

2023 Sewer Point Repairs and Improvements

(City Project #22-0006-UT,
Council Item #23-1097)

September 2023



CLEARWATER
BRIGHT AND BEAUTIFUL • BAY TO BEACH



PUBLIC UTILITIES SYSTEMS

Public Utilities Department Operates & Maintains the following systems:

- Raw water (44 supply wells)
- Water treatment (3 treatment plants)
- Water distribution (597 miles of water mains)
- **Wastewater collection system (WWCS, next slide)**
- Wastewater treatment (3 water reclamation facilities)
- Reclaimed water distribution (142 miles)

WWCS BACKGROUND

Wastewater Collection System Consists of:

- 8,300 manholes
- 408 miles of gravity sewer
- 78 lift stations
- 38 miles of force main
- Sub-divided into 3 service basins:
 - East Water Reclamation Facility (WRF)
 - Marshall St. WRF
 - Northeast WRF

WWCS MASTER PLAN



City of Clearwater Wastewater Collection System Master Plan

City Project Number 17-0006-UT

PRESENTED TO

City of Clearwater
100 S. Myrtle Avenue
Clearwater, FL 33766

PRESENTED BY

Tetra Tech
201 E. Pine Street, # 1000
Orlando, FL 32801
P +1-407-839-3955
F +1-407-839-3790
www.tetrattech.com



#200-41125-18003

December 2021

WWCS MASTER PLAN

Table 8-7. Summary of Collection System Opinion of Probable Cost

	To 2030	2031 to 2050
Capacity Related Projects		
Marshall Street WRF	\$15,380,000	\$0
East WRF	\$7,532,000	\$0
Northeast WRF	\$36,210,000	\$11,236,000
Total Capacity Related Project Cost	\$59,122,000	\$11,236,000
Renewal and Replacement Projects		
Marshall Street WRF	\$88,154,000	\$108,812,000
East WRF	\$48,420,000	\$110,474,000
Northeast WRF	\$24,046,000	\$107,825,000
Total Renewal and Replacement Project Cost	\$160,621,000	\$327,111,000
Total CIP Cost	\$219,742,000	\$338,347,000



WWCS MASTERPLAN

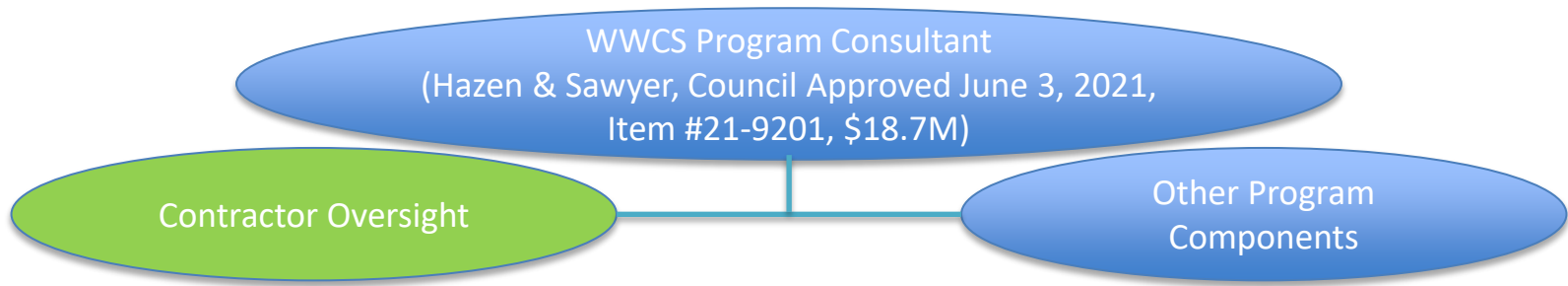
Table 8-6. Summary of **Renewal and Replacement** Annual Investment

	To 2030	2031 to 2050
Gravity Mains ¹	\$102,207,000	\$222,200,000
Manholes ²	\$36,638,000	\$73,276,000
Lift Stations ³	\$10,630,000	\$28,000,000
Force Mains ⁴	\$11,146,000	\$3,636,000
Total	\$160,621,000	\$327,112,000

Notes:

1. Based on an annual expenditure of \$10.22 million per year from 2021 to 2030 and \$11.11 million per year from 2031 to 2050.
2. Based on an annual expenditure of \$3.66 million per year through 2050.
3. Based on prioritized lift stations from Table 8-4 plus a \$1.4 million investment over 5 years from 2021 to 2030 and \$1.40 million per year thereafter.
4. Based on prioritized projects.

