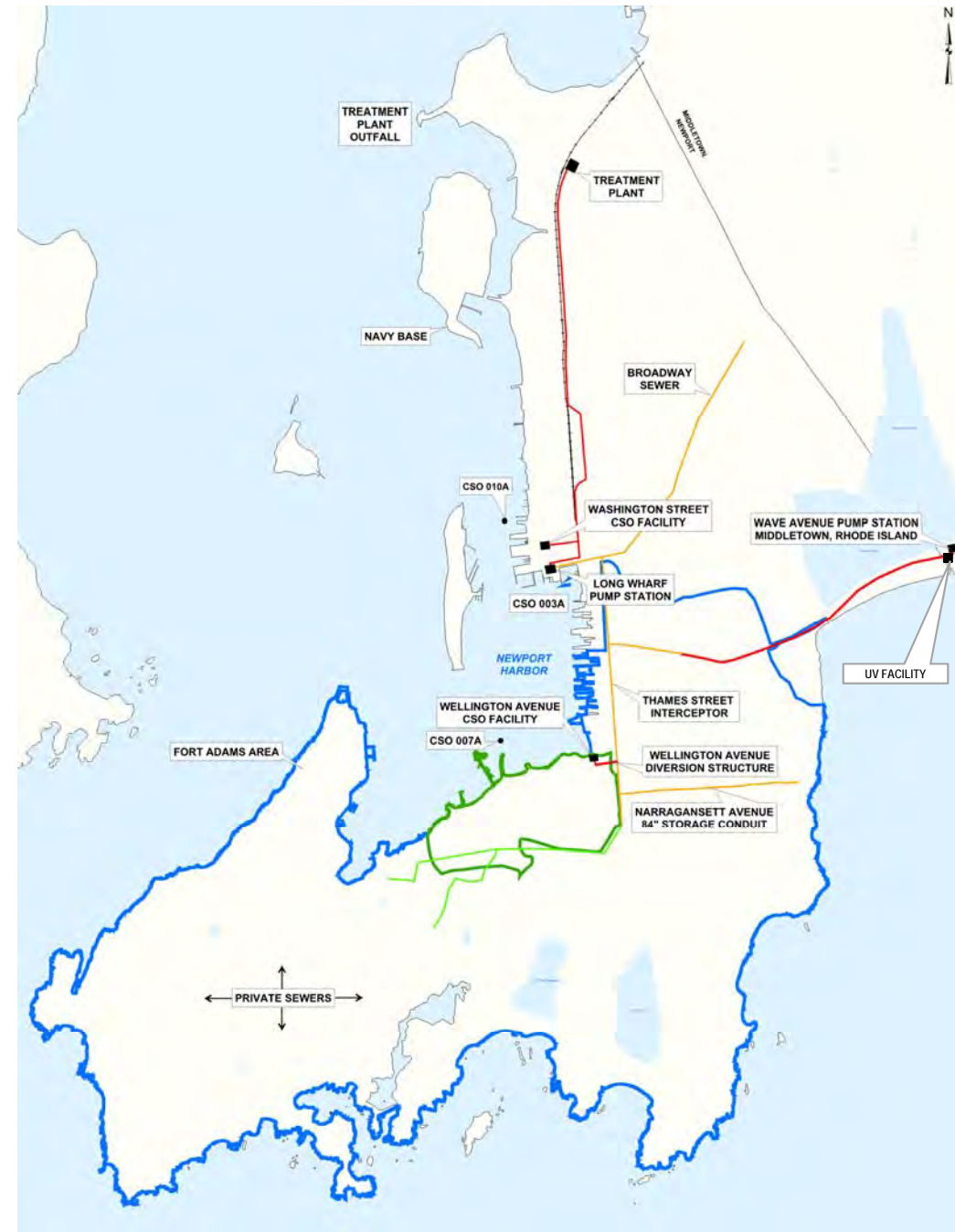
# Water Pollution Control System Overview

