

UPDATE: King's Beach/Stacy's Brook and Fisherman's Beach Completed, Ongoing, and Upcoming Improvements



Sewer pipe and manhole rehabilitation in Phase 1 significantly reduced cross-contamination between the sewer and drain systems



April 24th, 2024

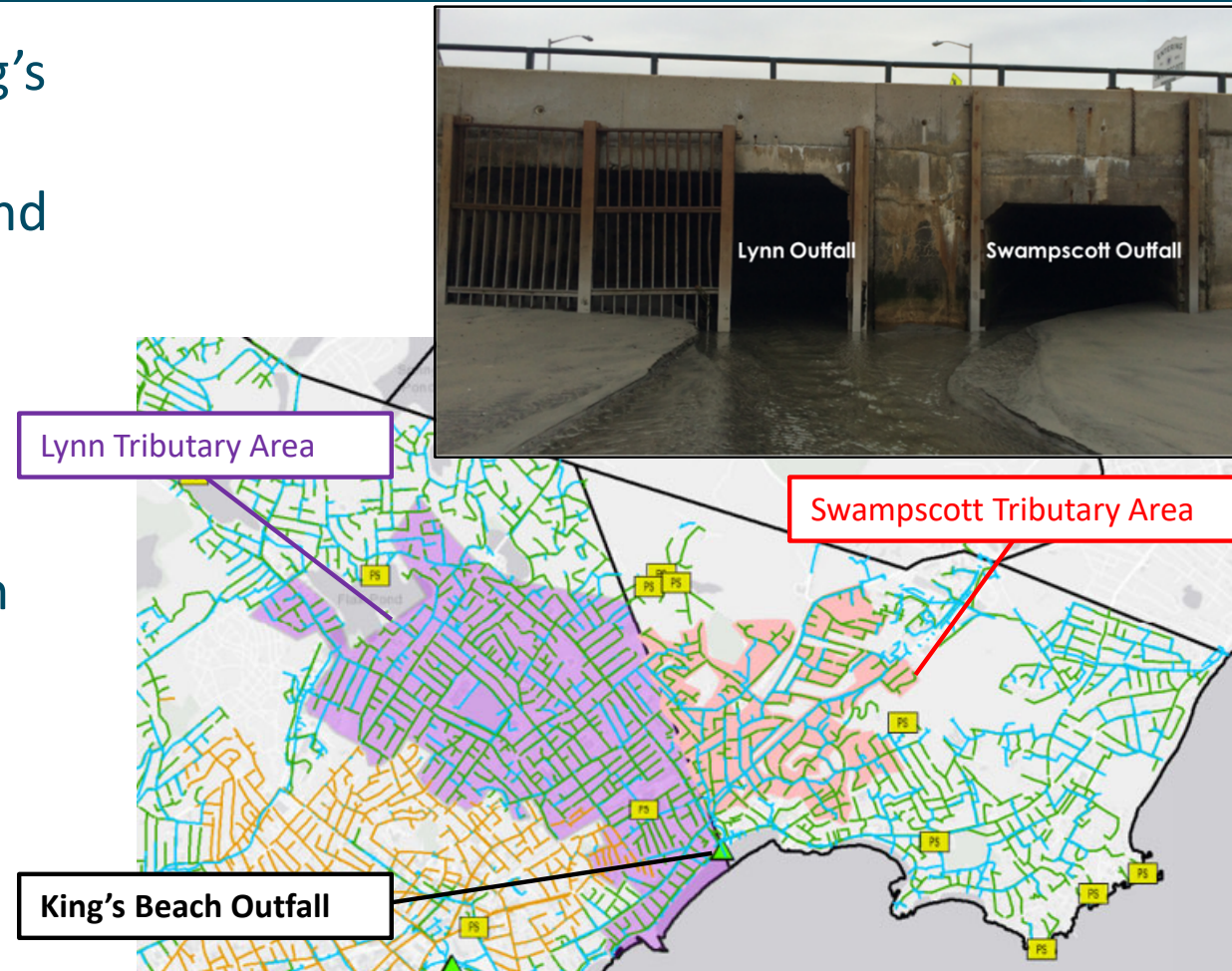
Swampscott, MA

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Background: King's Beach/Stacy's Brook

Background: King's Beach

- Stormwater discharges to King's Beach through two parallel drainage culverts from Lynn and Swampscott
- Bacteria contamination from the outfalls causes frequent beach closures
- Contamination at King's Beach is a regional issue impacting residents and state agencies (Mass DCR, Mass DEP)



Background: EPA Consent Decree

- Consent Decree Issued **November 2015**
- Basis for Consent Decree
 - Violations of the Clean Water Act
 - Bacteria exceedances to King's Beach, Fisherman's Beach/Marshall St Outfall, and Phillips Beach [sample data 2010 through 2012]
- Town and Kleinfelder developed detailed plan to address violations and contamination. King's Beach/Stacy's Brook was deemed highest priority

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

UNITED STATES OF AMERICA,
Plaintiff,

v.

TOWN OF SWAMPSCOTT, MASSACHUSETTS,
Defendant,
and
COMMONWEALTH OF MASSACHUSETTS,
Nominal Party required by
33 U.S.C. § 1319(e).


CIVIL ACTION NO.

