Wastewater Infrastructure
Collection System, Pumping Stations, Wastewater Treatment Facility and Effluent Disposal

Property Owner's Guidebook

Orleans, Massachusetts

Board of Water and Sewer Commissioners

December 20, 2023

Revision No. 21

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Introduction

The Town of Orleans, Massachusetts Owns and Operates Wastewater Infrastructure which consists of a combination of structures and conduits (public wastewater sewers, pumping stations, force mains, and wastewater treatment facilities) for the purpose of collecting, conveying, treating, neutralizing, stabilizing, disposing of domestic wastewater and/or industrial or other wastewaters. The Wastewater Infrastructure has been, and is anticipated to continue to be, constructed in phases, better known as Projects, in the service area defined by the Town's Approved Comprehensive Wastewater Management Plan.

The Orleans Board of Water and Sewer Commissioners (Commission) has developed this **Property Owner's Guidebook** to assist property owners as they prepare for connection to the Town's wastewater collection system. This **Property Owner's Guidebook** may be amended by the Commission as they deem necessary. Please refer to the Town's **Sewer Use Rules and Regulations** for definitions, as they apply. Comments, edits, suggestions and/or questions should be sent to Thomas E. Daley, P.E., Director, Department of Public Works and Natural Resources at tdaley@town.orleans.ma.

Town of Orleans, Massachusetts

Board of Water and Sewer Commissioners

Chair	Vice-Chair
Member	Member
Member	Associate Member
Associate Member	Planning Board Representative/Member
Board of Health Representative/Member	Date

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Section 1 - Project Team Members

Select Board

General

- The Select Board serves as the chief executive goal-setting and policy-making agency of the Town. The Select Board shall cause the policies of the Town to be regularly published and copies made available to those requesting them.
- The Select Board has the power to enact rules and regulations establishing Town policies, not otherwise governed by General Law, Charter or By-law, provided, however, that if an appropriation shall be necessary to implement such action, the vote of the Select Board shall be effective only when such appropriation has been authorized by the Town Meeting.
- The Select Board issues policy statements setting the outer limits of possible budget expenditures.

Project Role and Responsibility

- The Select Board shall establish sewer rates and shall consult with and receive recommendations from the Board of Water and Sewer Commissioners.

Board of Water and Sewer Commissioners

General

- The Board of Water and Sewer Commissioners is responsible for all functions cited in Chapter 418 of the Acts of 1953, except for the following functions vested in the Select Board for which the Select Board will consult with and receive recommendations from the Board of Water and Sewer Commissioners: establish water and sewer rates; contract with a municipality; acquire or take water and wastewater resources, rights-of-way or easements; issue bonds to defray development and construction costs. In discharging its duties and responsibilities, the Board of Water and Sewer Commissioners coordinates with the Town Manager and receives technical support from the Department of Public Works and Natural Resources. The Board of Water and Sewer Commissioners sets policy ensuring: (1) the adequate production and the high quality of potable water; (2) development of the water and wastewater infrastructure; and (3) oversight of the design, construction and operation and maintenance of the water and wastewater infrastructure.
- The Board of Water and Sewer Commissioners develops annual operating and capital budget projections and Capital Improvements Plan projections for the Water and Sewer Departments and makes recommendations to the Select Board and Town Manager.

Project Role and Responsibility

- The Board of Water and Sewer Commissioners is responsible for the design, construction and operation and maintenance of the wastewater infrastructure.
- Throughout the construction phase of the Project, the Board of Water and Sewer Commissioners will perform the following:
    - Provide updates to the Select Board and the public at large regarding construction status.
    - Administer the **Sewer Use Rules and Regulations**.
    - Recommend, as necessary, sewer rates for the operation and maintenance of the wastewater infrastructure.

Department of Public Works and Natural Resources

General

- The Department of Public Works and Natural Resources is responsible for maintaining the following Town infrastructure components:
  - Beaches
  - Fleet Maintenance
  - Harbormaster
  - Highway
  - Parks
  - Shellfish
  - Snow and Other Weather Emergencies
  - Streetlights
  - Town Facilities and Properties
  - Town Fuel Depot
  - Transfer Station / Solid Waste
  - Trees
  - Water
  - Wastewater
  - Windmill

Project Role and Responsibility

- The Director of the Department of Public Works and Natural Resources is the Town Manager's designee to oversee and administer the Projects and Contract Operator (see below).

Board of Health

General

- The Board of Health is required by state statutes and regulations to perform many important and crucial duties relative to the protection of public health, the control of disease, the promotion of sanitary living conditions and the protection of the environment from damage and pollution.
- With regard to wastewater, the Board of Health enforces Title 5 of the State Environmental Code; Minimum Requirements for the Subsurface disposal Sewage, 310.CMR 15.00.

Project Role and Responsibility

- Administer the Sewer Connection Regulations while the wastewater infrastructure is being constructed https://www.town.orleans.ma.us/DocumentCenter/View/4025/Orleans-MA-BOH-Sewer-Connection-Regs-FINAL-2022-08-10.
- Require properties abutting the wastewater infrastructure to connect in accordance with Chapter 185 – Board of Health Regulations.

Consulting Engineer

General

- AECOM provides a broad range of professional technical and management support services to the Town, delivering solutions that enhance and sustain the environment.
- AECOM provides comprehensive services with licensed professionals including civil, water, wastewater, architectural, structural, mechanical, plumbing, HVAC, electrical, instrumentation, environmental, geotechnical, chemical, industrial, and transportation disciplines.

Project Role and Responsibility

- AECOM is the engineer of record for the Project.
- Throughout the construction phase of the Project, AECOM will perform the following:

- Conduct visits to sites and observe the construction activities.
- Review and approve construction components.
- Review of the contractors' work.
- Issue necessary interpretations and clarifications of the Contract Documents.
- Review and make recommendations for payment to the contractors.
- Prepare and submit "State Revolving Fund (SRF) Loan Program" funding reimbursements.
- Prepare various documents including **Sewer Use Rules and Regulations**, Wastewater Infrastructure Mapping, Pretreatment Rules and Regulations, and Operation and Maintenance Manuals.
- Provide on-site Resident Project Representatives throughout the construction duration.

Contract Operator

- The Wastewater Infrastructure (Collection System, Pumping Stations, Wastewater Treatment Facility and Effluent Disposal) is operated and maintained by a third party called the Contract Operator.
- The Town of Orleans, MA, acting through the Town of Orleans Town Manager, has contracted with Veolia Water Contract Operations USA, Inc. Operation and maintenance services be provided in a safe, secure, effective and efficient manner and shall be in full compliance with the applicable laws of the Commonwealth of Massachusetts and regulations of the Massachusetts Department of Environmental Protection including the Groundwater Discharge Permit.

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Section 2 – Basic System Vocabulary and Terms

Note: Additional Vocabulary and Terms can be found in the Town's **Sewer Use Rules and Regulations (https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations).**

Average Daily Flow (ADF) means the actual average flow of wastewater through the wastewater infrastructure (e.g., gravity sewer, pumping station, wastewater treatment facility, etc.) in a twenty-four-hour period.

Backflow Valve shall mean a valve located at the property line and installed by the property owner which is used to prevent wastewater backup from flowing from the Town's wastewater infrastructure into the building/structure located on the property.

Building Drain shall mean that part of the lowest horizontal piping of a drainage system which receives the wastewater discharge from soil, waste and other drainage pipes inside the walls of the building and conveys it to the sewer service connection at a point ten (10) feet outside of the inner face of the building wall.

Building Sewer or Service Connection shall mean the extension from the building drain to the public sewer or other place of disposal.

Cleanout/Inspection Port shall mean a capped pipe or capped access point used to inspect and/or clean out blockages in the sewer or service connection.

Collection System shall mean pipes (gravity sewers and low-pressure sewers), pumping stations, force mains and service laterals for the purpose of collecting and conveying domestic wastewater, commercial and/or industrial or other wastewaters to the wastewater treatment facility.

Commercial User shall include any property occupied by an establishment which is not a residential property and not within the definition of an "Industrial User" and which is connected to the wastewater system. Commercial users include, but are not limited to, dry cleaning, hairdressing and film processing.

Department shall mean the Department of Public Works and Natural Resources of the Town or authorized representative.

Design Engineer shall mean the Engineer under contract with the Property Owner or Applicant and acting entirely within the scope of the authority granted by the Property Owner or Applicant, directly or through properly authorized agents. The Design Engineer shall be a Professional Civil or Environmental Engineer registered in the Commonwealth of Massachusetts.

Domestic Wastewater shall mean liquid wastes from sanitary conveniences from residential houses, apartments and condominiums including the kitchen, bathroom, laundry sources and/or other facilities containing human excrement and similar matter.

Infiltration shall mean the water other than wastewater entering a sewer system, including service connections, from the ground or a water body, through such means as, but not limited to, defective pipes, pipe joint connections or manhole walls.

Inflow shall mean the water other than wastewater that enters a sewer system, including service connections, from such sources as, but not limited to, roof leaders, sump pumps, yard and area drains, foundation drains, cooling water discharges, drains from springs and swampy areas, manhole covers, cross connections from storm sewers and combined sewers, catch basins, storm waters, surface runoff, or drainage.

Public Sewer shall mean the system of pipes used to convey wastewater from the private building sewer and service connection to the wastewater treatment facility. In addition, it shall mean every sewer laid in any land, easement, street or way, public or private, to which all owners of abutting properties have equal rights, and which is controlled and has been accepted by the Town. No sewer shall be deemed to be a public sewer unless it meets all of these criteria, even if such sewer is located in any land, street or way, public or private.

Pumping Stations

- Town Pumping Station shall mean a system designed to take the flow from a gravity sewer system and boost it to a higher elevation. The Town Pumping Station shall include, but not be limited to: (a) Wetwell with submersible pumps, piping, and level controls; (b) Valve Vault with Piping, Flow Meter(s) and Odor Control System; (c) Stand-by Generator; and (d) Control Pedestal with Control Panels, Transfer Switch, and SCADA System.
- Prefabricated Low-Pressure Sewage Pump System (complete factory-built and tested system of the wetwell/drywell type) designed to take the flow from the property and boost into the Town's wastewater infrastructure (gravity sewer or low-pressure sewer). The System shall include, but not be limited to: (a) wetwell containing grinder pump(s) (semi-positive displacement-type grinder unit) mounted in a high-density polyethylene (HDPE) basin and anti-siphon valve and check valve assembly; (b) drywell containing an electrical quick-disconnect; pump removal system and shut-off valve; and (c) electrical alarm/disconnect panel.

Record Drawings shall mean detailed drawings prepared upon completion of the wastewater infrastructure, sealed and certified by the Design Engineer which show actual construction and field dimensions, elevations, details, changes made to the construction drawings by modification, details which were not included on the construction drawings, and horizontal and vertical locations of underground utilities, which have been impacted by the utility installation.

- The Horizontal Datum used for Record Drawings shall be Massachusetts State Plane, Mainland Coordinate System (NAD83).
- The Vertical Datum used for Record Drawings shall be North American Vertical Datum of 1988 (NAVD88).
- Record Drawings shall be compatible with the Department's CAD System.
- Digital photographs of the site and wastewater infrastructure shall be submitted with the drawings.

Sanitary Sewer shall mean a sewer which carries wastewater and to which storm, surface and ground waters are not intentionally admitted or permitted.

Septage shall mean the material removed from any part of an individual on-site wastewater disposal system.

Service Connection shall mean the extension from the building sewer which carries sanitary sewage to the Town's wastewater system. A service connection may also be called a building sewer, house sewer, or house connection.

Sewer Unit shall mean the unit of measure which the Commission shall use to assess the owners of land abutting the wastewater system installed by the Town based upon the uniform unit method. A single residential Sewer Unit shall be equal to 55 gallons per day of water usage. The number of Sewer Units assessed shall be calculated in accordance with the Town's **Sewer Assessment By-Law**.

Substantial Completion shall mean a stage of a project or a designated portion of the project that is sufficiently complete, in accordance with the Contract Documents, so that the Town may use or occupy the project or designated portion thereof for the intended purpose.