- Two Categories of Assets
  - “A” Above Ground
  - “B” Below Ground



# Category “A” (Above Ground) Assets

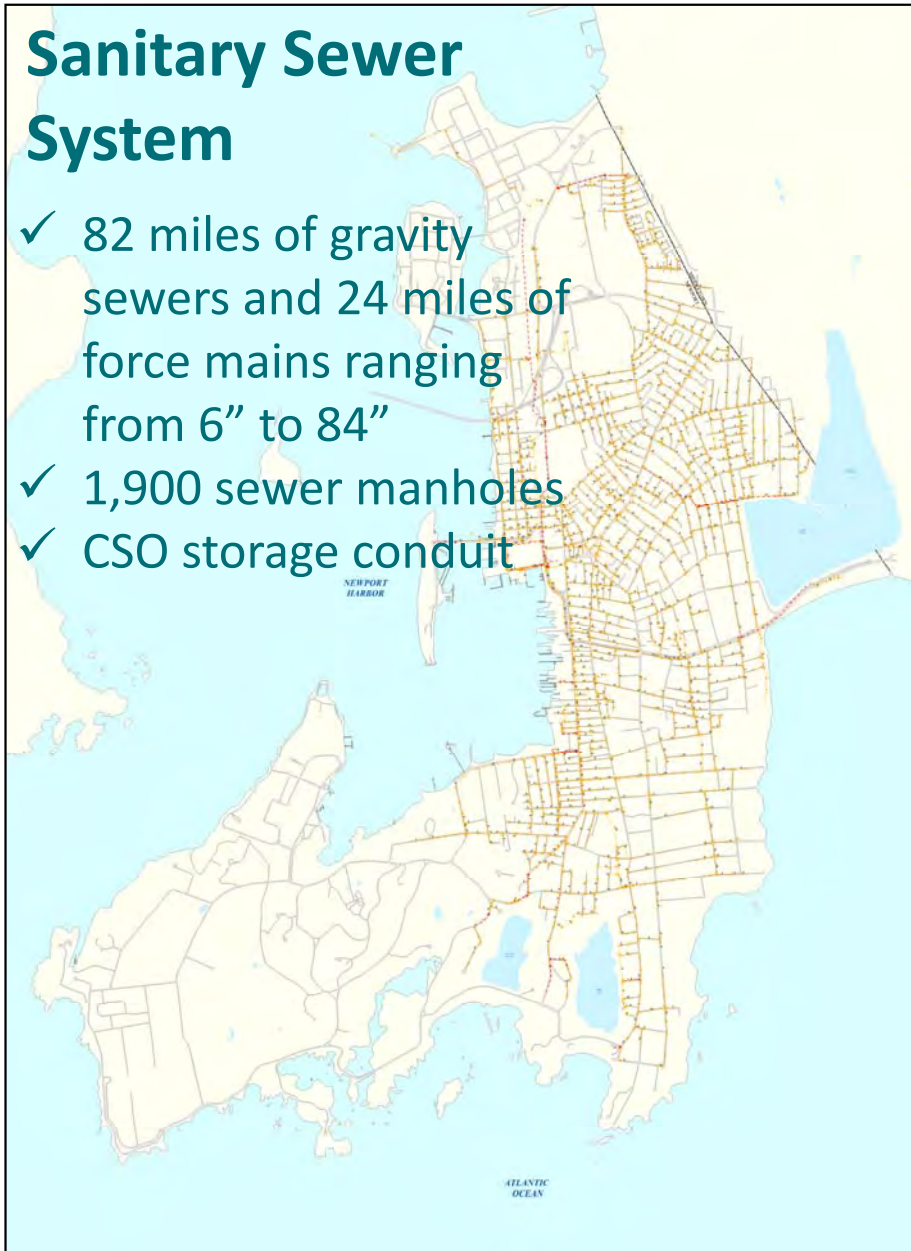
- Water Pollution Control Plant
- CSO Facilities (2)
- Pump Stations (14)
- Easton’s Beach Ultraviolet (UV) Disinfection Facility



