

# ANALYSIS OF TRENCHLESS AND CONVENTIONAL TECHNOLOGIES UTILIZED FOR INSTALLATION OF 5,550 LF OF RELIEF SEWER

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NEWWEA 2018 Spring Meeting – Newport, RI

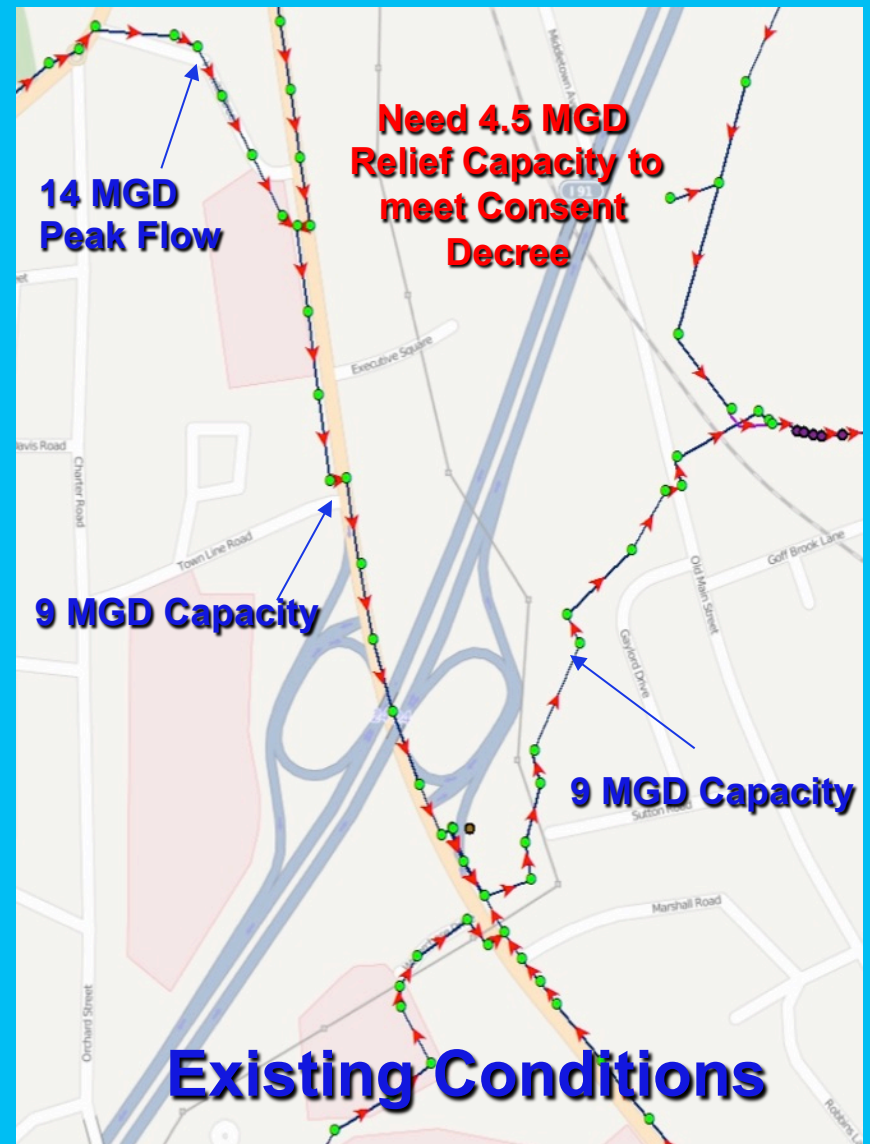


# Introduction

- Metropolitan District Commission
  - Regional Water and Sewer Authority – Greater Hartford Connecticut
- US EPA Consent Decree – SSO Elimination
- Goff Brook Sanitary Sewer Overflow Closure Project
- Focus Today – Alternatives Analysis Phase Considering Trenchless Technologies