WWCS PROGRAM OVERVIEW



- Sewer “Point Repairs” Contracts (As-Needed)
 - Group A – Sanitary Sewer Trenchless Reconstruction
 - Group B – Sewer Cleaning and Televising Inspections
 - Group C – Emergency/Non-Emergency Repairs/ Improvements of Sewer, Force Main, and Manholes
 - Group D – Sanitary Cleanouts and Laterals
 - Group E – Manhole Surfacing
 - Group F – Smoke and Dye Testing
- WWCS Flow Monitoring
- WWCS Program Prioritization and Tracking
- Hydraulic Modeling
- Designs:
 - New Pipelines
 - Capacity Increases
 - Pipeline Relocations
- Coordination with Lift Station, WRF Programs

\$32 M

GROUP A - SANITARY SEWER TRENCHLESS RECONSTRUCTION

1

Pipes Inside Pipes

Cured-in-place pipe, also known as CIPP, is one of several conduit repair technologies that are considered “trenchless” — that is, they don’t require that old pipes be dug up and replaced. In CIPP, liners made of felt, fiberglass, or other composite tubes embedded with resin are inserted into the damaged pipes. Hot water or steam hardens, or “cures,” the liner into a plastic conduit. During curing, plumes of materials can escape to the surface and into the air.

ORIGINAL CONDUIT
CIPP LINER

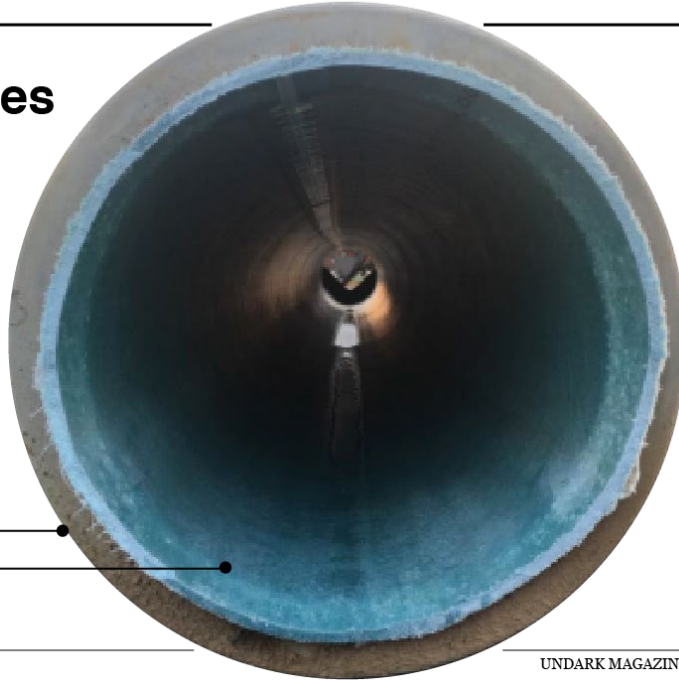
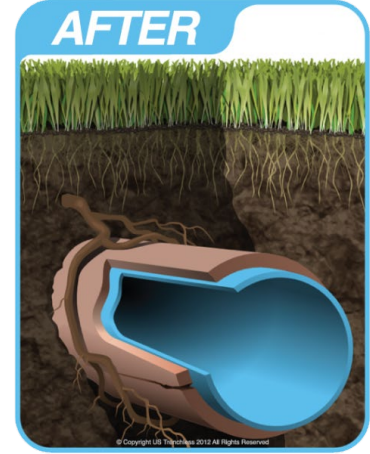
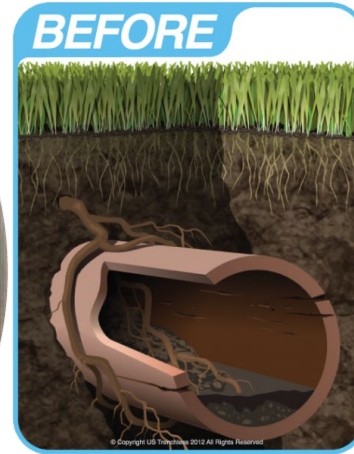


Image courtesy Purdue University

UNDARK MAGAZINE

2



1. <https://www.compositesone.com/process/cured-in-place-pipe/>
2. <https://ustrenchless.com/services/pipe-lining/>

GROUP A - SANITARY SEWER TRENCHLESS RECONSTRUCTION

- Year 1 Budget: \$10,000,000
 - Utilized: \$2,500,000 (est.)
 - 55,300 feet (~10.5 miles) installed
 - Contractor capacity lower than anticipated
- Year 2 Recommendation: \$5,000,000

GROUP B – SEWER CLEANING & TELEVISION INSPECTIONS

Pipe segment ID: 287A3050.1

Before cleaning



After cleaning



GROUP B – SEWER CLEANING & TELEVISION INSPECTIONS

- Year 1 Budget: \$3,000,000
 - Utilized: \$1,000,000 (est.)
 - 78,000 feet (~14.8 miles) of sanitary sewer inspected with closed circuit television (CCTV)
 - Contractor capacity lower than anticipated
- Year 2 Recommendation: \$2,000,000