# Category “B” (Below Ground) Assets

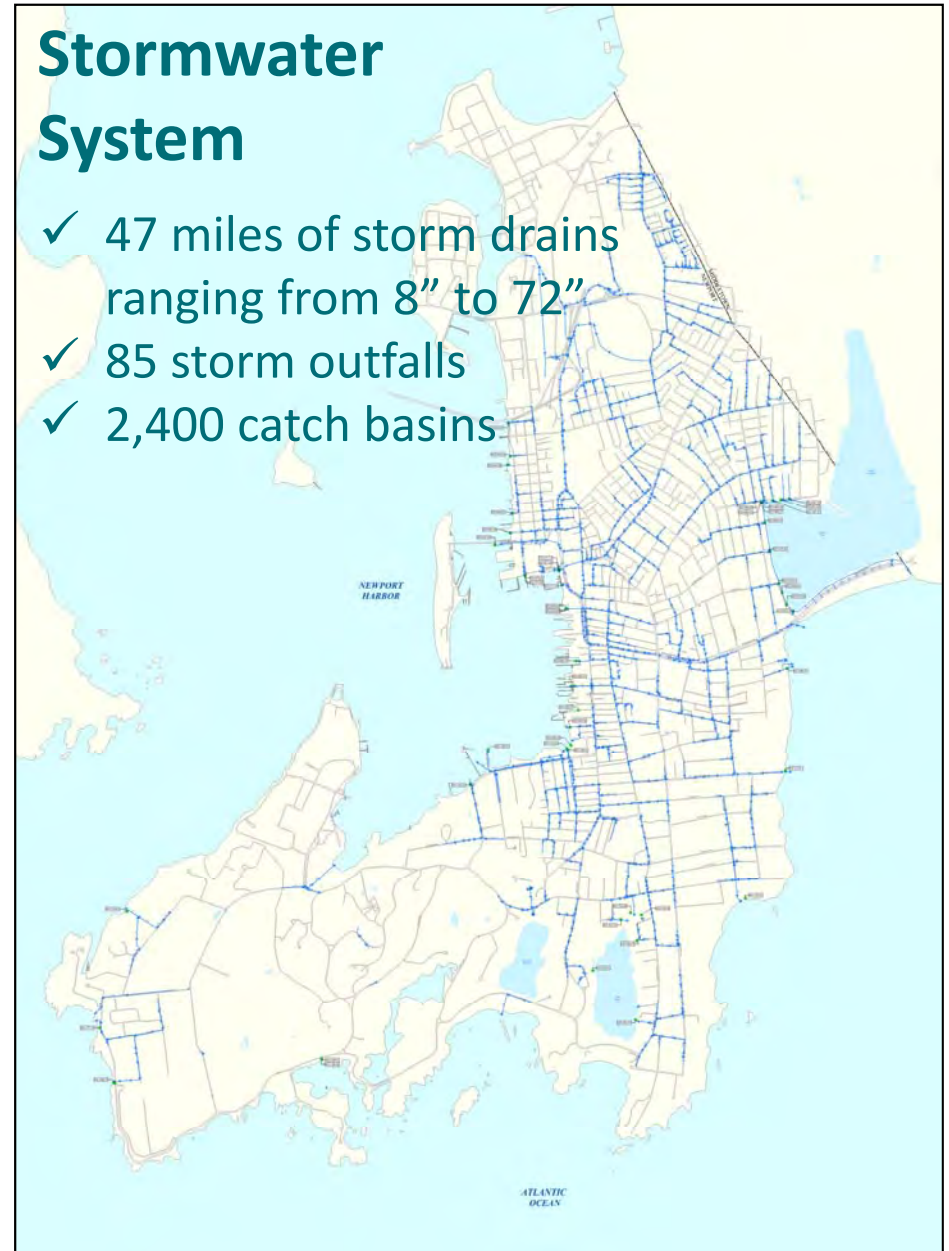
## Sanitary Sewer System

- ✓ 82 miles of gravity sewers and 24 miles of force mains ranging from 6” to 84”
- ✓ 1,900 sewer manholes
- ✓ CSO storage conduit



## Stormwater System

- ✓ 47 miles of storm drains ranging from 8” to 72”
- ✓ 85 storm outfalls
- ✓ 2,400 catch basins



# CDM Smith as City's Advisor to Guide DBO Project Implementation

- Completed to date:
  - Evaluated existing conditions
  - Prepared detailed RFQ and RFP
  - Assisted in proposal reviews and contract negotiations
  - Support for SRF funding
- Going forward:
  - Oversight of plant upgrades (technical submittals, construction management, field inspection)
  - Start-up, acceptance and performance testing
  - Support for SRF funding





# Overview of Selection Process for DBO Contract

# Selection Process for DBO Contract

- Design-Build-Operate (DBO)
  - Design plant upgrades
  - Build (construct) plant upgrades
  - Operate plant, pump stations, CSO facilities (Category “A” Assets)
- October, 2014 – Request for Qualifications (RFQ)
  - Three submittals, shortlisted to two highly-qualified teams
- August, 2015 – Request for Proposals (RFP)
  - Two compliant proposals (12/15/15)
  - Initial proposal evaluations
  - Questions/clarifications
  - Interviews (02/28/16)
  - Best and Final proposals (03/11/16)
  - Evaluation Committee selection of **Newport Water Services** based on RFP criteria to begin contract negotiations (3/23/16)