CONSENT DECREE

WHEREAS, the Town of Swampscott, Massachusetts (the "Town" or "Swampscott") discharges pollutants into navigable waters of the United States from a municipal separate storm sewer system ("MS4") pursuant to NPDES Permit No. MAR041064 ("Small MS4 General Permit");

WHEREAS, the plaintiff, the United States of America, States Environmental Protection Agency ("EPA"), has filed a Complaint and Consent Decree alleging that the Town has violated the Small MS4 General Permit, 301(a) of the Clean Water Act ("CWA" or "CWA"), 33 U.S.C. § 1311(a);

WHEREAS, entry of this Consent Decree by the Court is necessary to resolve the Complaint of the United States, referred to herein collectively as the "Plaintiff";



Background: Stacy's Brook Phase 1 Improvements (2017-2023)

- Phase 1 Improvements Complete as of **December 2023**

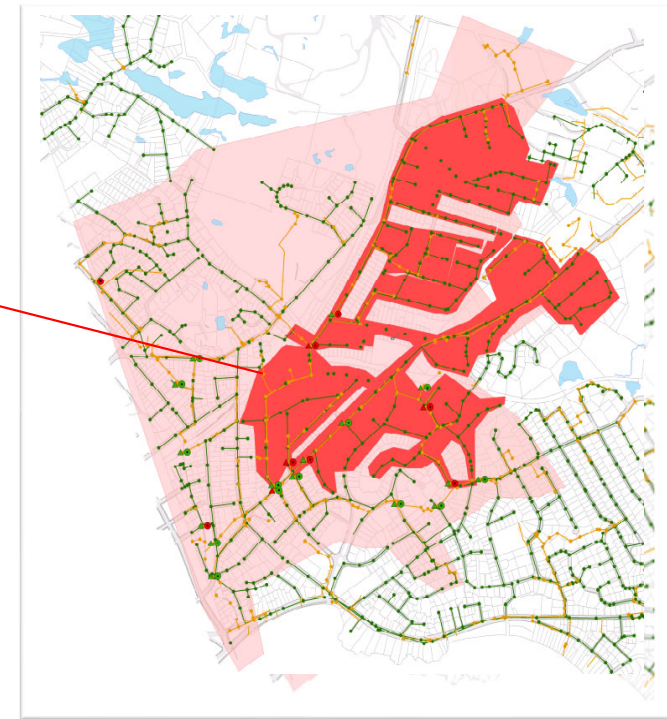
- 31,400 LF Sewer Mainline Rehab (CIPP)
- 6,000 LF Sewer Mainline Replacement (PVC)
- 470 Private Sewer Lateral Rehab (CIPP)
- 250 Sewer Manhole Rehab
- 40 Underdrain Manhole Rehab

Phase 1 Costs (~\$6.5M)

- Phase 1 IDDE: 2015-2016 (\$0.5M)
- Phase 1A: 2017-2018 (\$1.2M)
- Phase 1B: 2019-2020 (\$1.9M)
- Phase 1C: 2021-2023 (\$2.9M)

Phase 1 Area

The Phase 1 project area includes all area tributary to King's Beach upstream of Paradise Ave and Burrill Street



*Ongoing/Upcoming: King's Beach/Stacy's Brook
Phase 2 Sewer Improvements
(Anticipated) 2024-2028 (\$10M)*

Ongoing/Upcoming: Stacy's Brook Phase 2 Sewer Improvements

Ongoing Work

- **2024** – Phase 2 IDDE and Design (*Underway*)

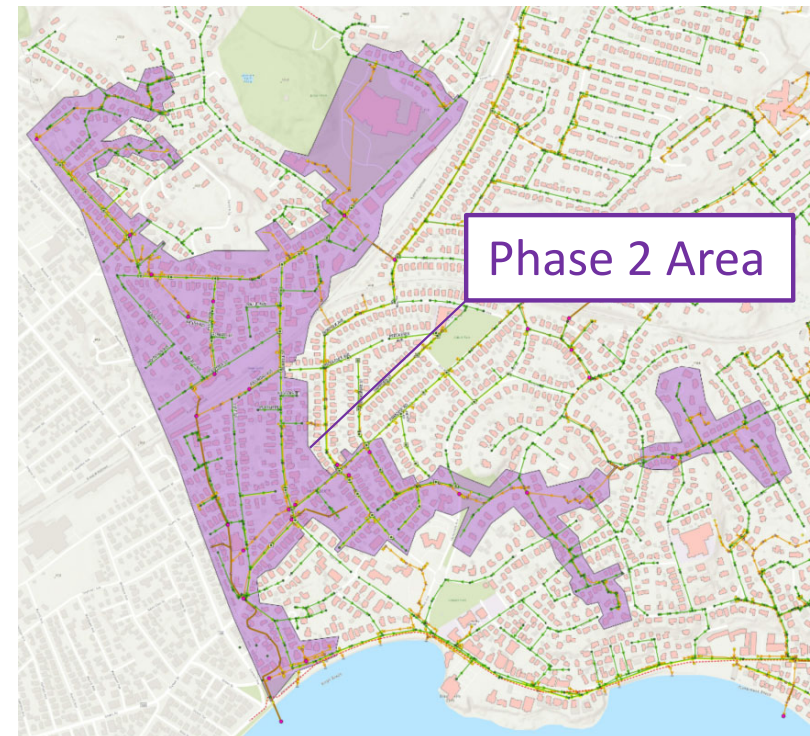
Anticipated Schedule for Construction

- **2025-2026** – Phase 2A Construction
- **2026-2027** – Phase 2B Construction
- **2027-2028** – Phase 2C Construction

Phase 2 Area

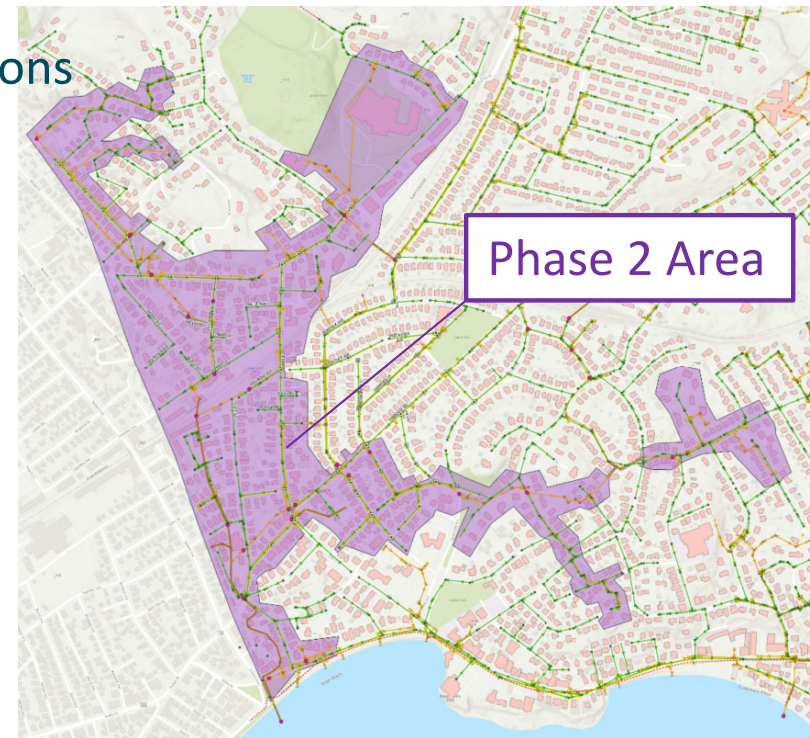
- 8.5 miles sewer pipe
- 300 sewer manholes
- 4.7 miles drain pipe
- ~550 private sewer laterals