SURR shall mean the Town's **Sewer Use Rules and Regulations** (https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations) related to the connection of properties to the municipal sewer system and to the use, operation and administration of the municipal sewer system.

Trench Permit shall mean the permit for work performed not within a right-of-way issued by the Department, pursuant to MGL Ch. 82A Section 1 and 520 CMR 7.00, as amended.

Trench and Road Opening Permit shall mean the permit for work performed within the public right-of-way issued by the Department.

Utility Contractor shall mean a contractor licensed in the Commonwealth of Massachusetts and the Town of Orleans, MA with experience in the installation of wastewater infrastructure that is hired by the property owner to

install the wastewater infrastructure on their property in accordance with industry standards and the Town's **Sewer Use Rules and Regulations**.

Wastewater Infrastructure shall mean the combination of structures and conduits (public wastewater sewers, pumping stations, force mains, and wastewater treatment facilities) for the purpose of collecting, conveying, treating, neutralizing, stabilizing, disposing of domestic wastewater and/or industrial or other wastewaters.

Wastewater Treatment Facility (WWTF) shall mean the structures, processes, equipment and arrangements necessary to treat the wastewaters discharged into the wastewater collection system prior to disposal.

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Section 3 - Project Background

Prior Planning Work

The Town's Comprehensive Wastewater Management Plan (CWMP) / Single Environmental Impact Report (SEIR) recommended plan included the proposed 20-year, phased construction of a wastewater collection system and a wastewater treatment facility (WWTF) to reduce nitrogen loadings to coastal embayments. Since the approval of the CWMP in 2011, the Town has allocated funds each year through the Town Meeting process to advance the planning and implementation of the agreed-upon solutions and projects. Subsequent to CWMP approval in 2011, the Cape Cod Commission updated the 1978 Water Quality Management Plan for the region in accordance with Section 208 of the Federal Clean Water Act due to the impairment of water quality in coastal waters resulting from excess nitrogen. The Section 208 Plan update identified several recommendations to improve water quality in coastal waters surrounding Cape Cod and a number of potential alternative technologies to achieve improvements, such as aquaculture, floating constructed wetlands, permeable reactive barriers (PRBs), and others. The Section 208 Plan update was approved by the Massachusetts Department of Environmental Protection (MassDEP) and United States Environmental Protection Agency (EPA) in 2015 and included a matrix of potential alternative approaches to reduce nitrogen in coastal waters. The alternative approaches were identified broadly as non-traditional (NT) technologies.

In 2014, the Orleans Water Quality Advisory Panel (OWQAP, comprised of Orleans selectmen and citizen constituencies with liaisons from key town boards and commissions, organizations, neighboring towns, and regional, state, and federal partners) convened to build community support for a customized, affordable water quality management plan for the Town. Following the Section 208 update, the OWQAP investigated both traditional and NT approaches, and in 2017 developed consensus on a written plan that identified a hybrid approach to nutrient management technologies as an alternative, more cost-effective strategy for managing wastewater and reducing nitrogen in the Rock Harbor, Nauset Marsh, Pleasant Bay, Namskaket and Little Namskaket watersheds.

The NT technologies initially identified in the consensus plan include permeable reactive barriers (PRBs), floating constructed wetlands, shellfish aquaculture, and coastal habitat restoration reefs. Of these alternatives, PRBs and aquaculture progressed to the demonstration project (DP) stage and have been implemented over the past few years, with results now being evaluated for full-scale implementation. Before any full-scale implementation, additional review and discussion with MassDEP are needed to confirm the amount of nitrogen removal credit that may be assigned to each NT technology. Nitrogen reducing barriers (NRBs) have also been identified as an NT technology warranting further review and consideration through a DP.

For each NT technology selected, the town has either compiled, is compiling, or is planning to compile three years of nitrogen removal data for MassDEP review and determination of whether the NT technology could be assigned a nitrogen removal credit. If a nitrogen removal credit is agreed upon, the Town may propose replacing part of the originally envisioned sewer area in the CWMP with a combination of NT technologies. However, it is still premature for the Town to propose any changes to the CWMP's recommended sewering plan.

The 2017 plan included a conceptual and preliminary design to update the CWMP to reflect the consensus plan. The goal was to minimize the proposed sewer system footprint, while maximizing the use of non-traditional technologies (coastal habitat restoration, aquaculture, floating constructed wetlands, PRBs, and NRBs). The proposed new sewer system could consist of two construction phases with each covering a different area of Orleans: (a) Phase I includes the Downtown Area and (b) Phase II includes the Meetinghouse Pond Area. This reduced the CWMP-proposed collection system area from approximately 60 percent of the Town and average daily flow (ADF) of 650,000 gpd to about 24 percent and ADF of 350,000 gpd. The following figure shows the final conceptual plan reflecting these goals, with rigidly drawn boundaries to follow property lines. The Downtown Area (shown in purple) consists of about 330 parcels, and the Meetinghouse Pond Area (shown in pink) consists of about 360 parcels.

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CONCEPTUAL APPROACH TO MEET ORLEANS WATER QUALITY GOALS

AUGUST 2017

TOWN OF ORLEANS
MASSACHUSETTS

N

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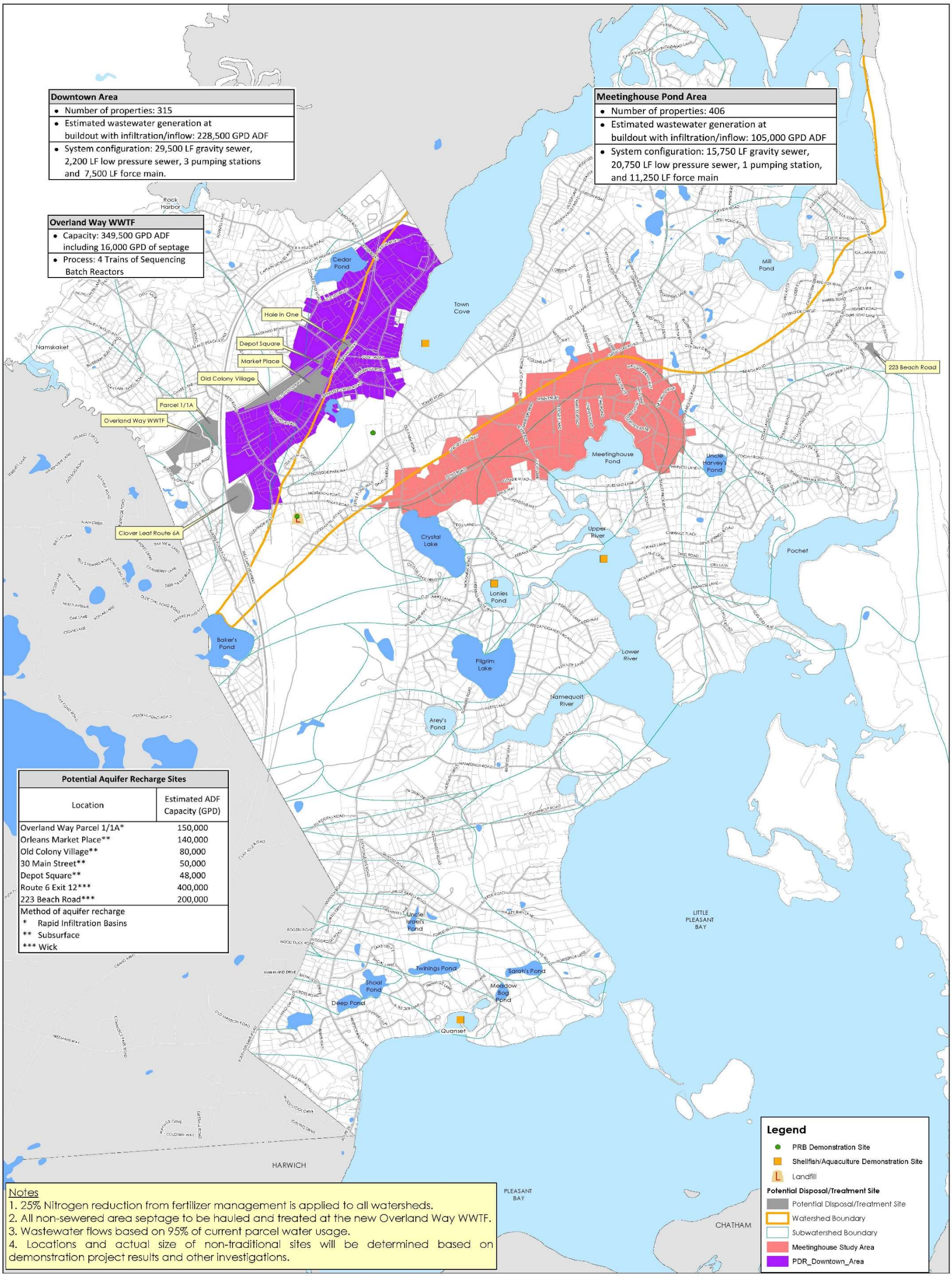
Feet



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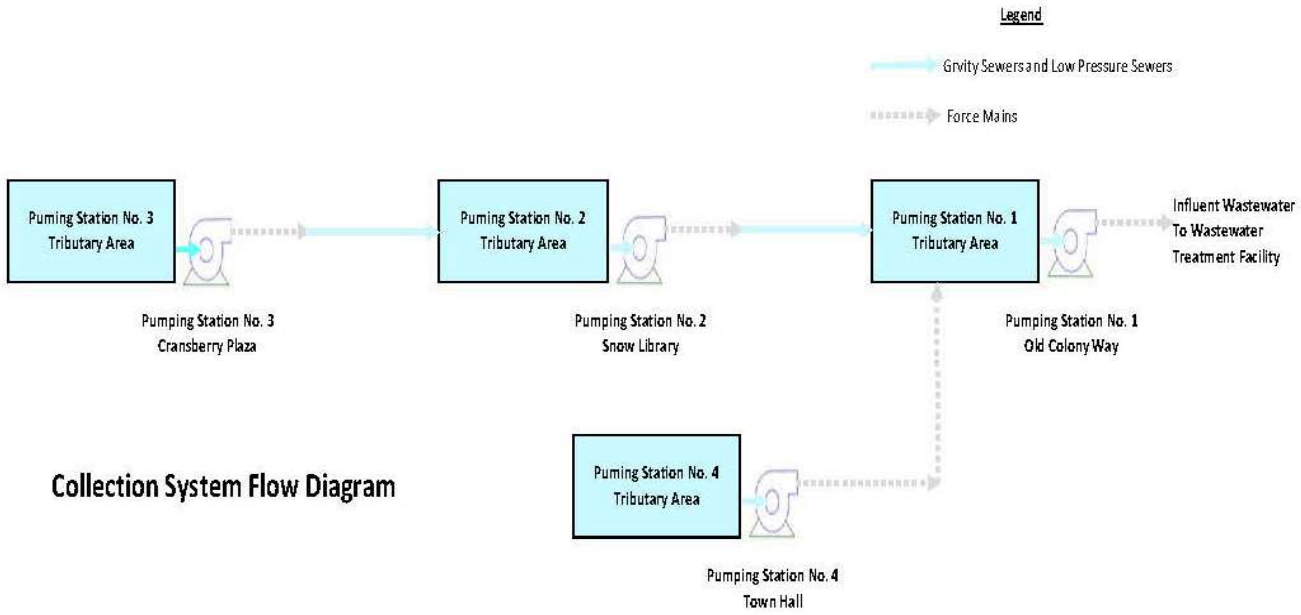
Scope of Work

Based on the approved Consensus Plan, the Scope of Work was identified to be completed in two phases. Phase I consisted of the following: construction of a combination of gravity sewers and low-pressure sewers to service the Downtown Area; construction of a WWTF; and installation of the effluent disposal system. The WWTF was constructed at the former Tri-Town Septage Treatment Facility on Overland Way; that was demolished as of April 2019. Phase II is the construction of a combination of gravity sewers and low-pressure sewers to service the Meetinghouse Pond area. The proposed wastewater system schematic is shown on the following figure.