# Selected DBO Team

- Based on most advantageous combination of cost and technical factors, Newport Water Services (NWS) selected:
  - AECOM – Design Engineer
  - C.H. Nickerson – Builder
  - Suez – Operator
- AECOM/C.H. Nickerson was designer and builder for DBIA-award winning, Lawton Valley and Station One water treatment facilities
- Suez currently is operator of City Water Pollution Control System under existing DBO contract (formerly, United Water)
- Suez and AECOM have successfully worked together on several DBO projects in New England
- AECOM is guarantor of NWS contractual obligations (years 1-3)
- Suez is guarantor of NWS contractual obligations (years 4-20)



# Key Elements of the Proposed DBO Contract

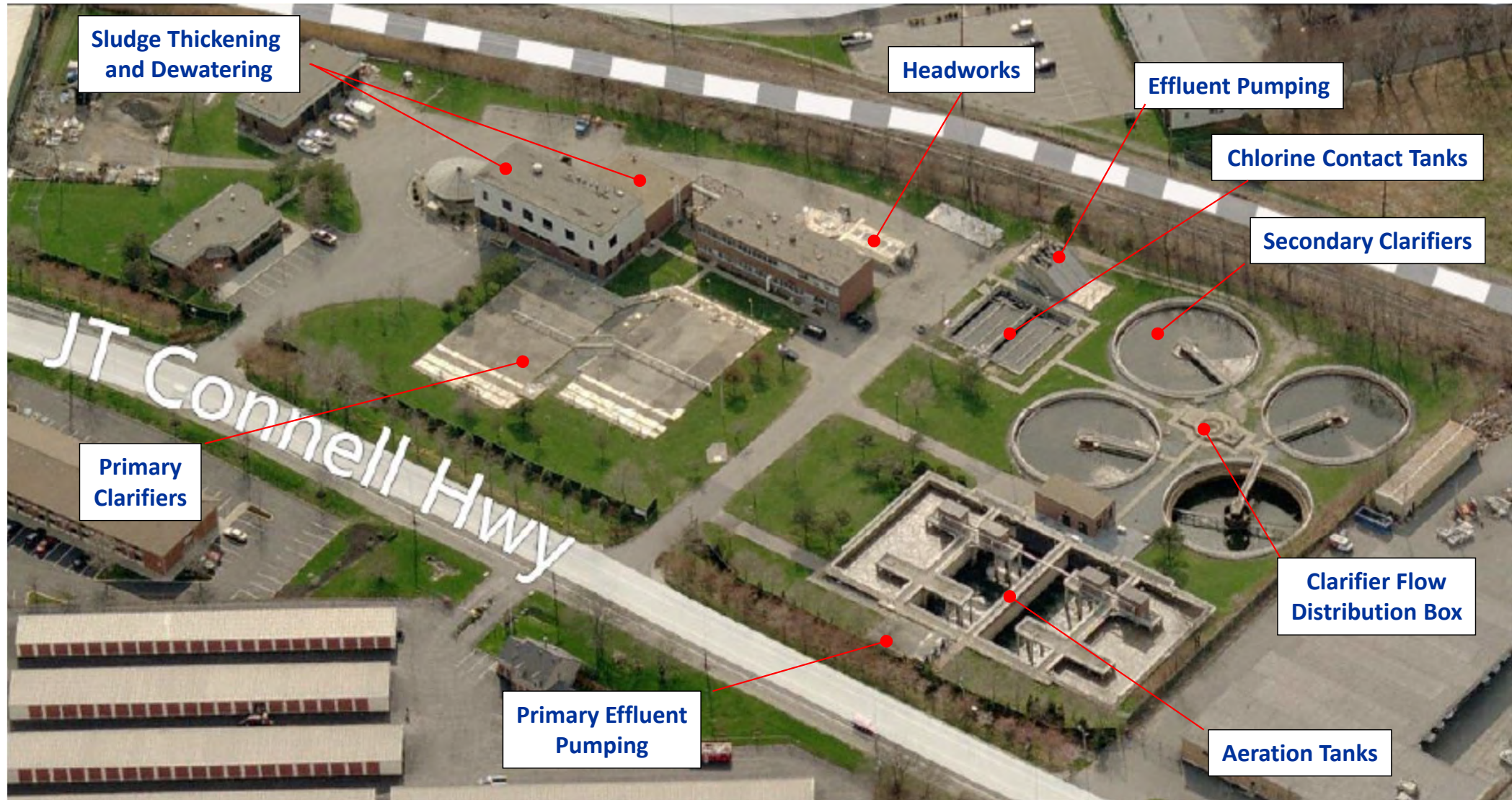
# A. Water Pollution Control Plant Upgrades