The Phase 2 project area includes all area tributary to King's Beach that wasn't rehabilitated during Phase 1



Ongoing: Stacy's Brook Phase 2 IDDE and Design

- Phase 2 Investigations Underway as of **March 2024**
 - Dry weather stormwater sampling at up to 30 locations (bacteria, ammonia, pharm.)
 - Sewer and drain pipe CCTV inspections
 - Detection and removal of **confirmed** illicit connections
 - Underdrain system sampling and evaluation
 - Prioritized design of Phase 2 sewer improvements
 - Anticipated design completion **December 2024**

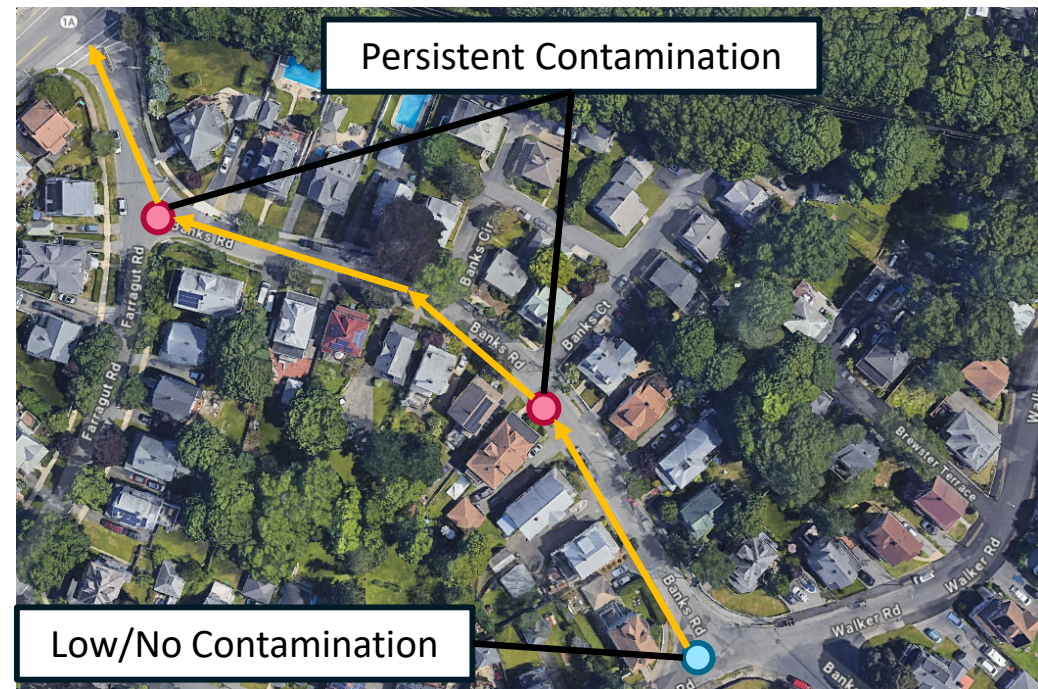


Ongoing: Stacy's Brook Phase 2 IDDE and Design

- Phase 2 – Lower Banks Road Follow-up Investigations

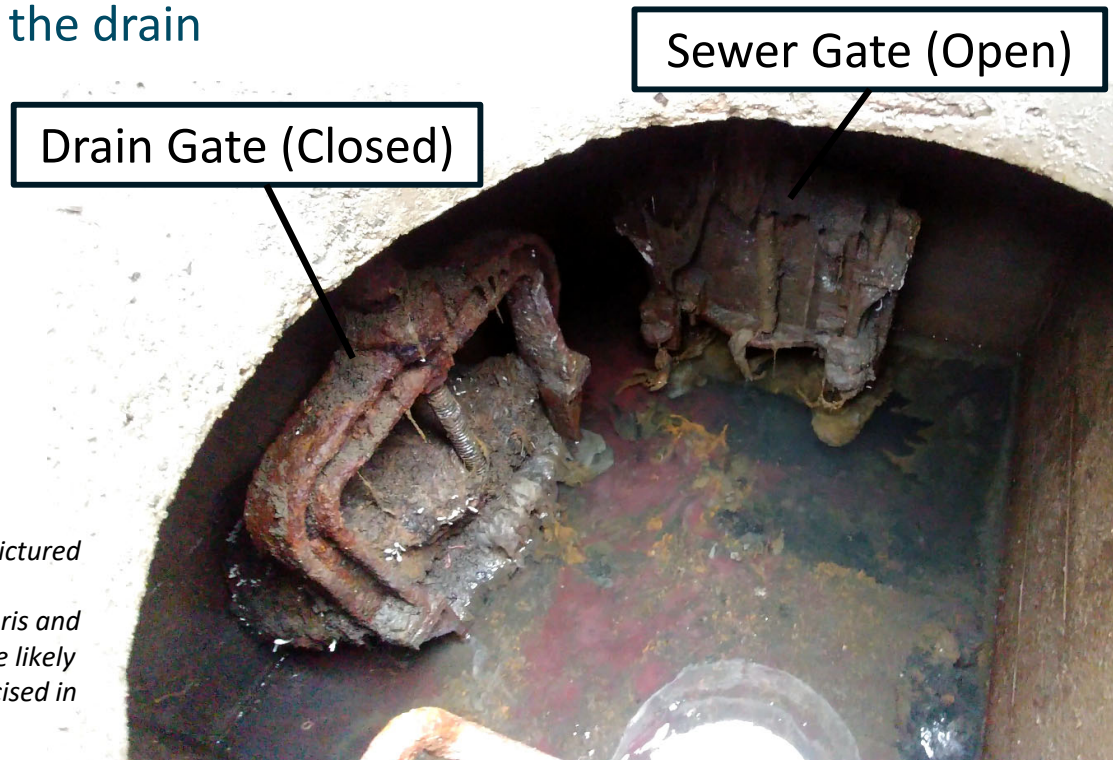
- Lower Banks Road (part of Phase 1) has shown persistent contamination issues
- Planned Phase 2 Inspections
 - Dry weather sampling
 - Dye testing of homes
 - Flooded sewer dye test
 - Targeted pipe CCTV inspections