Wastewater Flows

The WWTF is being constructed in two phases: a first phase to accommodate the Downtown Area flows including associated septage receiving; and a second phase to accommodate the capacity requirements for the Meetinghouse Pond Area. The second phase is scheduled for construction in 2024 and 2025.

Wastewater flow estimates are based on 95 percent of water consumed enters the wastewater system. Two years of water records were used for this calculation, and various Downtown Area development scenarios as well as Downtown Area and Meetinghouse Pond Area zoning were considered.

Average Daily Flow (ADF) estimates, allowances for Infiltration and Inflow (I/I), and septage include:

- Downtown Area: Existing ADF of about 150,000 gpd and estimated future ADF of about 228,400 gpd;
- Meetinghouse Pond Area: Existing ADF of about 65,000 gpd and estimated future ADF of about 105,100 gpd; and
- Septage Receiving: ADF of 16,500 gpd.

Septage Acceptance

The former Tri-Town Septage Treatment Facility treated approximately 8 to 9 MG or 8,000,000 to 9,000,000 gpd of septage per year. The necessary septage volume is expected to decrease because of a proposed wastewater system that would sewer various areas of the lower Cape including Orleans, Chatham and Harwich, and because the local Yarmouth–Dennis Septage Treatment Facility has been aggressively seeking to increase its annual throughput.

Therefore, to restore septage receiving service to Orleans residents, as well as to the lower and outer Cape towns, the future design septage volume was based on the recovery of about 67 percent of former septage receiving business at the Tri-Town facility, about 6 MG per year or 16,500 gpd on a seven-day average. This is a conservative and reasonable estimate for the restart of wastewater and septage treatment operations.

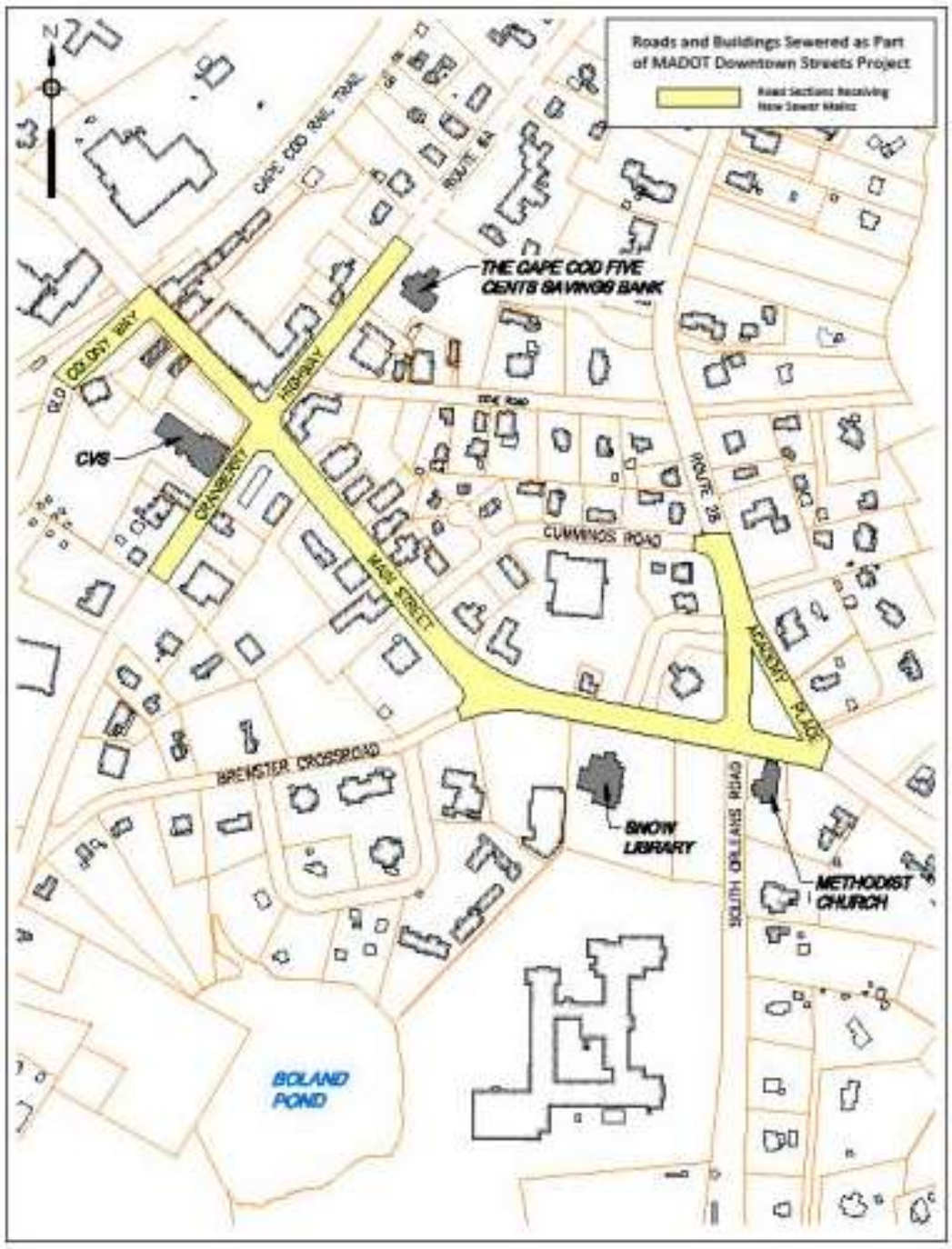
Downtown Area

- Collection System

  The Downtown Area collection system consists of:

  - About 30,990 Linear Feet of 8-inch through 18-inch PVC Gravity Sewer;
  - About 9,210 Linear Feet of 6-inch and 8-inch PVC and HDPE Force Main;
  - About 2,030 Linear Feet of 1.5-inch and 2-inch Low Pressure Sewer;
  - Piping Systems Connected Under Route 6; and
  - 3 Submersible Pumping Stations.

  A portion of the Downtown Area collection system design overlapped a Massachusetts Department of Transportation (MassDOT) road intersection upgrade project. MassDOT has a moratorium rule that prohibits roads under their control from being excavated for five years after they have been rebuilt, so this area of the collection system had to be installed prior to MassDOT's road repair project to align with the anticipated collection system construction schedule. Thus, a project was created to install this portion of the collection system, including gravity sewers, force mains, and sewer service connections to provide wastewater service to the Downtown Area. The yellow area outlined in the following figure shows the location of the installed wastewater infrastructure. This work was completed in the Fall of 2018. This infrastructure is considered the spine or foundation for the rest of the Downtown Area collection system.



An estimated 1,090 users will be connected into the system with about 60 privately owned and maintained grinder pumps used to pump to the gravity system where those connections are below the level of the Town's Wastewater Infrastructure.

The installation of the gravity sewers, low-pressure sewers and force mains was installed by open trench cut and cover methods (within existing roadways). The Route 6 crossing includes an 8-inch force main from Pump Station 1 to the WWTF, an 8-inch effluent force main from the WWTF to the effluent disposal site (32 Lots Hollow Road), two 4-inch electrical conduits and an additional 8-inch force main for future buildout conditions.

The Downtown Area Collection System Layout is shown on the following figure. The collection system for the Downtown Area was designed to accept the future flows from the Meetinghouse Pond Area.

- Pumping Stations

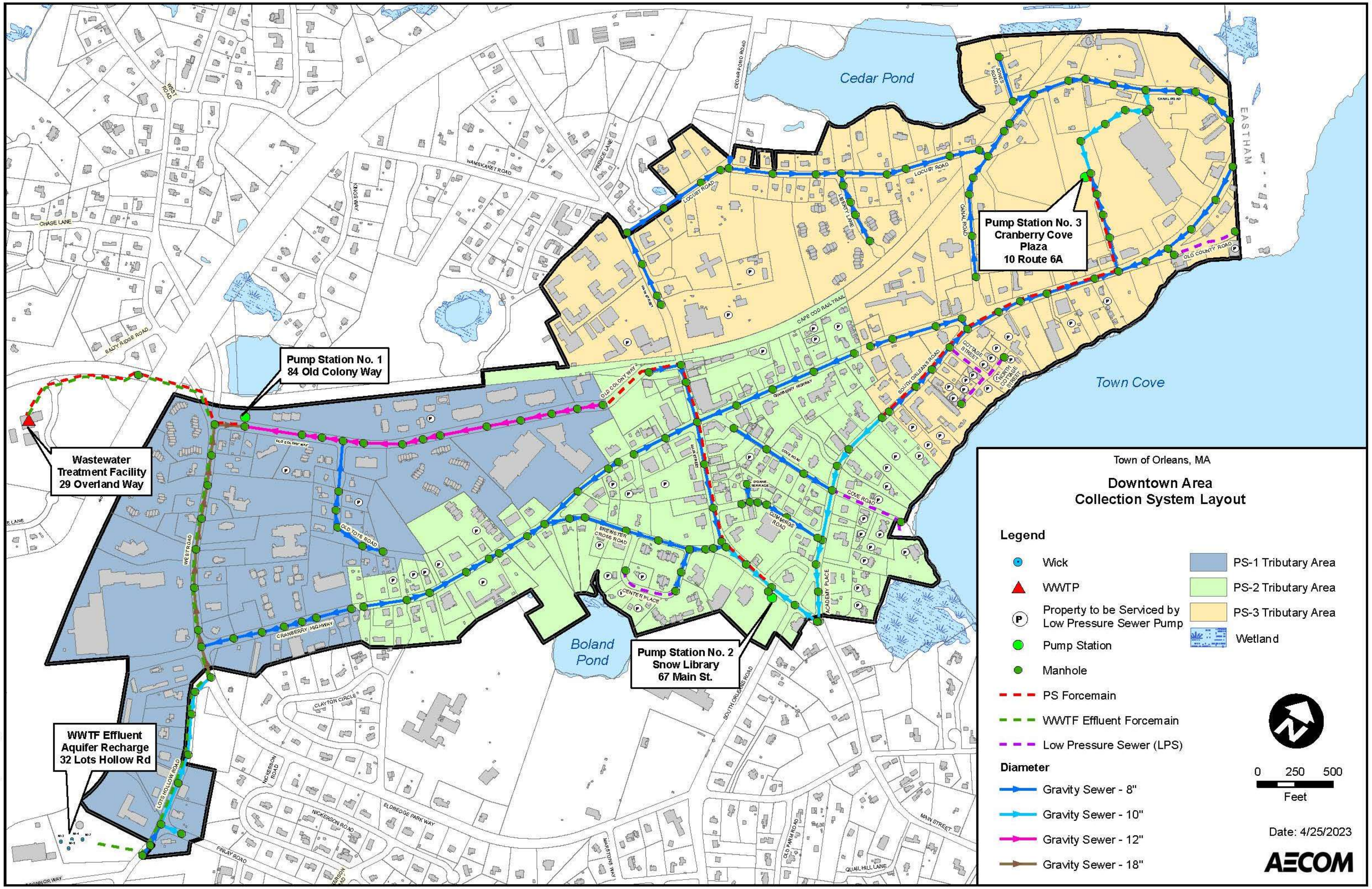
  Three pump stations are included in the Downtown Area Collection System: (a) Pump Station 1 located at 84 Old Colony Way; (b) Pump Station 2 located at the Snow Library site, 67 Main Street; and (c) Pump Station 3 located at Cranberry Cove Plaza, the site of the local Stop & Shop store, 10 Route 6A.

  Each pump station includes a wetwell with submersible pumps and a valve vault.

  - The wetwells are concrete structures are set below grade with access hatches flush with grade. Each station has submersible pumps with slide rails.
  - The valve vaults are concrete structures set below grade with two hatches flush with grade, and house a magnetic flow meter, a bypass pumping connection and an activated carbon system for odor control.

Each pump station has an equipment control pedestal that houses various components including electrical power and control panels.

Each pump station has an emergency generator with diesel belly tanks and a weather-tight sound-reduction enclosure.