- Increase maximum capacity from 19.7 to 30 million gallons per day (mgd) to address wet weather flows and mitigate CSOs
- Upgrade major process components to handle increased flow:
  - New headworks to safeguard reliability to downstream equipment and processes
  - Chemically-enhanced primary treatment (“CEPT”) to buffer the impact of wet weather peak flows
  - Increased aeration tank volume to accommodate increased loads
  - Two-train contact stabilization to optimize treatment capability
  - New high-efficiency turbo-blower to improve energy efficiency during normal flows
  - Deeper secondary clarifiers for more reliable sludge blanket control
  - New UV disinfection system to protect against fecal coliform and enterococci excursions at lower cost than chemicals and with increased safety
  - Improved solids management to minimize odors and reduce disposal costs
  - Biofilters for more reliable odor control not relying on chemicals

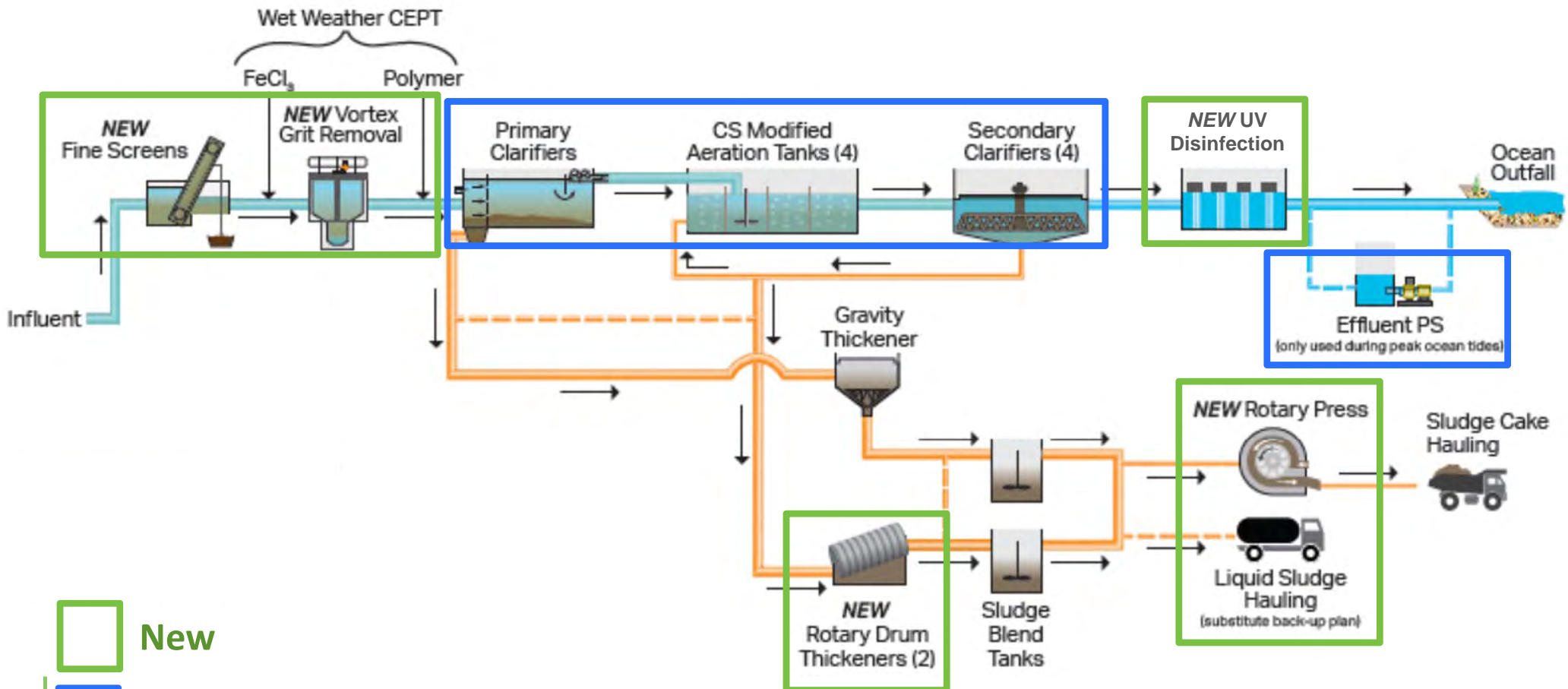
## A. Water Pollution Control Plant Upgrades *(continued)*