Banks Road between Walker Road and Farragut Road continues to exhibit elevated bacteria in the drains, despite infrastructure improvements made to date



Ongoing: Stacy's Brook Phase 2 IDDE and Design

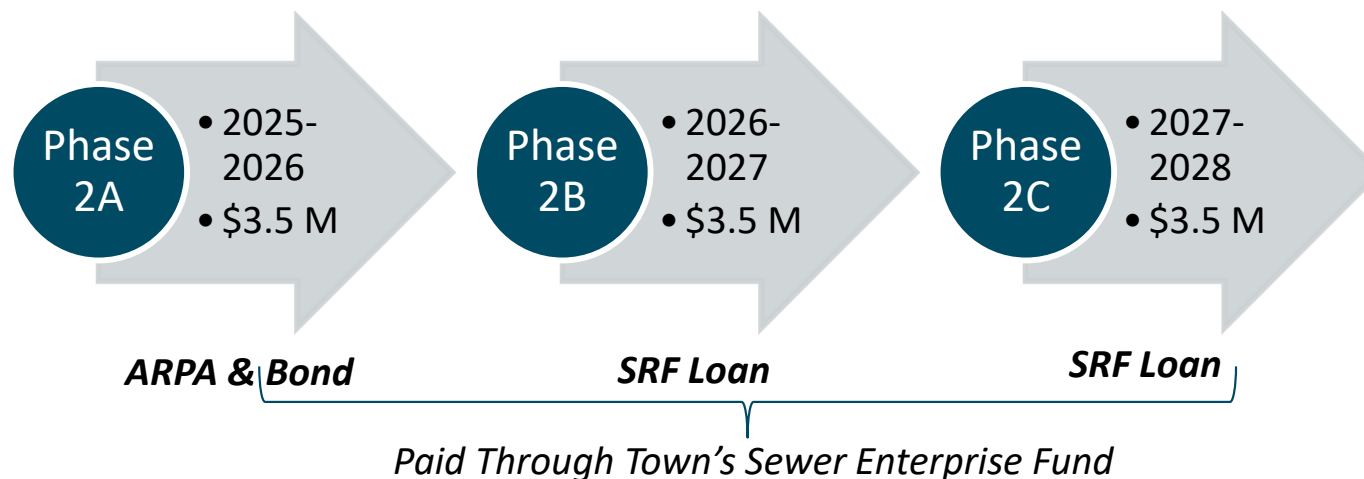
- Phase 2 – Underdrain System Evaluation
 - Inspection of underdrain structure on New Ocean Street
 - Dye test to confirm no leakage into the drain
 - Dry weather sampling
 - Inspection of gates
 - Design of future improvements



The gates as pictured in 2019 show significant debris and rust. They have likely not been exercised in many years

Upcoming: Stacy's Brook Phase 2 Construction

- **Funding – Construction of Phase 2 Sewer Improvements**
 - First construction phase (Phase 2A) expected to begin in 2025
 - ARPA contribution for Phase 2A may be up to \$1.7 M
 - Request for \$1.8 M in additional funding planned 2024 Annual Town Meeting
 - Paid through Sewer Enterprise Fund
 - MassDEP State Revolving Fund (SRF) loans planned for future phases



Upcoming: Fisherman's Beach / Marshall St Sewer Improvements

(Anticipated) 2025-2026 (\$1.7M)

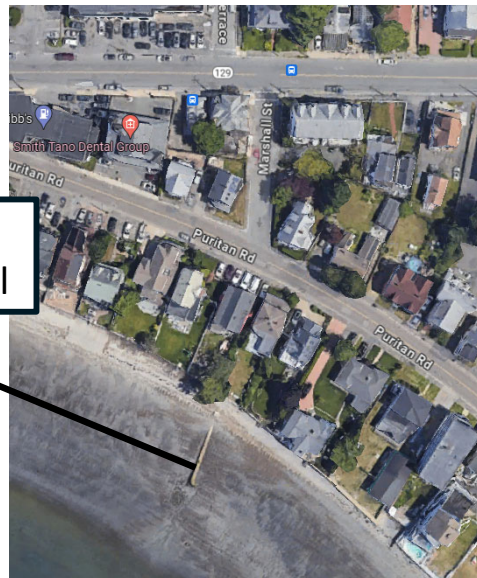
Fisherman's Beach / Marshall Street Construction