Cedar Pond
Town Cove
Boland Pond
EASTHAM
Pump Station No. 3
Cranberry Cove Plaza
10 Route 6A
Pump Station No. 1
84 Old Colony Way
Wastewater Treatment Facility
29 Overland Way
Pump Station No. 2
Snow Library
67 Main St.
WWTF Effluent Aquifer Recharge
32 Lots Hollow Rd
Town of Orleans, MA
Downtown Area
Collection System Layout
Legend
Wick
WWTP
Property to be Serviced by Low Pressure Sewer Pump
Pump Station
Manhole
PS Forcemain
WWTF Effluent Forcemain
Low Pressure Sewer (LPS)
PS-1 Tributary Area
PS-2 Tributary Area
PS-3 Tributary Area
Wetland
Diameter
Gravity Sewer - 8"
Gravity Sewer - 10"
Gravity Sewer - 12"
Gravity Sewer - 18"
0 250 500
Feet
Date: 4/25/2023
AECOM

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Meetinghouse Pond Area

- Collection System

  The Meetinghouse Pond Area collection system consists of:

  - About 18,750 Linear Feet of 8-inch, 10-inch, 12-inch, and18-inch PVC Gravity Sewer;
  - About 7,460 Linear Feet of 8-inch PVC Force Main;
  - About 24,500 Linear Feet of 1.25-inch through 3-inch Low Pressure Sewer; and
  - 1 Submersible Pumping Station.

  An estimated 488 users will be connected into the system with about 235 privately owned and maintained grinder pumps used to pump to the gravity system where those connections are below the level of the Town's Wastewater Infrastructure.

  The installation of the gravity sewers, low-pressure sewers and force mains will be installed by open trench cut and cover methods (within existing roadways).

  The Meetinghouse Pond Area is shown on the following figure. The collection system for the Meetinghouse Pond Area was designed to accept the future flows from future service areas.

- Pumping Station

  One pump station is included in the Meetinghouse Pond Area Collection System: (a) Pump Station 4 located at 19 School Road (Town Hall).

  Each pump station includes a wetwell with submersible pumps and a valve vault.

  - The wetwells are concrete structures are set below grade with access hatches flush with grade. Each station has submersible pumps with slide rails.
  - The valve vaults are concrete structures set below grade with two hatches flush with grade, and house a magnetic flow meter, a bypass pumping connection and an activated carbon system for odor control.

The pump station will have an equipment control pedestal that will house various components including electrical power and control panels.

The pump station will have an emergency generator with diesel belly tank and a weather-tight sound-reduction enclosure.

As of the October 16th, 2023 Special Town Meeting, the Town voted to increase the Meetinghouse Pond Area to include Tides End Lane and Hayward lane. The extension is contingent upon future Town actions.

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Town of Orleans, MA

Meetinghouse Pond Area Collection System Layout

Legend

- Property to be Serviced by Low Pressure Sewer Pump
- Pump Station
- PS Force Main
- Low Pressure Sewer (LPS)
- Gravity Sewer - 8"
- Gravity Sewer - 10"
- Gravity Sewer - 12"
- Gravity Sewer - 18"
- Meetinghouse Pond
- Meetinghouse-2 Extension
- Waterbody
- Wetland

0 250 500
Feet

Date: 9/24/2023

AECOM

Force Main to Existing Downtown Gravity Sewer

see inset map below

Pump Station No. 4
19 River Road

Meetinghouse Pond

Uncle Harvey Pond

Connection to Existing Manhole

Downtown Service Area

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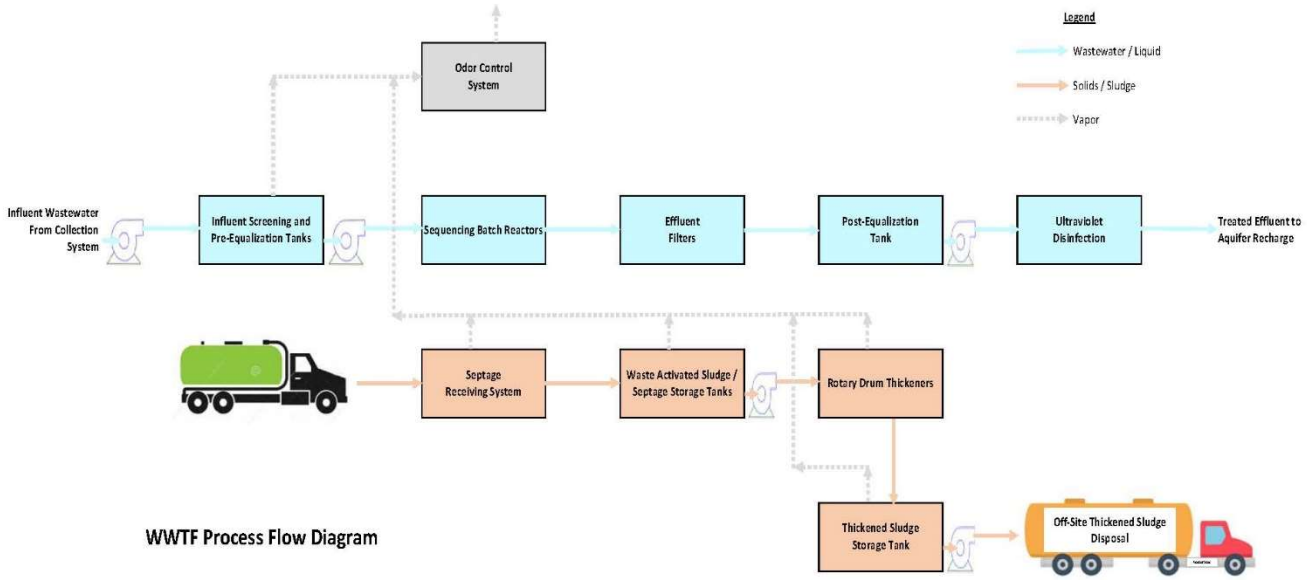
Wastewater Treatment Facility (WWTF)

The WWTF is located at 29 Overland Way, where the previous Tri-Town Septage Treatment Facility was located. The facility includes a multi-story building with administrative spaces, garage, laboratory, control room, chemical storage rooms, mechanical and electrical rooms on the ground floor, pumps and other equipment in the basement, and a separate Equipment Storage Facility.

The WWTF comprises influent screening, a septage receiving station, two pre-equalization tanks with three sequencing batch reactor (SBR) transfer pumps, two SBRs, two effluent disk filters, one post-equalization tank with submersible mixers and three effluent pumps, two ultraviolet reactors, seven mixing and aeration blowers, two waste sludge storage tanks with two sludge transfer pumps, a dual rotary drum thickener, one thickened sludge storage tank with tank-to-truck sludge transfer pumps, and chemical storage and feed systems. Refer to the following process flow diagram.



WWTF Process Flow Diagram

The building is located within the Old King's Highway Historic District, which requires specific architectural features. The design abides by these Old King's Highway Historic District requirements and preferences. The exterior architectural design of the WWTF and the Equipment Storage Facility (with its vehicle bays and maintenance facilities) conveys a state-of-the-art treatment facility using attractive, appropriately colored, and highly durable materials that require minimal maintenance. The overall attention to materials, details, building setbacks, historic requirements and scale create an architectural solution fitting for the Old King's Highway Historic District.

The following figure depicts a rendering of the WWTF, SBR tanks and the Equipment Storage Facility at the site.

The WWTF is oriented parallel to Overland Way in the same general location as the previous Tri-Town Septage Treatment Facility. The WWTF layout allows for the future expansion (up to double in size) to allow for the proposed flows projected in the original CWMP recommended plan. View is looking East.

Section 4 - Construction

General

- The intent of this section is to provide information to property owners with regard to the construction process and potential impacts to their property.

Is your property located in the Collection System Areas?

- The streets located within the Sewer Service Areas can be found in **Appendix A –Sewer Service Area Street Listing**. They are listed by Pumping Station Tributary Area.
- For more detailed information, the Contract Documents can be found on the Town of Orleans' website https://www.town.orleans.ma.us/171/Wastewater-Infrastructure. This information will be useful for your Engineer or Utility Contractor in determining the connection point for your property.

Frequently Asked Questions?

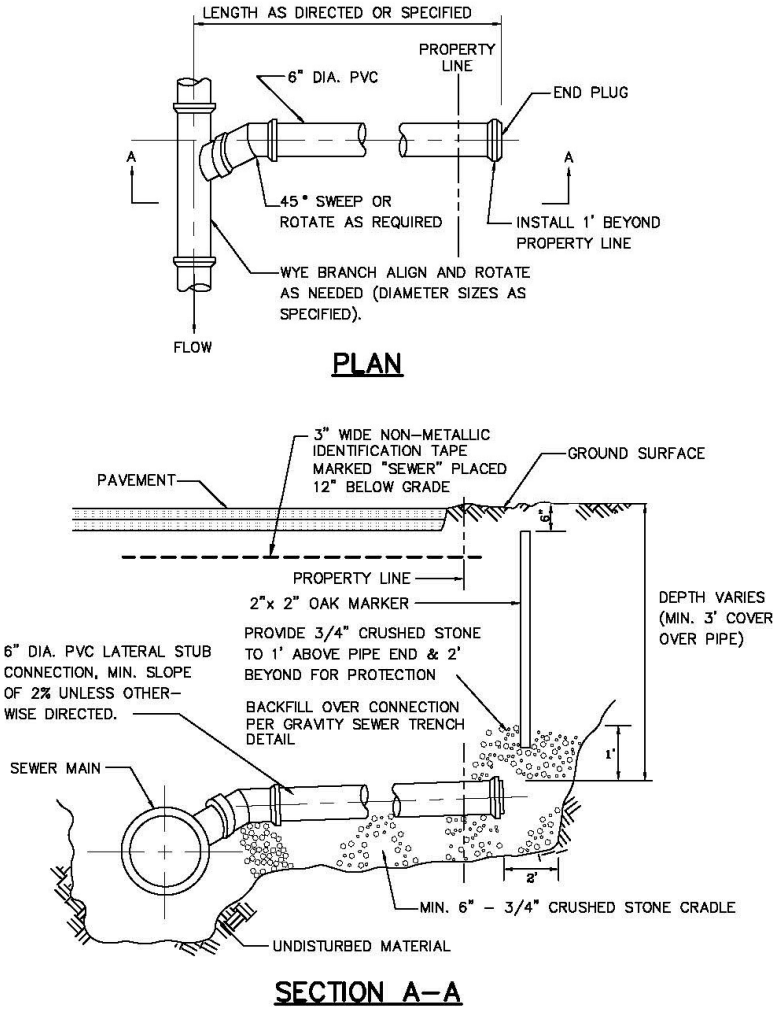
- Frequently asked questions and answers regarding the Project can be found in **Appendix B – Frequently Asked Questions**.

Sewer Construction Sequence

- Sewer installation has two construction components:
  - Town installs the wastewater collection system, which includes the pipes and pumps required to move the wastewater from each location to the wastewater treatment facility that are installed under roadways within the right of way and in easements on private property; and
  - Property Owner installs sewer service connections on private property to connect to the Town's wastewater collection system.
- The Town owns and maintains the wastewater collection system, to a point on the service lateral where it intersects your property line. The service lateral is uniquely located for each property within the Town's right of way and easements.
- After each phase of the Town's wastewater collection system that is completed, the property owner installs a sewer service connection from the property line to the structure (e.g., home, business, etc.) in order to connect your property to the Town's wastewater collection system.
- The sewer service connection is the financial, planning, installation and maintenance responsibility of the property owner. Designing of the sewer service connection to the Town's wastewater collection system must be performed by a Massachusetts Registered Design Engineer, in accordance with the Guides for the Design of Wastewater Treatment Works (TR-16), and in strict accordance with appropriate Massachusetts codes and the Town's **Sewer Use Rules and Regulations**. The engineer and Utility Contractor are hired by the property owner. Much like arranging for the installation of a new septic system, the property owner will contract with and pay for the installation directly.