- Site improvements
  - Improved traffic pattern
- Climate resiliency
  - Raise flood-protection elevation
- “Green” components
  - Efficient re-purposing of existing facilities (lower site impact)
  - High-efficiency equipment
  - Provisions/possible implementation of solar photovoltaic panels to generate electricity to use in operation of the plant

# Aerial View of Existing WPCP (Looking West)

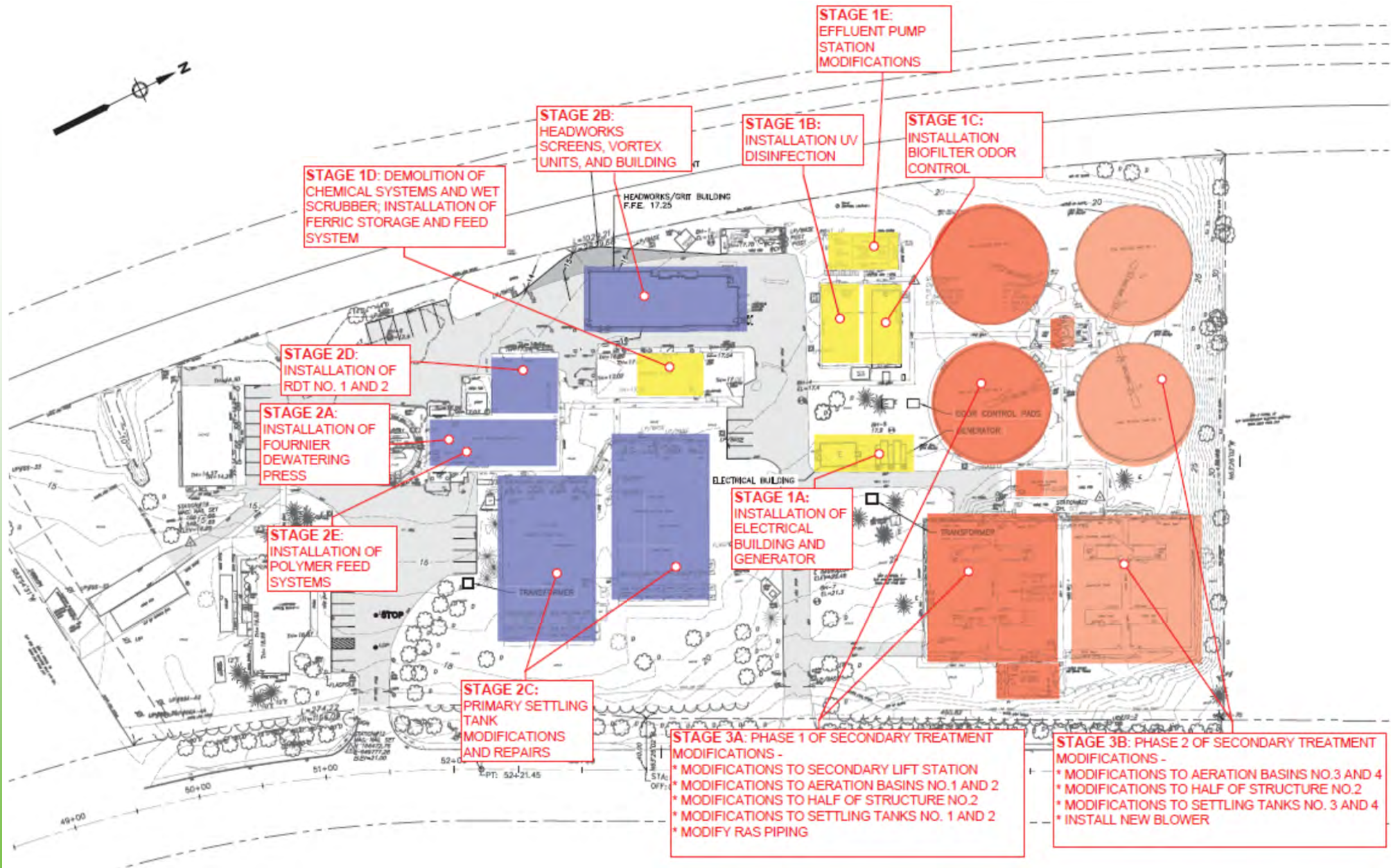


# Major Plant Upgrades – Process Flow Diagram

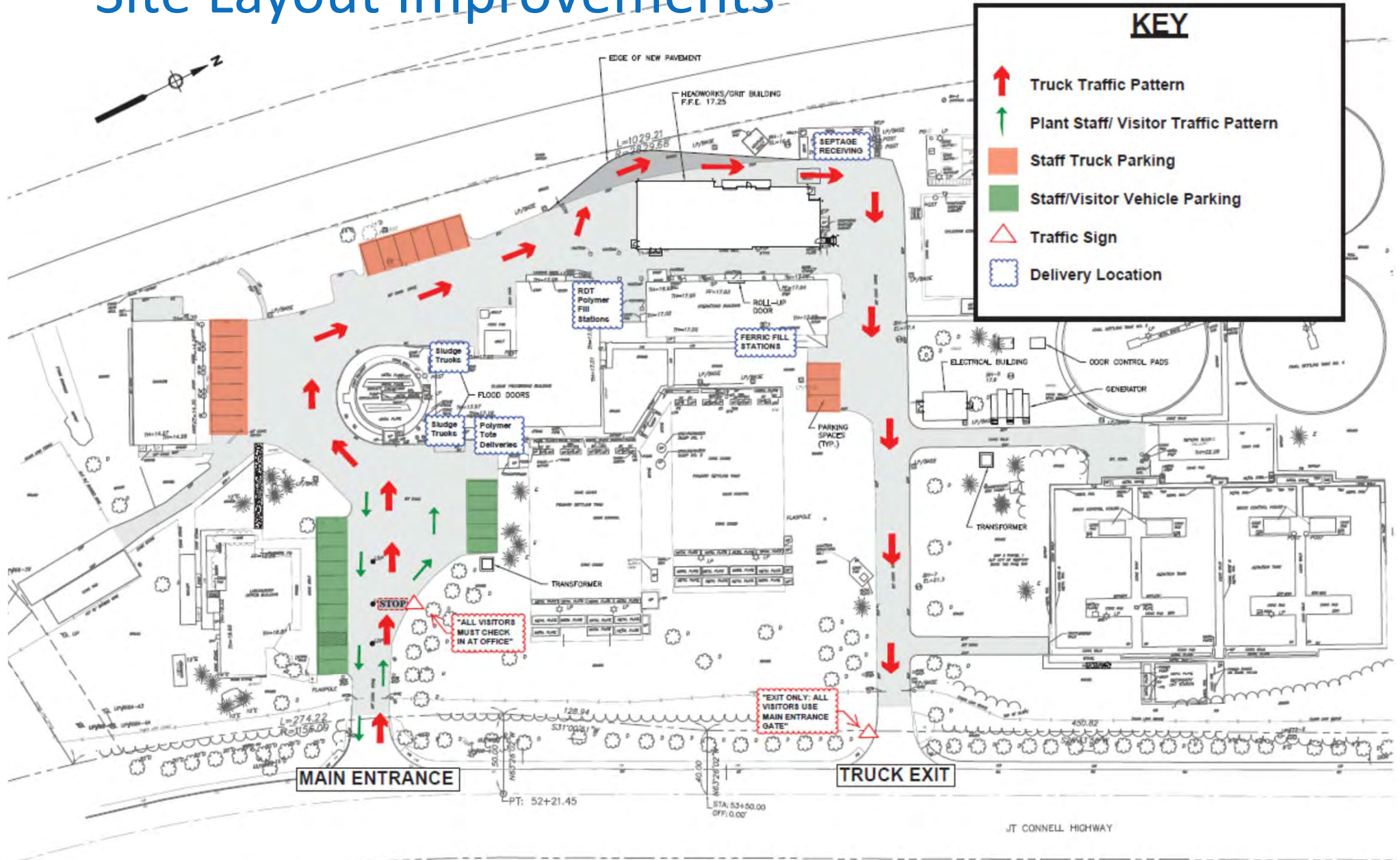




# Plant Upgrades – Construction Sequencing



# Site Layout Improvements





# Water Pollution Control Plant Upgrade – Costs, Funding and Schedule

- Fixed Price of \$ 37,995,300
  - Design, permitting, construction and performance testing
- City contingency of \$2,000,000
  - If changed conditions encountered
  - Design alternatives, including Solar generation of electricity for use in operating the Plant
- Funded by \$50 million bond ordinance via RI Clean Water State Revolving Fund loan
- Guaranteed completion by Consent Decree Deadline of June 28, 2019