- Marshall Street Outfall located on Private Portion of Fisherman's Beach

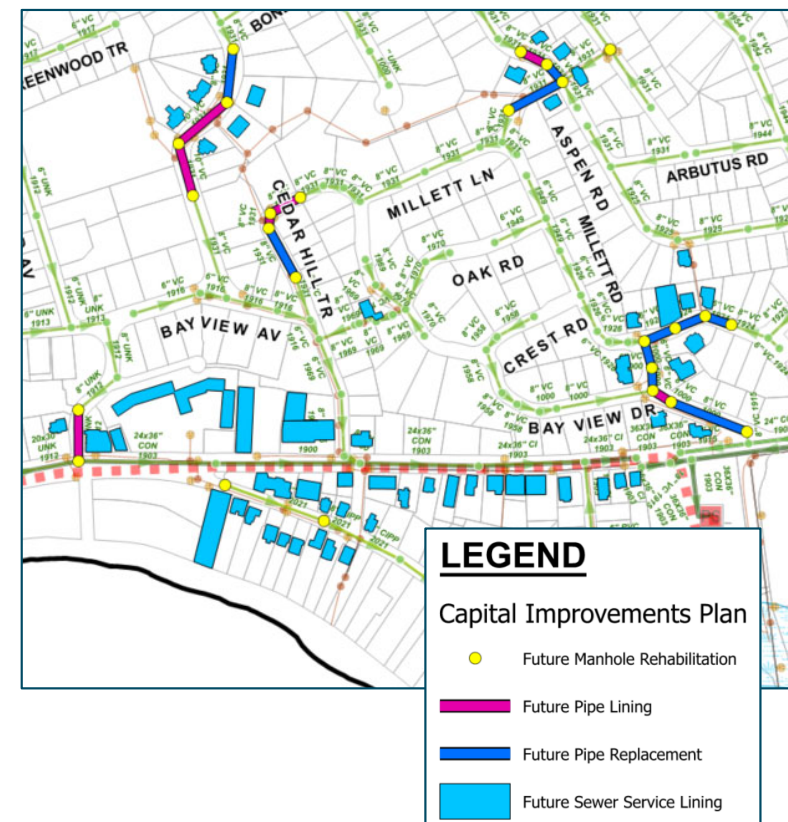


Fisherman's Beach / Marshall Street Construction

- Upcoming: Construction of Sewer Improvements
 - IDDE and Design Completed 2019-2020
 - Project is shovel ready, awaiting funding
 - Cost estimate is \$1.7 M



The Fisherman's Beach design includes targeted sewer rehabilitation and replacement based on field investigations conducted in 2019-2020



Schedule and Funding for Sewer Improvements

Funding Sources for IDDE Sewer Improvements

TOWN GENERAL FUND

- Funding from property tax revenue appropriated at Annual Town Meeting

TOWN SEWER ENTERPRISE FUND

- Funding from sewer rates appropriated at Annual Town Meeting

MA STATE REVOLVING FUND (SRF) LOANS

- Low-interest 20-year loan (2%) through MassDEP to reimburse funding appropriated from Town Sewer Enterprise Fund at Annual Town Meeting

AMERICAN RESCUE PLAN ACT (ARPA)

- Federal grant (free) funding allocated to the Town and approved by the Town Select Board

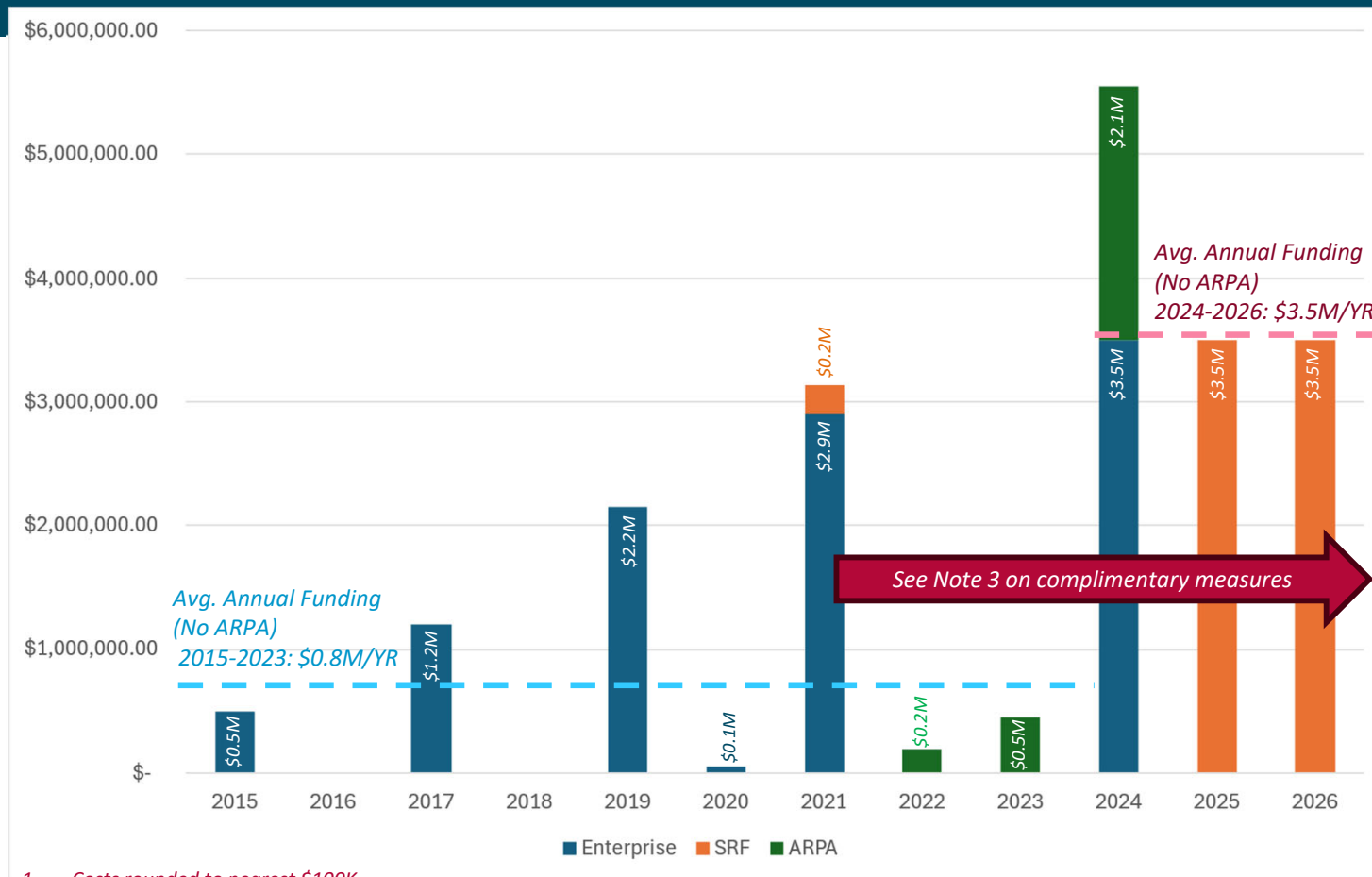
Schedule and Funding for IDDE Sewer Improvements