Homeowner Involvement During Construction (Sewer Lateral / Stub Placement)

- While most of the construction will not require any homeowner involvement, there is one component that will require input from property owners.
- Part of the wastewater collection system installation process is making an accommodation for the property owner's sewer service connection that will be installed in the future. This is done by installing a sewer lateral or stub in front of each property.
- A sewer lateral or stub is a pipe that is brought from the sewer main in the street to the property line of each property. The sewer lateral is NOT a sewer service: the sewer service will be installed at a later date by a utility contractor, hired by the property owner, who will make a connection from the structure (e.g., home, building, etc.) to the sewer lateral or stub at the property line.
- During the design phase of the Project, the Town and its consultants utilized existing conditions to locate the proposed sewer service connection.
- This information included the following:



Typical Gravity Sewer Lateral or Stub

  - Location of site features (e.g., driveways, sidewalks, large trees, sheds, garages, decks, etc.);
  - Location of where the existing waste pipe exits the building;
  - Location of existing septic tanks, cesspools, leaching fields, pump chambers, etc. (as applicable); and
  - Location of above and below ground utilities, if known (e.g., water, gas, electric, etc.).
- Each property owner is requested to review the proposed sewer service connection in accordance with **Appendix C – Sewer Service Connection Verification Letters**.

Homeowner Involvement After Construction

- Property owners will be notified and will be required to connect to the Town's wastewater infrastructure within one year of substantial completion of the Town's wastewater infrastructure.
- The owner of the property connected to the sewer system is responsible for the installation of his/her service connection. Service connections may only be installed by Utility Contractors who are licensed by the Town to perform such installation. All service connections shall be installed in full accordance with the Town's **Sewer Use Rules and Regulations**.
- The **Sewer Use Rules and Regulations** can be downloaded from the Town's Website at https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations.
- For your reference, a wastewater collection checklist has been prepared. Refer to **Appendix D - Wastewater Connection Checklist**.
- For properties that require a pump, refer to **Appendix H - Non-Gravity Sewer Connections Only**

What are the timelines for the Wastewater Collection Systems?

- The Downtown Area Collection System is complete. Property owners are required to connect by March 16, 2024.
- The Meetinghouse Pond Area Collection System is under construction and is scheduled to be complete and to allow connections by December 7, 2025.

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Section 5 - Easements

What is an easement?

- In this context, an easement gives the Town of Orleans the right to use private property in accordance with the provisions of Massachusetts General Law c. 79, G.L. c. 83, §1 and §3. The Town of Orleans does not own the property, but the easement gives the Town the legal right to use the property as specified in the easement documents.
- All easements required for the Project have been obtained by the Town of Orleans, MA.

Are there different types of easements?

- Yes. There are many types of easements, including: (a) Utility Easements; (b) Driveway or Access Easements; (c) Drainage Easements; (d) Prescriptive Easements; and (e) Easements by Implication and by Necessity.

  This Project has the most common type of easements in Massachusetts, known as a utility easement. Utility easements are used for such things as overhead and underground power lines, cable lines, gas lines, sewer lines and water mains.

- Permanent Easement vs. Temporary Easement

  A permanent easement is a right granted by an underlying property owner that entitles its holder to a specific use of the property. The underlying property owner's rights to use a permanent easement are somewhat restricted.

  A temporary easement is a right granted for a specific period and once it expires, the rights granted return to the property owner. A temporary easement allows (e.g., easier access, etc.) the Town's contractor(s) to construct the wastewater infrastructure.

What rights do the parties have?

- The Project's easements are needed for the purpose of constructing, inspecting, maintaining, operating, improving, repairing, renewing, replacing and abandoning in place: (a) a sewer system and any and all structures and facilities related thereto, including, without limitation, manholes, lines, mains, pipes, conduits, pump stations and such other structures, facilities and/or appurtenances as may be necessary or convenient to establish a public sewerage system, including, without limitation, for the purpose of extending and/or connecting, regardless of origin, to other land; and (b) stormwater drain or drains, drainage swales, detention or retention basins, and any manhole, pipes, catch basins, conduits, culverts, channels, and such other structures, facilities and/or appurtenances as may be necessary or convenient for the proper drainage of stormwater, including, without limitation, for the purpose of extending and/or connecting drainage facilities, regardless of origin, to other land; and, further, to take any and all actions as may be necessary or incidental to accomplish the foregoing purposes.

  All sewer and drainage facilities installed by the Town shall be and remain the property of the Town.

  The Town has the right to enter upon and pass over the easements from time to time, by foot, vehicle, or heavy equipment, for any and all purposes stated herein and uses necessary or incidental thereto, including, without limitation, using and temporarily storing, as needed, construction equipment, materials or other incidental items within the easements.

No permanent or temporary buildings, structures and/or objects shall be constructed, installed, maintained and/or placed upon the easements that may interfere with Town's utilities.

Trees, shrubs and stone walls located within the easements are also taken thereby and shrubs and stone walls may be relocated within the easement area. Other structures so located are not taken and shall be removed or may be relocated within the easement whenever their removal or relocation shall be required for the purposes for which the easements were taken.

Did the Town pay for the easements?

- No. The Town determined that no persons would sustain damages to their property by reason of the taking, all in accordance with the provisions of G.L. c.79, §6, as amended, and accordingly awarded no damages for this taking.

Is an easement a legal document?

- Yes. During the design phase of the Project, easement documents were prepared, and each consisted of a description and associated figure. The easements were recorded in the Barnstable Land Court Registry. Easement records are available online or in person at the Barnstable County Registry of Deeds.

What was the process to determine the easement locations?

- During the design phase of the Project, the wastewater collection system was laid out to: (a) Maximize Use of Existing Roadways; and (b) Avoid Cross-County Routes. Some considerations included: (a) Minimizing the number of pumping stations; and (b) Complying with regulatory permitting requirements and constraints. Easements are still required in certain circumstances and are determined on a case-by-case basis.

Section 6 - Property Transfers

Should realtors disclose information related to future connection to the sewer system of a property?

- Realtors have a fiduciary responsibility to advise potential buyers of properties which will be required to connect to the wastewater infrastructure once the system is ready for operation. Until such time as the wastewater infrastructure is operational and the property is connected to the wastewater infrastructure, the transfer of property will require a certificate that the Title 5 septic system is in compliance with state and local requirements and that a certificate has been issued by the Orleans Board of Health. This certification is a condition of the property transfer. If the septic system is not in compliance, the system needs to be repaired or replaced.

- When the Board of Health orders your property to connect, you will have twelve months to connect. The property owner may file for a variance with the Orleans Board of Health to seek an extension. However, the Orleans Board of Health has made it very clear that variances may be granted for short periods of time for special circumstances. Each case would be decided individually but eventually property owners will need to connect to the wastewater infrastructure.

- Typically, the attorneys for the buyers and sellers will develop a Purchase and Sales Agreement which will address the responsibilities of each party as it relates to connecting to the Town's Wastewater Collection System and abandoning the existing on-site wastewater disposal system.

- Realtors are requested to contact the Department to discuss the estimated schedule for the availability for connection to the Town's Wastewater Collection System as it compares to the estimated schedule for closing on the property.

What should a realtor say when asked how much it costs to connect to the sewer?

- Each connection to the wastewater infrastructure will be different in length, elevations, connections and associated details. Realtors should refer their clients to the Town of Orleans website regarding **the Sewer Use Rules and Regulations** at https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulationsfor connection requirements.

- In addition, a realtor should advise their clients to retain the services of a Massachusetts Registered Civil or Environmental Professional Engineer to prepare their sewer service connection plan and to obtain the necessary permits from the Town of Orleans.

- The Town has developed a list of Engineering Design Firms that may perform engineering services related to the design of sewer service connections. Refer to **Appendix E - Engineering (Design) Firms**. Please note that this is not an endorsement but merely a compilation of engineering (design) firms located in the area. It is suggested that each property owner call at least three firms and check references prior to engaging their services. Any Massachusetts licensed Design Engineer is able to design sewer connections in the Town of Orleans. You do not have to adhere to the list.

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Section 7 - Overview of Sewer Use Rules and Regulations (SURR)

(See SURR for Actual Regulations. This is a guidance document only.)

Background

- Developed over 7 public meetings with participation by:
  - Board of Water and Sewer Commissioners
  - Department of Public Works and Natural Resources
  - Board of Health
  - Public
  - Tighe & Bond (Owner's Project Manager)
  - AECOM Technical Services, Inc. (Designer of Record)
- The **Sewer Use Rules and Regulations** can be downloaded from the Town's Website athttps://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations.

Regulations Cover

- System Specifications
- Connection/Extension Processes
- Allocation of Flow
- Enforcement
- User Charges and Fees

Allocation of Flow

- All properties allowed a minimum of their current flow or twice the Sewer Unit Flow of 55 gpd.
- Additional flow dispensed by the Board of Water and Sewer Commissioners based on available capacity, community benefit, economic development and other factors. Refer to the Town's **Sewer Use Rules and Regulations**.
- Permits only valid for the use and quantity of flow stated in the sewer service connection application.
- Changes in property use require re-permitting.

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Section 8 - Project Costs and Funding

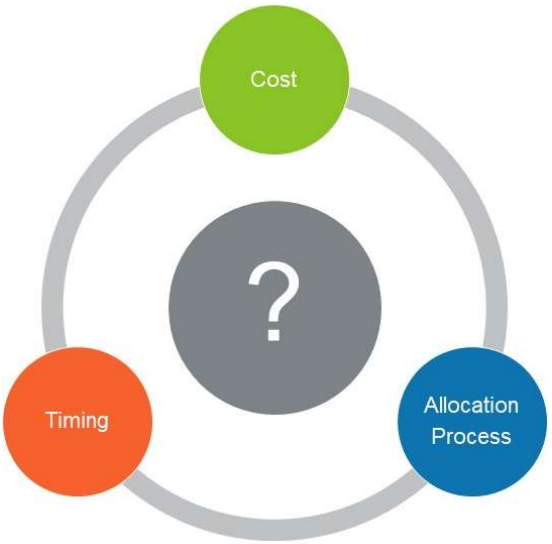
Project Funding Sources

- State Revolving Fund (SRF)
  - This is a state-managed fund, which receives federal and state monies to support loans for wastewater and drinking water projects. Communities who have projects focused on nutrient removal are eligible for 0 percent loans.
  - There are five criteria that a community must meet in order to qualify for the 0 percent financing. The Town has been working for over five years to meet these qualifications and have now met these criteria. The Criteria Are:
    - ✓ Project is Primarily Intended to Remediate or Prevent Nutrient Enrichment of a Surface Waterbody or Water Supply Source
    - ✓ Applicant is Not Currently Subject, Due a Violation of a Nutrient-Related Total Maximum Daily Load Standard or Other Nutrient Based Standard, to a
      - MassDEP Enforcement Order
      - Administrative Consent Order or Unilateral Administrative Order
      - Enforcement Action by the U.S. EPA
      - State or Federal Court Order Relative to the Proposed Project
    - ✓ Applicant Has a Comprehensive Wastewater Management Plan Approved Pursuant to Regulations Adopted by the MassDEP
    - ✓ Project Has Been Deemed Consistent with the Regional Water Resources Management Plan, If One Exists
  - ✓ Applicant Has Adopted Land Use Controls, Subject to the Review and Approval of the MassDEP in Consultation with the MA Department of Housing and Economic Development and, Where Applicable Any Regional Land Use Regulatory Entity, Intended to Limit Wastewater Flows to the Amount Authorized Under Zoning and Wastewater Regulations as of the Date of the Approval of the CWMP
- Increases Hotel/Motel Tax
  - Previously the Town received a 4 percent tax from room rentals at hotels, motels and larger Bed and Breakfasts.
  - The Town increased this tax from 4 percent to 6 percent by approval at the Annual Town Meeting held on May 13, 2019, which is allowed by statute, to be used for wastewater infrastructure projects.
- Stabilization Fund
  - Created a Stabilization Fund for the purpose of funding wastewater projects in Town by approved at the Annual Town Meeting held on May 13, 2019. Due to the expansion of the existing hotel/motel tax to include short-term rentals, there is a new revenue stream coming to the Town that began on July 1, 2019.
  - Requires funds be deposited directly to the Stabilization Fund established by Town Meeting in May 2019. Expenditures from the fund would require a 2/3rds approval vote from Town Meeting.
- Short-term Rental Tax
  - In late 2018 the Commonwealth of Massachusetts enacted an amendment to the existing hotel/motel tax to include a 5.7 percent tax on short-term rentals in private homes for rentals less than 31 days.