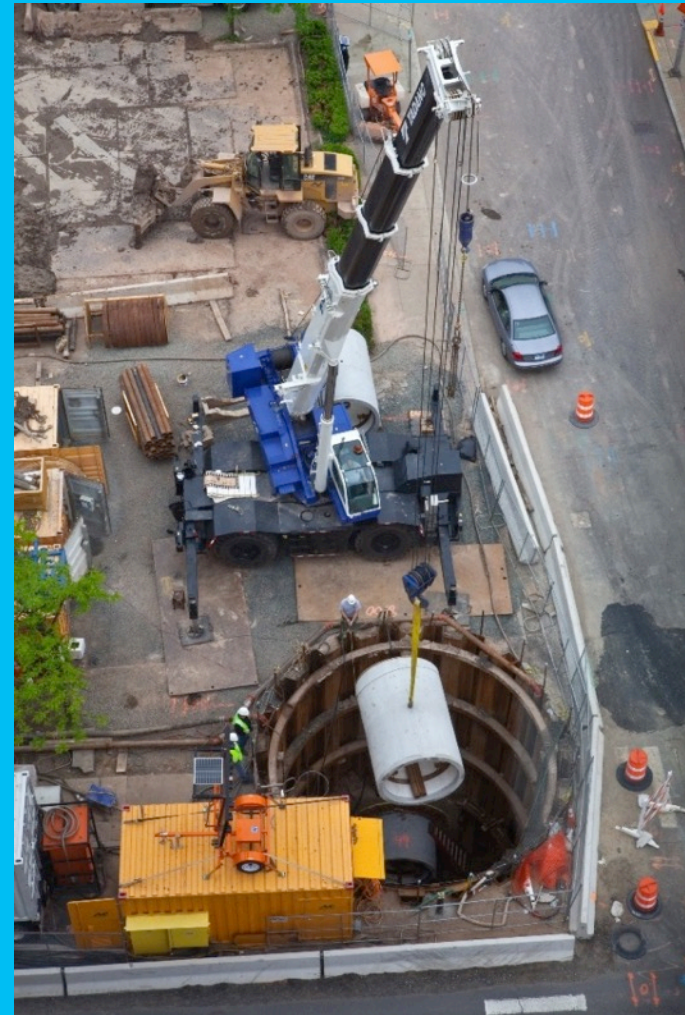
# Issue Identification

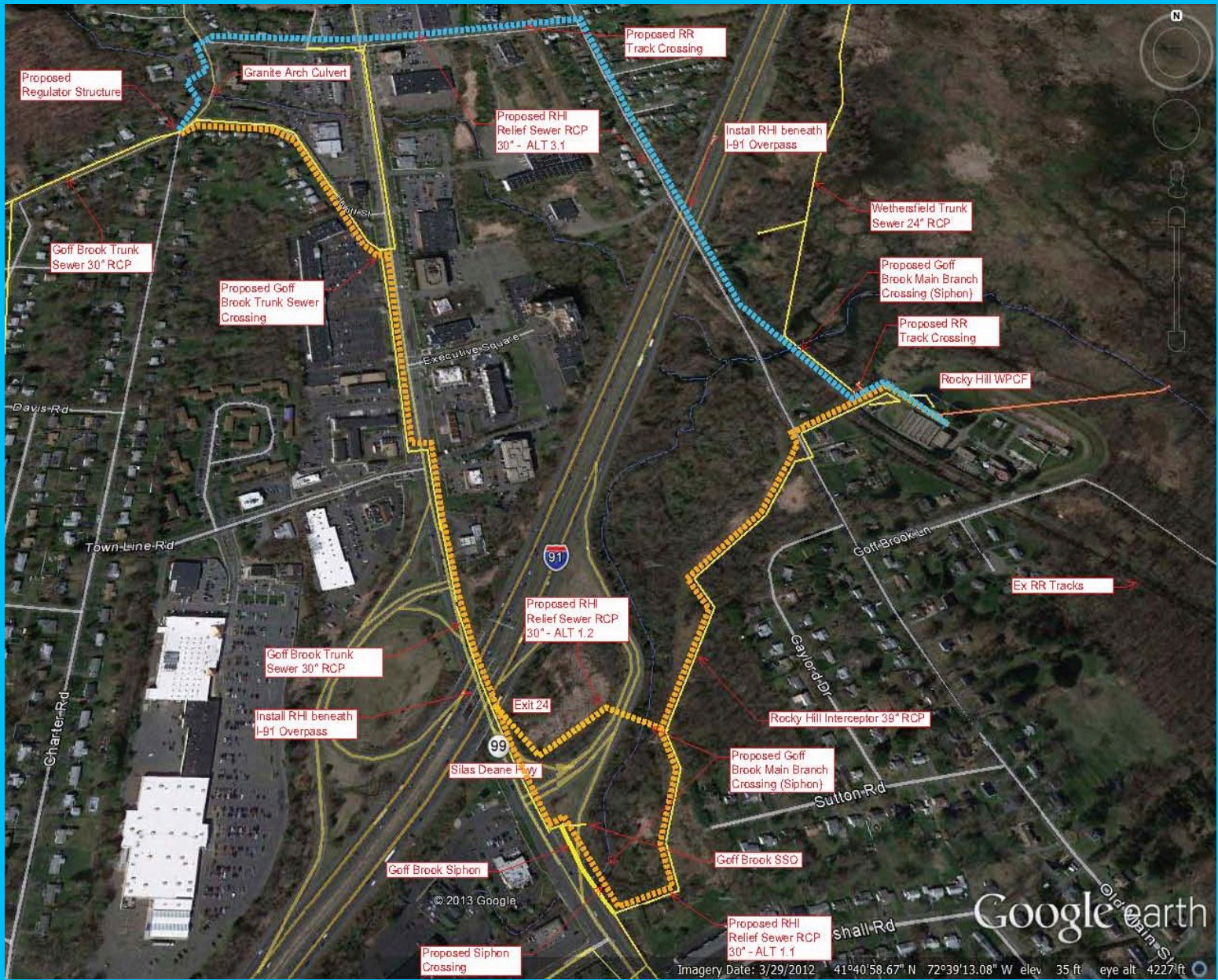
- Goff Brook Trunk Sewer
  - Flow Exceeds Capacity
  - Street Manhole Surcharging
- Rocky Hill Interceptor – SSO to relieve surcharging to Goff Brook
- Additional Collection Capacity Necessary to Close SSO
- Phased Data Acquisition and Alignment Evaluation



# Alternatives Identification

- 3 Main Alternative Routes
- 13 Sub-alternative Alignments
- Various Soil Strata
  - Solid Rock
  - Clay
  - Mixed Soil Conditions
  - Interface Zones
  - Goff Brook/Wetland Crossings





# Pre-Design Data Collection Investment

- Significant Capital Investment by MDC
- Detailed Geotechnical Investigation of Each Route
- Field Confirmation of GIS Data
  - Confirm Sanitary Sewer Data for Modeling
  - Utility Survey for Conflict Avoidance Consideration
- Confirmation/Update of Modeling to Confirm Issues and Verify Alternative Improvements

# Trenchless Technology

- Auger Boring
  - Least Expensive
  - Short Soft Ground Tunnel Applications
- Rockhead Tunnel Boring Machine (TBM)
  - Can Mine Rock – Groundwater Considerations
- Microtunnel Boring Machine (MTBM)
  - Remote Controlled
  - Lengths up to 2000 feet
  - High Groundwater Table Conditions
  - Varying Soil Strata
- Identification of Mixed Face Soil Conditions Critical