| LOCATION | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|-------------------------|------|--------------------------------|------|--------------------------------|-------------------------|-----------------------------------|---|--|--|--------------------------------|--------------------------------|------|------|
| KINGS BEACH | | | | | | | | | | | | | | |
| General Fund | | | | | | | | | | | | | | |
| REVOLVING LOANS | | | | | | | \$240,000.00 | | | | \$3,500,000.00 | \$3,500,000.00 | | |
| | | | | | | | Asset Management Plan (60% grant) | | | | Phase 2B Construction and ESDC | Phase 2C Construction and ESDC | | |
| ENTERPRISE | \$500,000 | | \$1,200,000 | | \$1,900,000 | | \$2,900,000 | | | \$1,800,000 | | | | |
| | Phase 1 IDDE and Design | | Phase 1A Construction and ESDC | | Phase 1B Construction and ESDC | | Phase 1C Construction and ESDC | | | Phase 2A Construction and ESDC | | | | |
| STATE ARPA | | | | | | | | \$190,000 | \$450,000 | \$2,000,000 | | | | |
| | | | | | | | | King's Beach Study - Complementary Measures | Phase 2 IDDE and Design (\$400K) / UV Sampling (\$50K) | Phase 2A Construction and ESDC (\$1.7M) / Outfall Pipe Ocean Model and Evaluation (\$300K) | | | | |
| FISHERMANS BEACH / AREAS BEYOND STACY'S BROOK | | | | | | | | | | | | | | |
| General Fund | | | | | | | | | | \$132,000 | | | | |
| | | | | | | | | | | MS4 Outfall Inspections / IDDE | | | | |
| REVOLVING LOANS | | | | | | | | | | | | | | |
| ENTERPRISE | | | | | \$150,000 | \$50,000 | | | | \$1,700,000 | | | | |
| | | | | | ABSB IDDE | ABSB Sewer Rehab Design | | | | ABSB Construction (Fisherman's Beach / Marshall St Area) | | | | |
| STATE ARPA | | | | | | | | | | \$50,000 | | | | |
| | | | | | | | | | | MS4 Outfall Inspections / IDDE | | | | |

1. Dollar values are not necessarily representative of amounts allocated at Town Meetings
2. Dollar values in **red** are estimates and have not been allocated
3. Schedules and funding sources for upcoming projects may change based on the availability of grants, loans, and Town funds

ESDC = Engineering Services During Construction
 IDDE = Illicit Discharge Detection and Elimination
 ABSB = Areas Beyond Stacy's Brook

Investments in IDDE Sewer Improvements



1. Costs rounded to nearest \$100K
2. Projected General Fund disbursement for MS4 services in 2024 (132K) is omitted from the chart
3. The Town has engaged with local, state and federal partners since 2021 to assess and find support for the Town's strategies

The Town plans to implement an "aggressive" approach to funding sewer improvements



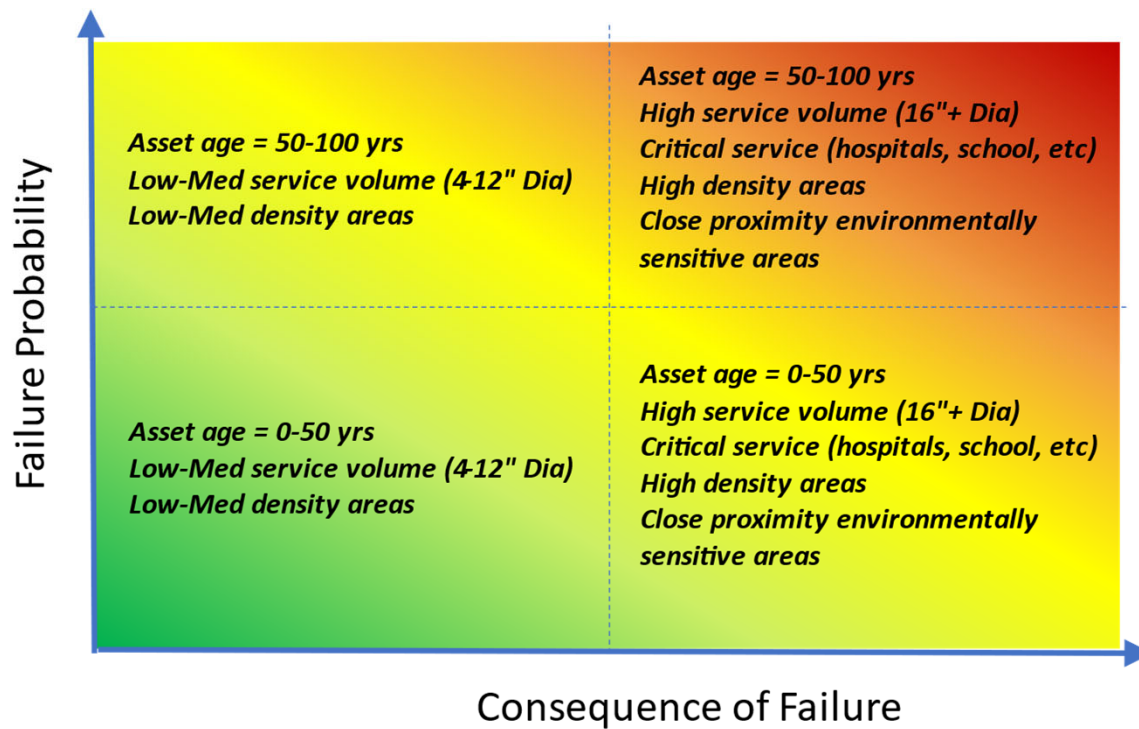
Asset Management Plan

Asset Management Plan / Study

- In 2023, Town and Kleinfelder completed an Asset Management Study for water, sewer, and stormwater systems
- All system assets were identified, evaluated, and prioritized based on established risk and criticality factors
- A 20-year Capital Improvement Plan (CIP) was developed for the water, sewer, and stormwater systems
- CIP will help the Town plan and prioritize projects and funding sources going forward