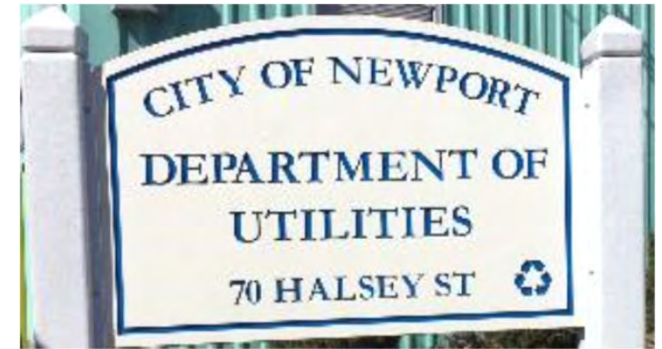
## B. Operations and Maintenance (O&M)

- 20-year term service contract
- City may terminate “for convenience”
- Managed Assets O&M (Category “A”)
  - Water Pollution Control Plant (WPCP)
    - During and after Plant Upgrades
  - Pump Stations/Force Mains
  - CSO Facilities
  - Stormwater UV Disinfection Facility
- Corrective Maintenance and Repair
- Five-Year Renewal and Replacement Plan
- Interim O&M/Support City O&M transition for gravity Collection and Stormwater Systems (Category “B”)

## B. O&M Service Fee

Fiscal Year	Category "A" Total O&M Fee	Breakdown
<b>Before Plant Upgrades</b>		
2017, 2018, 2019	\$6,214,193	O&M: \$5,134,670 Corrective Maintenance/Repair: \$654,523 Renewal & Replacement: \$425,000
<b>After Plant Upgrades</b>		
2020 – 2037	\$6,448,145	O&M: \$5,376,115 Corrective Maintenance/Repair: \$647,030 Renewal & Replacement: \$425,000

- Interim Category "B" Fee of \$90,280 per month for FY'17
  - City may terminate at transition to City O&M
- Annual Consumer Price Index (CPI) adjustment of O&M fee component (starting in 2021)
- 5-Year City review for adjustments, up or down:
  - Sludge disposal quantity cap
  - Corrective Maintenance/Repair funding
  - Renewal and Replacement funding



City Management & Operation of  
Collection and Stormwater Systems  
(*Category "B" Assets*)

# Category “B” Assets

- Better known as the “Collection System”
  - Sanitary sewer pipe network
  - Storm drainage pipe network
  - Primarily all underground gravity assets
- Historically underfunded
- Most Contract Operators specialize in plant operations (“vertical” not “horizontal” assets)
- Very few collection systems privately operated
- Challenges with customer responsiveness and emergency nature of the work



# Potential for \$600,000 Annual Savings with City O&M of Category “B” Assets

Component	Estimated Annual Cost
<b>A. Proposed DBO Contract Price</b>	<b>\$2,400,000</b>
<b>B. City Operation</b>	
B1. Labor	\$ 780,000
B2. Parts, Supplies, Materials	\$ 485,000
B3. Subcontracted Services ( <i>e.g., CCTV pipe inspection</i> )	\$ 375,000
Subtotal	<u>\$1,640,000</u>
B4. City Equipment Lease ( <i>total cost = \$655,000</i> )	\$ 150,000
Estimated Annual Budget Total	<b>\$1,790,000</b>
<b>Potential Annual Savings with City Operation</b> <i>(including financing equipment lease over five years)</i>	<b>\$600,000</b> <i>(rounded)</i>

# Advantages of City O&M

- Rapid response to system emergencies and customer problems
- Customer-centric operations
- Standard Operating Procedures (SOPs)
- Quality control procedures
- More effective management and prioritization of needed repairs



# Example of City Responsibilities

- Catch basin inspection and cleaning (routine and non-routine)
- Catch basin repairs
- Manhole inspections and maintenance
- Pipeline inspection and cleaning (routine and non-routine)
- Pipeline repairs
- Spoils management
- Develop & implement priority repair program
- Root control
- Maintenance of tide gates and regulator chambers
- West Nile Virus vector control
- Maintenance of grass swales
- Rapid response to system emergencies and customer problems
- Pre- and post-storm event checks and clean-up
- Right-of-way/access maintenance for stormwater assets
- Maintenance of paved channels and Easton Pond Moat
- Maintenance of stormwater BMPs
- Illicit discharge investigations
- Respond to/remove system blockages
- Customer complaints
- Records maintenance
- Regulatory compliance and reporting
- Service requests and work orders
- Develop SOPs and quality control procedures



# Questions