- Cape Cod and Islands Water Protection Fund
  - The expansion of the hotel/motel tax law to include short-term rentals also established a Trust Fund to provide financial assistance to Cape Cod & Island towns for the construction of wastewater and water facilities.
  - The Fund is financed through a 2.75 percent surtax on hotel/motel and short-term rental taxes. The intent of this Fund is to provide 25 percent of the funding necessary to implement wastewater and water projects across Cape Cod, consistent with the Cape Cod Commission's 208 Wastewater Plan.

Sewer Assessment By-law

- Developed over 6 public meetings
  - Board of Water and Sewer Commissioners
  - Department of Public Works and Natural Resources
  - Board of Health
  - Public
  - Tighe & Bond (Owner's Project Manager)
  - AECOM Technical Services, Inc. (Designer of Record)
- The **Sewer Assessment By-law** can be downloaded from the Town's Website at https://www.town.orleans.ma.us/DocumentCenter/View/1058/Sewer-Assessment-Bylaw-PDF?bidId=.
- Assessments cover only collection system costs
  - Assessment is based on Uniform Unit Method in accordance with Massachusetts General Law, Chapter 83, Section 16 - Charge of Use of Sewers.
  - Orleans voters, at the Special Town Meeting held outdoors at Nauset Beach on October 31, 2020, voted to authorize and direct the Select Board to petition the Great and General Court of the Commonwealth of Massachusetts for special legislation to rescind Chapter 381 of the Acts of 2008 which authorized the town to lay out sewers and assess betterments in accordance with the Town's initially approved CWMP (2008) and further to authorize the Town, notwithstanding provisions of Chapters 80 and 83 of the General Laws or any other general or special law to the contrary, to adopt a sewer assessment bylaw based on the uniform unit method most appropriate to the Town. The Town submitted Special Legislation which was signed by the Governor on January 5, 2023.



  - A uniform unit method shall be based upon sewerage construction costs divided among the total number of existing and potential sewer units to be served, after having proportioned the cost of special and general benefit activities. Each sewer unit shall be equal to a single-family residence. Potential sewer units shall be calculated on the basis of zoning then in effect. Existing and potential multifamily, commercial, industrial and semipublic uses shall be converted into sewer units on the basis of residential equivalents
  - Base Unit is 55 GPD (Equivalent to typical condominium)

- ✓ Units assigned based on 3-year's water use

- Sewer billings are based upon ninety-five (95) percent of the water meter readings. If an irrigation deduct meter is present, then the sewer bill is based upon one hundred (100) percent of the water meter readings.

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Appendix A –Sewer Service Area Street Listing

Downtown Area Sewer Service Area Street Listing		
Number	**Street Name**	**Collection System Type**
Pump Station No. 1 Tributary Area		
1	Cranberry Highway / Route 6A	Gravity Sewer
2	Eldredge Park Way	Gravity Sewer
3	Lots Hollow Road	Gravity Sewer
4	Old Colony Way	Gravity Sewer
5	Old Tote Road	Gravity Sewer
6	West Road	Gravity Sewer
Pump Station No. 2 Tributary Area		
1	Academy Place	Gravity Sewer
2	Brewster Cross Road	Gravity Sewer
3	Center Place	Gravity Sewer / Low-Pressure Sewer
4	Cove Road	Gravity Sewer
5	Cranberry Highway / Route 6A	Gravity Sewer
6	Cummings Road	Gravity Sewer
7	Doane Terrace	Gravity Sewer
8	Snow Library	Gravity Sewer
9	South Orleans Road / Route 28	Gravity Sewer
Pump Station No. 3 Tributary Area		
1	Canal Road	Gravity Sewer
2	Cottage Street	Low-Pressure Sewer
3	Cross Country (Canal Road to Stop & Shop Parking Lot)	Gravity Sewer
4	Cranberry Highway / Route 6A	Gravity Sewer
5	Jones Road	Gravity Sewer
6	Liberty Lane	Gravity Sewer
7	Locust Road	Gravity Sewer

Downtown Area Sewer Service Area Street Listing		
Number	**Street Name**	**Collection System Type**
8	Main Street	Gravity Sewer
9	North Cottage Street	Low-Pressure Sewer
10	Old County Road	Low-Pressure Sewer
11	South Orleans Road / Route 28	Gravity Sewer
12	Cranberry Cove Plaza (Stop & Shop) Parking Lot	Gravity Sewer

Meetinghouse Pond Sewer Service Area Street Listing		
Number	**Street Name**	**Collection System Type**
Pump Station No. 4 Tributary Area		
1	Barley Neck Road	Gravity Sewer / Low-Pressure Sewer
2	Baxter Lane	Low-Pressure Sewer
3	Bayberry Lane	Low-Pressure Sewer
4	Beach Road	Gravity Sewer
5	Cedar Way	Low-Pressure Sewer
6	Cheney Road	Low-Pressure Sewer
7	Cole Place	Gravity Sewer
8	Deerwood Lane	Low-Pressure Sewer
9	Gesner Road	Gravity Sewer
10	Great Oak Road	Gravity Sewer
11	Grist Road	Gravity Sewer / Low-Pressure Sewer
12	Harveys Lane	Low-Pressure Sewer
13	Hayward Lane[1]	Low-Pressure Sewer
14	High Tide Lane	Low-Pressure Sewer
15	Karen Way	Low-Pressure Sewer
16	Lake Farm Lane	Low-Pressure Sewer
17	Larboard Lane	Gravity Sewer / Low-Pressure Sewer
18	Lewis Road	Gravity Sewer / Low-Pressure Sewer

1 Contingent upon future Town actions.

Meetinghouse Pond Sewer Service Area Street Listing		
Number	**Street Name**	**Collection System Type**
19	Linden Lane	Low-Pressure Sewer
20	Loomis Lane	Low-Pressure Sewer
21	Lucys Lane	Low-Pressure Sewer
22	Main Street	Gravity Sewer
23	Manito Way	Low-Pressure Sewer
24	Mill Lane	Gravity Sewer
25	Meetinghouse Road	Gravity Sewer
26	Ministers Prim	Low-Pressure Sewer
27	Monument Road	Gravity Sewer
28	Natural Drive	Gravity Sewer / Low-Pressure Sewer
29	Nauset Farms Way	Low-Pressure Sewer
30	Oak Lane	Gravity Sewer
31	Packet Landing	Low-Pressure Sewer
32	Pine Ridge Lane	Gravity Sewer
33	Pochet Road	Gravity Sewer / Low-Pressure Sewer
34	Pond Road	Gravity Sewer
35	Pond View Road	Low-Pressure Sewer
36	Reverend Treat Road	Low-Pressure Sewer
37	River Road	Gravity Sewer / Low-Pressure Sewer
38	School Road	Gravity Sewer
39	Tides End Lane[2]	Low-Pressure Sewer
40	Uncle Vicks Way	Low-Pressure Sewer
41	Windy Hill Lane	Low-Pressure Sewer

2 Contingent upon future Town actions.

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Appendix B - Frequently Asked Questions

Why is the Town being sewered?

The Massachusetts Department of Environmental Protection (MassDEP) has set specific water quality goals for marine waters in the Commonwealth. Nitrogen from septic systems is the primary contributor to degraded water quality in our bays and estuaries. When wastewater from a property's leaching field enters the groundwater, it flows slowly toward receiving coastal waters, regardless of where you live in Orleans. Studies have shown that an average of sixty (60) percent of the septic nitrogen must be removed from groundwater to achieve state-mandated requirements. If Orleans does not act on its own to clean up its waters, the Town could be put under an administrative order from MassDEP and could also face a lawsuit from the Conservation Law Foundation.

Orleans has also made a commitment to preserve and protect its freshwater ponds from excess phosphorous, which is primarily caused by septic system loads into our lakes and ponds. So, in addition to Orleans' commitment to cleaning up marine waters, we also expect to sewer for phosphorus removal in future sewer phases to clean up freshwater resources.

I need to figure out where I want my sewer connection to be, how do I do that?

- The first step is locating where your existing septic system is and where the pipe exits your foundation.
- The Board of Health keeps records of septic system plans and can assist you with this information.
- Refer to **Appendix C – Sewer Service Connection Verification Letter.**

Can I hire anyone I want to design and install my sewer connection?

- You must hire a Massachusetts Registered Design Professional Engineer to design the sewer connection.
- The Board of Water and Sewer Commissioners has developed a list of Engineering (Design) Firms that may perform engineering services related to the design of the sewer service connection. Refer to **Appendix E - Engineering (Design) Firms**. The listing of firms is not an endorsement but merely a compilation of Engineering (Design) Firms located in the area. The Engineering (Design) Firms will be able to assist you in the design of your sewer service connection including but not limited to pipe route; permits; Town approvals; selection of a Utility Contractor, etc. Licensed Engineering Firms not included on the list may also be engaged for design and permitting purposes.
- The Board of Water and Sewer Commissioners has developed a list of Utility Contractors who will be able to install your sewer service connection line and abandon your existing septic system. Refer to **Appendix F - Utility Contractors**. The Utility Contractor list is not an endorsement but merely a compilation of Utility Contractors located in the area. The Utility Contractors must be approved by the Board of Water and Sewer Commissioners.

My septic system needs to be replaced prior to Project Completion, what are my options?

- The Board of Health will review the situation on a case-by-case basis, considering the reasons why the system needs to be replaced and the period before the sewer will be available to serve the location.

How will I know when I must connect?

- After the pipelines are placed in the street and the system is ready to receive wastewater (connection has been made to the wastewater treatment facility), the Board of Water and Sewer Commissioners will notify the Board of Health in writing.
- The Board of Health will then send a letter to each property owner indicating that it is time to connect.
- A timeframe of one year will be given to property owners to connect to the system.

How long does it take to make the connection and interrupt septic/sewer use in my house while construction is going on?

- When the time comes to connect your home to the sewer system, the Utility Contractor will dig a trench to install your sewer line from the street to your house. The existing plumbing will be disconnected from the septic system and re-connected to the new sewer line. Once the new connection is made, your existing septic system will be abandoned.
- This work can typically be done in as little as one day, with an interruption of service for a few hours or less.
- You do not need to shut the water service off during the connection; however, there will be a short period of time when the Utility Contractor will ask that you do not use any water (toilets, sinks, washing machines, etc.) so they can re-connect your plumbing properly.

I am selling my house; do I need to have my septic system inspected if I will be connecting to the sewer?

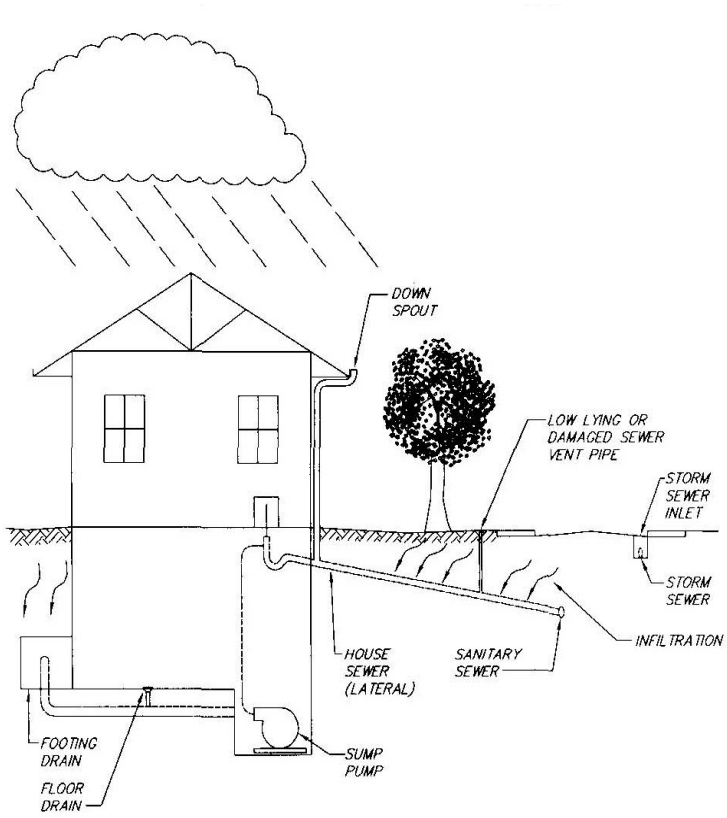
- Until you are connected to the Sewer, existing regulations remain in effect, including a Title 5 System inspection prior to transfer of the property.
- Waivers can be requested via the Board of Health and will be reviewed on a case-by-case basis.