Asset Management Plan / Study: Sewer Risk Analysis



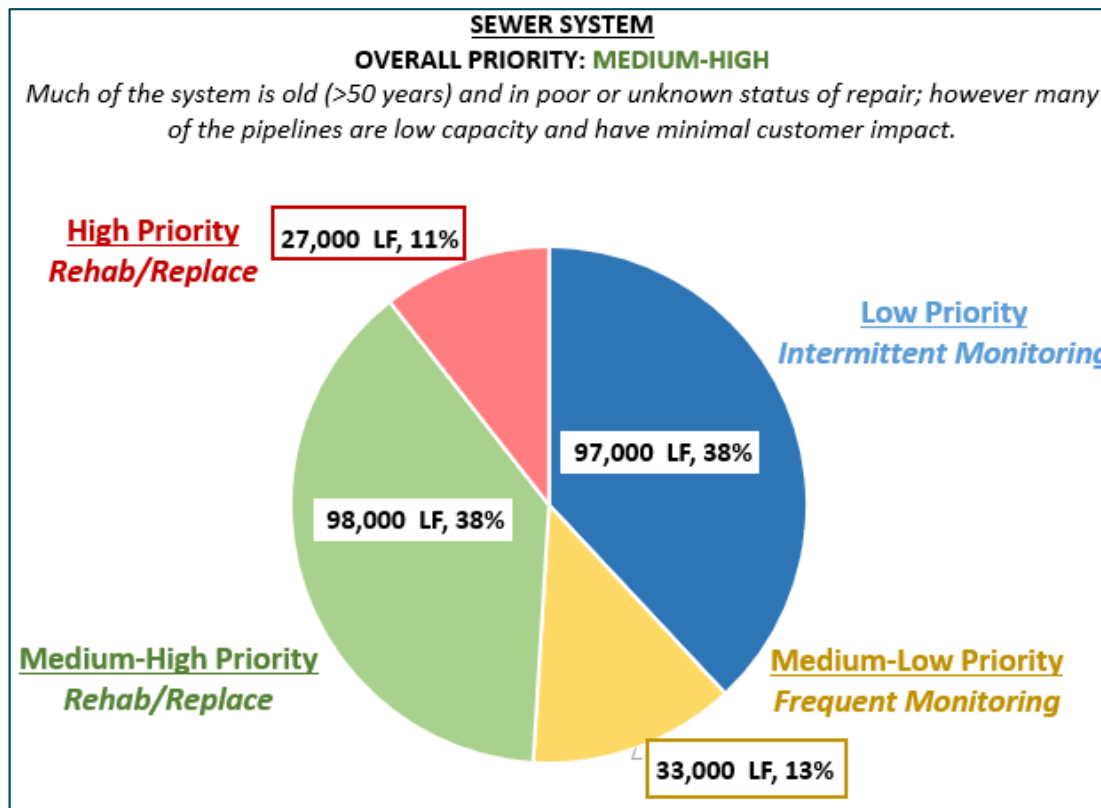
Action:

High Risk – Task Action

Med Risk – Monitor & Maintain

Low Risk – Maintain

Asset Management Plan / Study: Sewer Risk Analysis



- **High Priority** assets are old (>50 years) and have high impact to either the community or the environment if failure occurs.
- **Medium-High Priority** assets are old (>50 years) but have lower consequence to the community or environment if failure occurs.
- **Medium-Low Priority** assets are newer but are high capacity and their failure would have a notable customer or environmental impact.
- **Low Priority** assets are newer and have a lower consequence to the community or environment if failure occurs.

Asset Management Plan / Study: Sewer Capital Improvement Plan

Swampscott Water, Sewer, and Stormwater Capital Improvement Plan Schedule Costs are in 2024 Dollars

| | Key Driver | Project | FY25 | FY26 | FY27 | FY28 | FY29 | FY30-FY34 | FY35-FY39 | FY40-FY44 | Cost | Funding ⁵ |
|-------|--|--|--------|--------|--------|--------|--------|-------------|-------------|-------------|---------------|-----------------------------|
| SEWER | Renewal of Aging Infrastructure | Stacy's Brook Phase 2 IDDE and Design | | | | | | | | | \$400,000 | Grants (ARPA) |
| | | Infiltration / Inflow Study and Targeted Inflow Reduction Program | | | | | | | | | \$400,000 | Cash |
| | | Stacy's Brook Phase 2 - Comprehensive Sewer System Improvements | | | | | | | | | \$10,500,000 | Grants (ARPA), Bonds, & SRF |
| | | Fisherman's Beach Tributary Area Sewer Rehabilitation/ Replacement | | | | | | | | | \$1,700,000 | Bonds |
| | | Annual Sewer Pipe/Manhole Inspection and IDDE Program | | | | | | | | | \$50,000 / yr | Cash |
| | | Prioritized Sewer System Improvements Outside Stacy's Brook | | | | | | | | | \$7,500,000 | Bonds |
| | Renewal of Aging Critical Infrastructure | Humphrey St. Force Main Inspection and Evaluation | | | | | | | | | \$27,000 | Cash |
| | | Humphrey St. Force Main Rehabilitation/Replacement ³ | | | | | | | | | N/A | N/A |
| | Maintain Reliability | Pump Station Improvements | | | | | | | | | \$2,800,000 | Bonds & Cash |
| | Approx. Annual Costs ² | | \$3.6M | \$3.4M | \$2.6M | \$2.6M | \$2.4M | \$0.8M / YR | \$0.5M / YR | \$0.5M / YR | \$24.2M | |

2. Annualized project costs assume equal distribution of costs across the duration of the projects. Actual annualized costs may differ depending on funding payback structure.