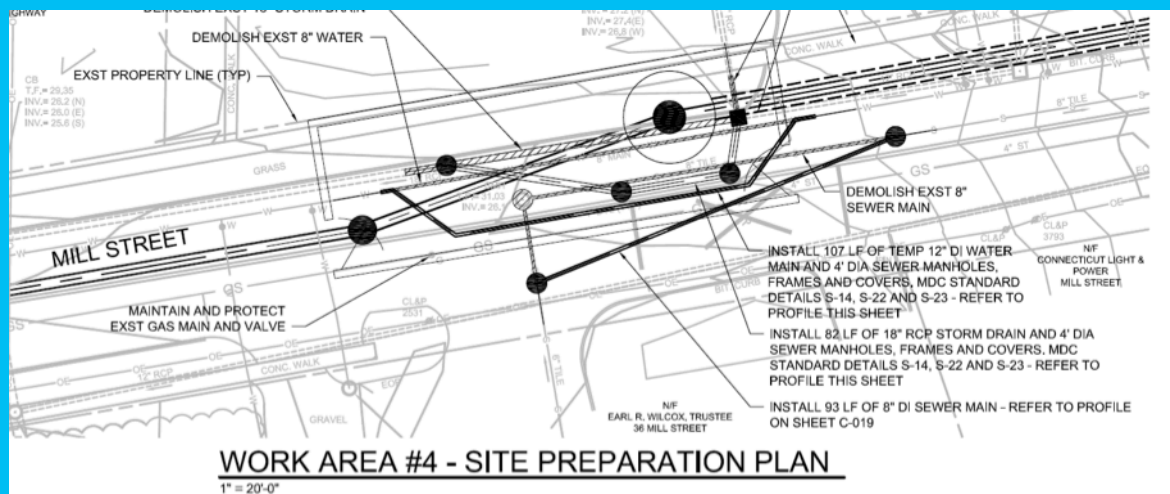
# Trenchless Technology in Operation





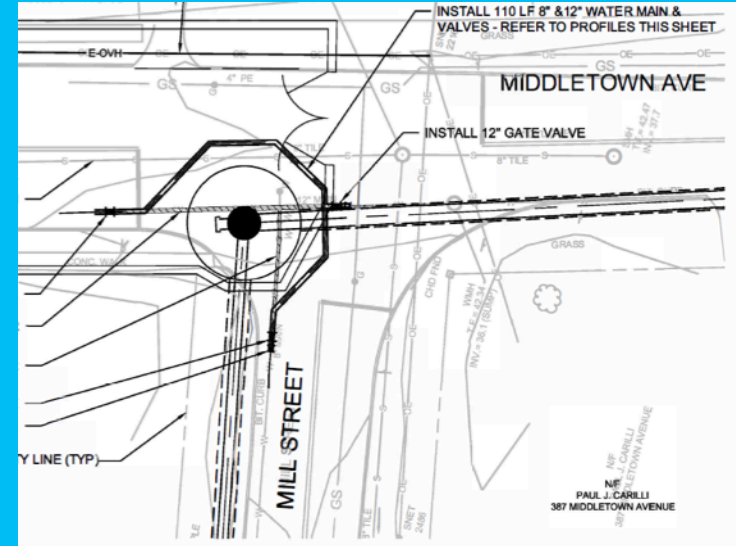
# Evaluation Balancing Act

- Constructability – No Alternative Removed
- Duration – Winter Shutdown (Benefit of Tunneling)
- Cost – Factor Developed and Included in Matrix
- Non-Cost Factors –
  - Public Inconvenience/Safety Impacts
  - Environmental/Wetland Impacts
  - Easement Acquisition (time to acquire, not cost)



# Evaluation Balancing Act

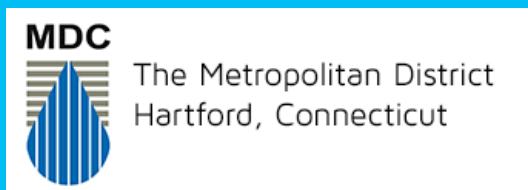
- Water and Sewer Main Replacement Philosophy Factor
  - Segmental Infrastructure Upgrade
- Future Replacement of Wethersfield Trunk Sewer
- Alternative 3 – Non-Cost Benefit Factor
  - Allowed Relocation of WTS out of Wetland
  - Increased Capacity – Reduced Manhole Surcharging
  - Reduced I&I from Floodplain Impacts



# Final Alternative Selected - Evolution

- Alternative 3 - Northern Route
  - Most Rock Influences – Most Opportunities for Tunneling
  - Provided Highest Non-Cost Benefits
- Design Progression – Bidding Phase
- In Construction Thru Winter
  - Multiple Phases at Same Time – Open Cut & Tunneling
  - Both TBM and MTBM to be Used
  - Construction and Public Safety Paramount





# QUESTIONS??

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