Clearwater vs. Wastewater – What's the difference?

- ***Clearwater*** (rainwater) is collected and discharged without any treatment into receiving waters through the storm sewer system.
- The storm sewer system is separate from, and does not connect with, the **sanitary sewer** (wastewater) system; ***wastewater*** must undergo treatment at the wastewater treatment facility before being discharged.

Do illegal sump connections really have a major impact on the Town's wastewater system?

- Yes – the impact can be great.
- A typical 8-inch sanitary sewer main can handle wastewater from about 460 homes, yet it can take only 12 sump pumps operating at full capacity to overload the sewer system causing backups and flooding.
- See the figure to the right detailing typical ILLEGAL sewer connections.



Sources of Inflow and Infiltration Through Illegal Sewer Connections

What is an illegal connection?

- An illegal connection occurs when a pipe that would normally be discharged to the ground surface outside a home or connected to the storm sewer (drainage) system is connected to the sanitary sewer system. This allows clearwater (rainwater) to end up at the wastewater treatment facility instead of being transported through the storm sewer system. Illegal connections include downspouts, sump pumps, and area drains around a building.
- Any connection that allows rainwater or groundwater to enter the sanitary sewer system is considered an illegal connection.
- For additional information, refer to the **Sewer Use Rules and Regulations** which can be downloaded from the Town's Website at https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations.

Will the Department of Public Works and Natural Resources fix my Sewer Backup Problem?

- You can always call the Department of Public Works and Natural Resources at 508-240-3790 during regular business hours if you are experiencing overflows, backups or for any-sewer related questions. If it is after regular business hours, please call the Orleans Police Department at 508-255-0117.
- The Town of Orleans is responsible for problems in the sewer service lateral/stub from the property line cleanout to the main sewer line. Property owners are responsible for portions of the sewer line within the private property boundaries including from their structure to the property line cleanout.

- The Department of Public Works and Natural Resources will respond to any calls regarding backups to check if the source of the problem is located within the Town's wastewater infrastructure. If it isn't, it is recommended that the Property Owner contact a reputable plumber to help clear any clogged lines located within your property.

I am razing a property that is currently on the Town sewer in order to build a new structure. Does the Department of Public Works and Natural Resources cap off the sewer service lateral/stub?

- No, the Department of Public Works and Natural Resources does not cap off the line. The Property Owner should have their Utility Contractor take care of that.
- You will need to fill out an application and receive a permit prior to capping.
- In addition, The Department of Public Works and Natural Resources will inspect the capping, the sewer reconnection, etc. and sign off on the Building Permit once the work has been completed.

How do I verify if my property is tied into the Town's Wastewater Infrastructure or obtain a diagram of my connection?

- The Department of Public Works and Natural Resources maintains maps and records of the Town's Wastewater Infrastructure.
- If you are unsure if your property is connected to Town's Wastewater Infrastructure, you can contact the Department of Public Works and Natural Resources at 508-240-3790 during regular business hours for verification.
- If you need to obtain a copy of a diagram showing the location of your sewer connection, you can contact the Department of Public Works and Natural Resources at 508-240-3790 during regular business hours.

What is Required When Selling a Property on Sewer?

- Municipal Lien Certificate
- New owner must notify the Sewer Department of new Owner's contact information.

What is a Sewer Betterment Assessment?

- A Sewer Betterment Assessment is a method used by municipalities to recover project costs by equitably distributing applicable costs to property owners who receive the specific benefit from the project.

Who is required to pay the Sewer Betterment Assessment?

- The Sewer Betterment Assessment is charged to owners of properties located along the route of the sewer collection system (except for properties owned by government entities which are exempt from this requirement).

What is a Sewer Unit and how is assigned to my property?

- A sewer unit is a measure of wastewater flow that is used for assessment by the Board of Water and Sewer Commissioners to spread applicable project costs across all users based on their water use. One (1) sewer unit is equivalent to the average daily water use over multiple years of the lowest residential use category within the sewer service area being assessed.
- Properties that use more water than one (1) sewer unit will be assigned proportionally more sewer units. The number of sewer units for any residential or non-residential property shall not be less than one (1) sewer unit.

How is the Sewer Betterment Assessment calculated?

- The cost attributable to one (1) sewer unit is calculated by dividing the total cost of the wastewater system to be paid by Sewer Betterment Assessments by the total number of sewer units in that sewer service area. The Sewer Betterment Assessment for each property is then calculated by multiplying the cost of one (1) sewer unit by the number of sewer units assigned to the property.

- For example: If the project cost to be paid through betterments is $10,000,000 and there are 10,000 sewer units then the value for a single sewer unit is $1,000. A property that has been assigned 2 sewer units would therefore be assessed a $2,000 betterment fee.

Are undeveloped properties included in the Sewer Assessment Betterment calculation?

- Yes. Undeveloped properties that have the potential to benefit from the project will be assessed a sewer betterment based on the same methodology.

What costs does the Sewer Betterment Assessment include?

- The Sewer Betterment Assessment represents the allocated cost of the public wastewater system as defined by the Sewer Assessment Bylaw. The Sewer Betterment Assessment does not include the private cost of connecting a property to the public sewer service located at the property line. It also does not include the cost of decommissioning the property's current on-site wastewater treatment system.

Are there other costs property owners connecting to sewers will have to pay?

- In addition to the Sewer Betterment Assessment, a property owner is responsible for the cost to connect their property to the public sewer system located at the property line. Connection costs will vary based on property characteristics. Once sewer service is connected, property owners will be charged a sewer user fee on a quarterly basis, based on their water usage.

- Certain parcels may also require the property owner to pay for and maintain a Low-Pressure Sewage Pump System (often called grinder pumps) to move the flow from the property and into the Town's wastewater infrastructure (gravity sewer or low-pressure sewer). The Board of Water and Sewer Commissioners has pre-selected and standardized the pumping system to be purchased by the property owners and conducted a procurement process with pricing established as part of the Sewer Use Rules and Regulations. These pumping systems are described in the Property Owner's Guidebook, available on the Town's website at

  https://www.town.orleans.ma.us/217/Property-Owners-Guidebook.

- If the property has irrigation, a property owner can install a deduct meter which will enable the property owner to realize a savings for water that does not enter the sanitary sewage system. Sewer user fees are reviewed annually by the Board of Water and Sewer Commissioners. The user fees support the annual cost of running the wastewater system.

What do the property owners need to design?

- The property owner is responsible for all work from the public sewer connection point located at the property line to their structure and any internal work that may be required (https://www.town.orleans.ma.us/1213/Sewer-Service-Connections).

When will the Sewer Betterment Assessment be issued?

- For properties to be connected in the Downtown sewer service area (often referred to as Phase 1), it is estimated that a bill will be mailed in the month of December of calendar year 2024.

- For properties to be connected in the Meetinghouse Pond sewer service area (often referred to as Phase 2), where construction funding was approved at the May 2022 Annual Town Meeting, it is estimated that

a bill will be mailed to those properties in the month of April of calendar year 2028.

How is the Sewer Betterment Assessment paid?

- A property owner can opt to pay the Sewer Betterment Assessment all at once when due or may opt to finance the Sewer Betterment Assessment and pay quarterly installments on their property tax bill for up to thirty (30) years at an interest rate of two (2) percent above the rate paid by the Town to finance the project. If financing is selected, a lien will be recorded on the property at the Registry of Deeds. A property owner can pay off a Sewer Betterment Assessment early without penalty. If you have additional questions, please contact the Town of Orleans Treasurer's Office at 508-240-3700 ext. 2420 for more information.

What happens to the Sewer Betterment Assessment Lien on the property upon transfer of ownership?

- The lien for the Sewer Betterment Assessment may either be transferred to the new owner of the property or paid off at the time of transfer.

Do I have a choice whether or not to connect to new sewer service?

- No. Properties in the sewer service areas are required to connect.

If I have recently installed a new Title 5 septic system, or will be doing so in the near term, will I still have to connect to sewer service and pay the Sewer Betterment Assessment?

- Under the Board of Health Sewer Connection Regulations, the Board of Health has the authority to defer the deadline for connection for properties with a compliant septic system, subject to other requirements (https://www.town.orleans.ma.us/DocumentCenter/View/4025/Orleans-MA-BOH-Sewer-Connection-Regs-FINAL-2022-08-10)

- A deferral to connect to the sewer does not de-obligate the property owner from paying the Sewer Betterment Assessment. If you have a question about your property, the type of system serving your property, or the date of installation for that system, please call the Town of Orleans Health Department at 508-240-3700 ext. 2450 for more information.

What happens to my septic system when I connect to sewer service?

- The de-commissioning and removal or filling of septic systems will be determined on a property-by-property basis. Any component that is not essential to the connection to the public sewer will have to be properly abandoned, in accordance with Massachusetts Title 5 and Orleans Board of Health Sewer Connection Regulations, the methods for which are based on the type of septic component. This determination is made by the property's engineer prior to the property being connected to the sewer system.

When do I connect to the sewer system?

- The sewer system in the Downtown sewer service area was substantially complete in February 2023. On March 9, 2023, each property owner was issued a "Notice to Connect" from the Board of Health indicating that the sewer adjacent to their property is ready to receive wastewater flow. Property owners have one (1) year from the date of the "Notice to Connect" to make the connection into the sewer in the street. The Town strongly encourages property owners to hire an engineer to develop their connection plan and submit a Connection Permit Application, as well as speak with some Town-approved, licensed contractors (drain-layers) about installing the connection as soon as possible.

- A list of local engineers can be found on the Town website at

  https://www.town.orleans.ma.us/DocumentCenter/View/2781/Engineering-Design-Firms-PDF.

- A list of Town-approved licensed contractors can be found on the Town website at

  https://www.town.orleans.ma.us/DocumentCenter/View/2782/Sewer-Installation-Contractors-PDF

How much will it cost a property owner to connect to the sewer?

- The property owner's cost to connect to the sewer will vary significantly as it will depend on numerous factors. Some of those include the distance between the house waste line and the sewer service stub at the property line, depth of the sewer service, relative elevation of the house waste line compared to the Town sewer, groundwater elevation, presence of ledge/boulders, offsets from underground utilities, landscaping impacts, and other restoration costs. The property owner is responsible for all connection costs. Contracts between the property owner and the engineer and contractor are private. The property owner should consider budgeting for the following services and fees associated with connection in addition to annual user charges and sewer assessment betterments:
  - Connection Permit (currently set at $0.50/gal of average daily water use or $250, whichever is greater);
  - Board of Health Septic System Abandonment Permit ($75);
  - Engineering including plans, specifications, and permit application (on the order of $2,000 - $10,000); and
  - Construction including all costs to connect the house waste line to the sewer service stub (including low-pressure pump systems if necessary), decommissioning the existing sewage disposal system, and restoration of property (on the order of $5,000 - $30,000).
- The Town recommends that homeowners obtain several proposals for their connection from professional engineers and Town-approved drain-layers. Property owners may also choose to join with their neighbors to solicit proposals from design engineers and Town-approved drain layers to perform multiple connection designs and installations which may result in more favorable pricing.

Is there any payment assistance or abatement of either the Sewer Betterment Assessment or connection costs?