GROUP C - EMERGENCY/NON-EMERGENCY REPAIRS/IMPROVEMENTS



GROUP C - EMERGENCY/NON-EMERGENCY REPAIRS/IMPROVEMENTS

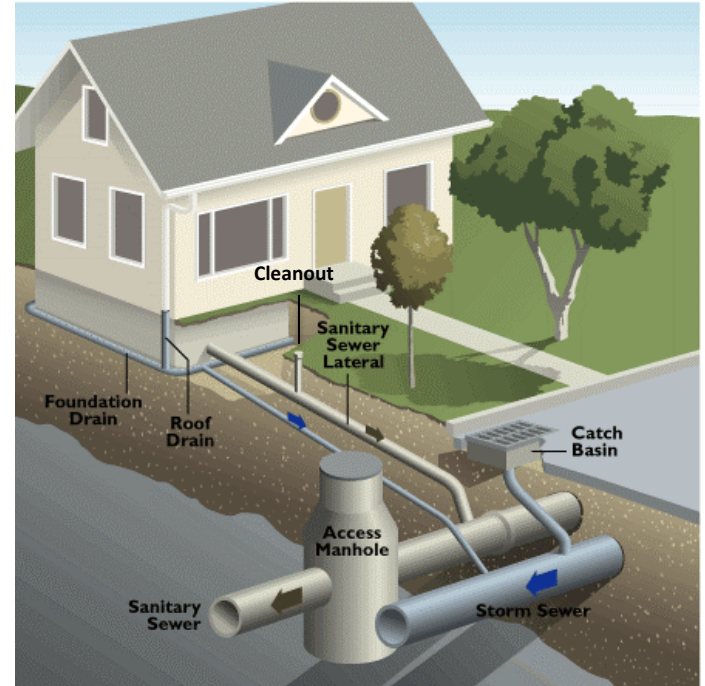
- Year 1 Budget: \$15,000,000
 - Utilized: \$13,000,000 (est.)
 - 130 point-repair work orders completed or in progress
 - Multiple crews engaged
 - Progress aligned with expectations
- Year 2 Recommendation: \$15,000,000

GROUP D - CLEANOUTS & SEWER LATERALS



1. <https://www.cityofnoblesville.org/topic/subtopic.php?topicid=269&structureid=16>

1



GROUP D - CLEANOUTS & SEWER LATERALS

- Year 1 Budget: \$1,000,000
 - Utilized: \$220,000 (est.)
 - 18 laterals lined
 - Ramping up pending pilot efforts
 - Potential significant infiltration and inflow (I&I) reduction
- Year 2 Recommendation: \$6,000,000

GROUP E - MANHOLE SURFACING

MH 287A4095



GROUP E - MANHOLE SURFACING

- Year 1 Budget: \$2,000,000
 - Utilized: \$2,000,000 (est.)
- 245+ manholes coated
 - 757 total vertical feet of polyurethane coating applied
 - 179 frame/corbel connections resealed
 - 1,000+ ft of injection grouting installed to prevent infiltration and inflow (I&I)
- Year 2 Recommendation: \$3,000,000

GROUP F - SMOKE & DYE TESTING



GROUP F - SMOKE & DYE TESTING

- Year 1 Budget: \$1,000,000
 - Utilized: \$180,000
 - 375,000 feet (71 miles) of pipe smoke tested
 - 1,140,000 feet (216 miles) to be tested by end of 2023
- Year 2 Recommendation: \$750,000

SUMMARY

WWCS On-Call Contractors

- Total for 6 Contracts: \$31,750,000*
- Providing emergency and proactive preventive maintenance work to be renewed each year for up to 3 more years.
- Each year approved by City Council.
- Contractor bids for capital projects will still be brought to City Council for approval.

*Total annual not to exceed. Unused funds revert to Public Utilities Sanitary Sewer FY24 budget.



SUMMARY

WWCS Program Consultant
(Hazen & Sawyer, Council Approved June 3, 2021,
Item #21-9201, \$18.7M)

Contractor Oversight

Other Program
Components

- Sewer “Point Repairs” Contracts (As-Needed)
 - Group A – Sanitary Sewer Trenchless Reconstruction
 - Group B – Sewer Cleaning and Televising Inspections
 - Group C – Emergency/Non-Emergency Repairs/ Improvements of Sewer, Force Main, and Manholes
 - Group D – Sanitary Cleanouts and Laterals
 - Group E – Manhole Surfacing
 - Group F – Smoke and Dye Testing
- WWCS Flow Monitoring
- WWCS Program Prioritization and Tracking
- Hydraulic Modeling
- Designs:
 - New Pipelines
 - Capacity Increases
 - Pipeline Relocations
- Coordination with Lift Station, WRF Programs

\$31.75
M

QUESTIONS?



2023 Sewer Point Repairs and Improvements

(City Project #22-0006-UT,
Council Item #23-1097)

September 2023



CLEARWATER
BRIGHT AND BEAUTIFUL • BAY TO BEACH