3. Project dependent on findings from Humphrey Street Force Main inspection and evaluation in FY25.

5. Funding sources may change based on the availability of grants, loans, and Town funds.



King's Beach Water Quality Complementary Measures

King's Beach: Water Quality Improvements Study

- **Basis of Design Report Published in February 2023**
 - 6 potential alternatives in addition to continuing IDDE followed by sewer and drain improvements
 - 3 alternatives recommended for additional study:
 - Extend King's Beach Outfall into Nahant Bay
 - Treat dry weather flows with UV Light
 - Treat dry weather flows with chemical disinfection
 - Study included input from diverse stakeholder group



KING'S BEACH WATER QUALITY IMPROVEMENTS
BASIS OF DESIGN REPORT

FEBRUARY 8, 2023



King's Beach: Outfall Extension Alternative

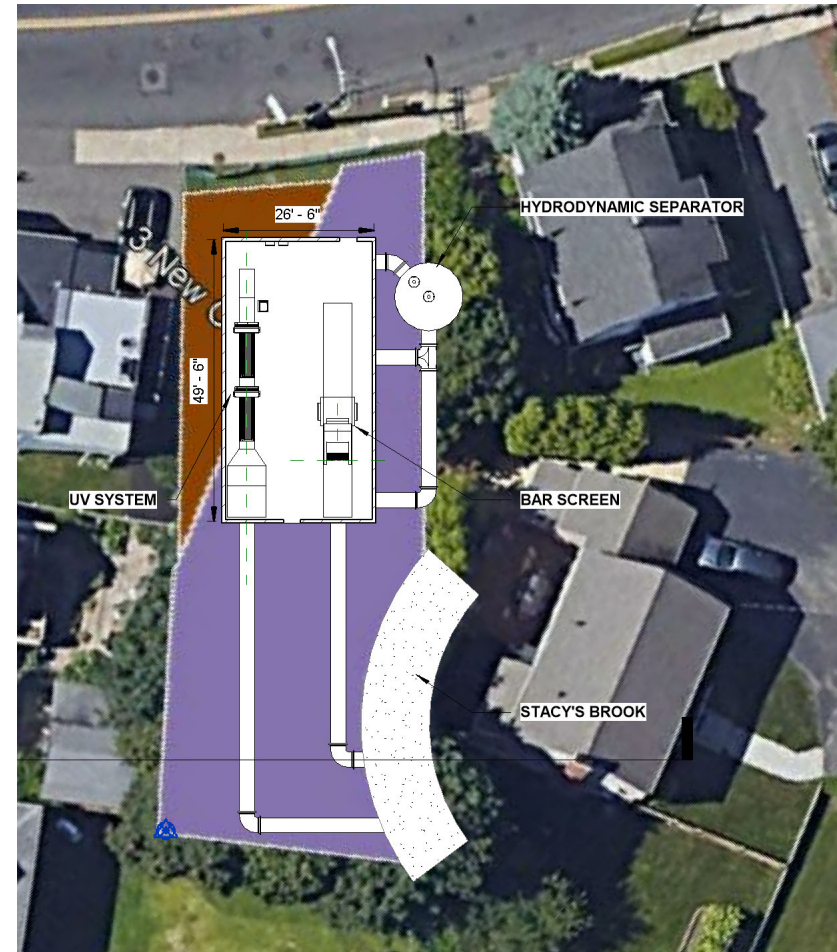
- Outfall Extension into Nahant Bay
 - Extend King's Beach outfall (Lynn/Swampscott Combined) approx. 4,500 feet into Nahant Bay
 - Include tide gates and pre-treatment to protect outfall
- 2024 Update
 - EEA, MassDEP, and EPA have expressed support for the project
 - Expressed willingness to shorten permit timelines and support funding through SRF
 - Next steps:
 - Finalize scope study to model dispersion within Nahant Bay to refine outfall length
 - Update design concept and construction costs



King's Beach: UV Treatment Alternative

- UV Treatment Facility
 - Treats dry weather stormwater flows from Lynn and Swampscott
 - Would require construction of a new treatment facility with pre-treatment, controls, package pump station, and UV treatment components
- 2024 Update
 - Field sampling underway to characterize the efficacy of UV treatment under a variety of conditions

One potential site (shown to the right) is a Town-Owned parcel on New Ocean Street (site of the retired Calgon station)



King's Beach: Bench Scale Testing of Stormwater Disinfectants

- Bench Scale Testing
 - Comparing efficacy of chlorine (sodium hypochlorite) and peracetic acid (PAA) at disinfecting bacteria in stormwater
 - Scope approved by EPA and MassDEP
- 2024 Update
 - Study ongoing - up to 5 samples to be collected and analyzed
 - May lay the groundwork for a future on-site pilot of a disinfection system

Next Steps

NEXT STEPS

- Continue ongoing investigations for Stacy's Brook Phase 2 IDDE and Design
- Secure funding at Town Meeting for planned sewer improvements for Stacy's Brook Phase 2 Construction Phase(s) and Fisherman's Beach/Marshall Street Construction
- Continue investigating potential grant funding opportunities to help offset costs of planned sewer improvements
 - Apply for CWSRF Program in August 2024 for the Phase 2B Construction
- Continue investigations into disinfection, UV and Outfall Extension for King's Beach Water Quality Improvements
- Contemplate potential on-site pilots in the future
- Review and plan for other upcoming projects included in the 20-year Capital Improvement Plan