1. Betterment Deferrals - Homeowners over 65 years of age with gross receipts from the prior year of $40,000 or less and who occupy the bettered property as their domicile may defer payment of their betterment at two (2) percent interest until the sale of their property or settlement of their estate. Other criteria may also apply. This only applies to residential properties. Applications must be made to the Select Board within six (6) months of issuance of your betterment notice. Contact the Town of Orleans Assessor's Office at 508-240-3700 ext. 2430 for further information.
2. Senior Circuit Breaker Tax Credit - For persons over 65 who qualify to file for the Senior Circuit Breaker Tax Credit (Schedule CB) with their MA income tax return can include their annual betterment and interest, along with fifty (50) percent of their usage fees (up to certain limits) as expenses. Talk to a tax advisor or contact the Massachusetts Department of Revenue Tax Department at 617-887-6367 for details and information.
3. State Income Tax Credit – A tax credit of up to $15,000 of your sewer hook-up costs may be claimed on your MA income tax return. You must file Schedule SC and Schedule CMS with your annual return. Talk to your tax advisor or contact the Massachusetts Department of Revenue Tax Department at 617-887-6367 for details and information.
4. Barnstable County Community Septic Management Loan Program also known as the Cape Cod Aquifund. This program provides zero-to-low-interest betterment loans (based on household income) to Cape Cod homeowners for septic system replacement, installation of advanced onsite wastewater treatment units and sewer connection costs repayable over twenty (20) years. Eligible homeowners with a household income of less than 120% of Barnstable County's median household income can qualify for a 0% interest loan.

Please contact the Program's office at 508-375-6877 or visit http://www.barnstablecountysepticloan.org for details and information.

5. Financial assistance opportunities can also be found on the State's website at https://www.mass.gov/guides/title-5septic-systems-financial-assistance-opportunities-for-system-owners#-homeowner-septic-loan-program.

Will I be charged the Sewer Betterment Assessment even if I haven't been connected yet?

- Yes. The Sewer Betterment Assessment for each sewer phase is charged to the properties after completion of each phase.

What will I be charged for a Sewer Betterment Assessment?

- The value of the individual sewer betterments assessments will be determined approximately eighteen (18) months after completion of the construction phase, either the Downtown Area or the Meetinghouse Pond Area. That betterment will reflect the Select Board's decision to pay twenty (20) percent of the project cost through betterment and be based on the final project costs, updated water use information, and the property's use at the time of assessment in accordance with the Sewer Assessment Bylaw. Any vacant lots will be evaluated by the Town for their highest use as a basis for betterment. Betterment values will be made available by the Town as they are finalized. Property owners in the Downtown sewer service area can get an early indication of the estimated betterment amount by looking up their property address on the table available at https://www.town.orleans.ma.us/1363/Estimated-Betterments-Downtown-Project.

What type of information will I need from the Town to provide to my engineer and contractor?

- Your engineer will need to request from the Town information for the existing on-site wastewater treatment system and information for the Town's sewer system at your property line. Your contractor will use the approved permit application and construction plans and specifications developed by the engineer.

Will my tax assessment increase when the property is connected to sewer?

- No. Property assessments are based on current market value derived from actual comparable sales.

Can I add on to my home once it is connected to sewer?

- Yes. A property connected to sewer can apply to the Board of Water and Sewer Commissioners for increased sewage flow, subject to. wastewater Infrastructure capacity. The property will still need to comply with all local zoning bylaws including yard setbacks, height, and lot coverage.

What is a Privilege Fee and a Compensatory Privilege Fee?

- A Privilege Fee is the fee charged to properties not currently located within the sewer service area that may wish to connect to the system at a later date. It ensures that new connections pay their fair share of the cost of the system in order to have access to it. These connections are subject to approval by the Board of Water and Sewer Commissioners.

- A Compensatory Privilege Fee is a fee charged to property owners located within the sewer service area who wish to increase the flow allocated to their property to expand or develop it.

What happens to the Privilege Fee paid by users who want to expand their home or business?

- The Privilege Fees are placed in a segregated fund to be used to help pay the costs to repair and upgrade the wastewater infrastructure.

If I have additional questions about this program, who do I contact?

- You can find information in the "Property Owner's Guidebook" and other information located on the Town's website at https://www.town.orleans.ma.us/217/Property-Owners-Guidebook. However, if you have a specific question, please contact the Department of Public Works and Natural Resources at 508-240-3790 or the AECOM Project Ombudsman at 508-237-7161.

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Appendix C - Sewer Service Connection Verification Letters

Downtown Area Sanitary Sewer Collection System and Pumping Stations Project

Meetinghouse Pond Area Sanitary Sewer Collection System and Pumping Station Project

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Downtown Area Sanitary Sewer Collection System and Pumping Stations Project

RESPOND BY SEPTEMBER 4, 2020, IF REQUIRED

Dear SPECIFIC Property Owner:

The Orleans Board of Water and Sewer Commissioners through the Department of Public Works and Natural Resources requests that each property owner review his/her planned Sewer Service Connection as part of information gathering for the Downtown Area Sanitary Sewer Collection System and Pumping Station Project that will begin in September of 2020 and is planned to be completed in July of 2022. The information requested herein is specific to your property and will be incorporated into the project to optimize your sewer service connection location by:

(a) locating the new sewer service connection at a point best suited to the present building plumbing;

(b) locating the new sewer service connection at a point best suited to accommodate any anticipated future property updates/modifications;

(c) minimizing the disturbance to your property; and

(d) minimizing the cost for you to install the sewer service connection on your property.

Every effort will be made to incorporate your preferences during the construction phase of the project.

Over the two-year construction period, a sewer line will be installed in your street and a sewer service connection stub will be installed from the pipeline to your property line. Please note, this project will only install the sewer service connection stub up to your property line and it is your responsibility to complete the sewer service connection from the property line to your building in accordance with the Town's **Sewer Use Rules and Regulations**. (https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations).

We request that you review the attached plan of your property, which includes the current proposed location of the sewer stub. Please take note of the following and let us know if you find discrepancies as you review the plans:

- Property owner's name;
- House or business number and street name;
- Location of site features (i.e., driveways, sidewalks, large trees, sheds, garages, decks, etc.);
- Location of where the existing waste pipe exits the building;
- Location of existing septic tanks, cesspools, leaching fields, pump chambers, etc. (as applicable);
- Location of above and below ground utilities, if known (i.e., water, gas, electric, etc.);
- Proposed location of the new sewer connection stub to your property.

Information and Instructions for Changing the Sewer Service Connection Location

1. If you would like to make any changes to the proposed location of your sewer stub, please mark on the plan where you would like it to be moved to and mail the plan and your contact information by **September 4, 2020** to:

   Mr. Martin "Reggie" Donoghue, P.E., AECOM
   c/o DPW&NR
   40 Giddiah Hill Road
   Orleans, MA 02653

   Telephone: 508-237-7161
   E-Mail: martin.donoghue@aecom.com

   If email is easier, please scan or take a picture of the entire plan with the proposed new location on it and email it with your contact information to Mr. Donoghue at martin.donoghue@aecom.com.

2. As required by regulation, a permit from the Department of Public Works and Natural Resources is required for hook-up to the Town's wastewater collection system. Only one Sewer Service Connection will be allowed per property unless otherwise approved by the Department of Public Works and Natural Resources. Permits for connecting to the Town's wastewater collection system can only be issued to utility contractors licensed by the Town of Orleans, MA. Applications for permits will be available through the Department of Public Works and Natural Resources. Additional information on how to find licensed utility contractors and permit applications will be forthcoming within the Town of Orleans' sewer Property Owner's Guidebook that you will receive by mail very soon. The Property Owner's Guidebook will also be available on the Town's Website.

3. Sewer Service Connections shall be made to the building plumbing system only. Typically, this would begin outside of your building where your main waste line exits the foundation. Sewer Service Connections are not permitted to the existing septic tank, septic pump chamber or cesspool.

4. Storm water, surface water, ground water, roof runoff, submerged drainage and/or sump pumps shall not be discharged into Town's wastewater collection system.

5. No Sewer Service Connection, from the Town's wastewater collection system in the street to the property line, will be changed and/or added after construction is completed.

6. All Sewer Service Connections must be installed per the Town of Orleans Sewer Use Rules & Regulations.

   https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations

If you need assistance in responding to this request, please contact:

Mr. Martin "Reggie" Donoghue, P.E.
AECOM Technical Services, Inc.
Telephone: 508-237-7161
E-Mail: martin.donoghue@aecom.com

Thank you for your cooperation.

Richard Hartmann
Chair, Board of Water and Sewer Commissioners

Meetinghouse Pond Area Sanitary Sewer Collection System and Pumping Station Project

RESPOND BY SEPTEMBER 8, 2023, IF REQUIRED

Dear SPECIFIC Property Owner:

The Orleans Board of Water and Sewer Commissioners through the Department of Public Works and Natural Resources requests that each property owner review his/her planned Sewer Service Connection as part of information gathering for the Meetinghouse Pond Area Sanitary Sewer Collection System and Pumping Station Project that will begin in June 2023 and is planned to be completed in May 2025. The information requested herein is specific to your property and will be incorporated into the project to optimize your sewer service connection location by:

(e) locating the new sewer service connection at a point best suited to the present building plumbing;

(f) locating the new sewer service connection at a point best suited to accommodate any anticipated future property updates/modifications;

(g) minimizing the disturbance to your property; and

(h) minimizing the cost for you to install the sewer service connection on your property.

Every effort will be made to incorporate your preferences during the construction phase of the project.

Over the two-year construction period, a sewer line will be installed in your street and a sewer service connection stub will be installed from the pipeline to your property line. Please note, this project will only install the sewer service connection stub up to your property line and it is your responsibility to complete the sewer service connection from the property line to your building in accordance with the Town's **Sewer Use Rules and Regulations** (https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations).

We request that you review the attached plan of your property, which includes the current proposed location of the sewer stub. Please take note of the following and let us know if you find discrepancies as you review the plans:

- Property owner's name;
- House or business number and street name;
- Location of site features (i.e., driveways, sidewalks, large trees, sheds, garages, decks, etc.);
- Location of where the existing waste pipe exits the building;
- Location of existing septic tanks, cesspools, leaching fields, pump chambers, etc. (as applicable);
- Location of above and below ground utilities, if known (i.e., water, gas, electric, etc.);
- Proposed location of the new sewer connection stub to your property.

Information and Instructions for Changing the Sewer Service Connection Location

1. If you would like to make any changes to the proposed location of your sewer stub, please mark on the plan where you would like it to be moved to and mail the plan and your contact information by **September 8, 2023** to:

   Mr. Martin "Reggie" Donoghue, P.E., AECOM
   c/o DPW&NR
   40 Giddiah Hill Road
   Orleans, MA 02653

   Telephone: 508-237-7161
   E-Mail: martin.donoghue@aecom.com

   If email is easier, please scan or take a picture of the entire plan with the proposed new location on it and email it with your contact information to Mr. Donoghue at martin.donoghue@aecom.com.

2. As required by regulation, a permit from the Department of Public Works and Natural Resources is required for hook-up to the Town's wastewater collection system. Only one Sewer Service Connection will be allowed per property unless otherwise approved by the Department of Public Works and Natural Resources. Permits for connecting to the Town's wastewater collection system can only be issued to utility contractors licensed by the Town of Orleans, MA. Applications for permits will be available through the Department of Public Works and Natural Resources. Additional information on how to find licensed utility contractors and permit applications are available on the Town's website (https://www.town.orleans.ma.us/1213/Sewer-Service-Connections)

4. Sewer Service Connections shall be made to the building plumbing system only. Typically, this would begin outside of your building where your main waste line exits the foundation. Sewer Service Connections are not permitted to the existing septic tank, septic pump chamber or cesspool.

4. Storm water, surface water, ground water, roof runoff, submerged drainage and/or sump pumps shall not be discharged into Town's wastewater collection system.

5. No Sewer Service Connection, from the Town's wastewater collection system in the street to the property line, will be changed and/or added after construction is completed.

6. All Sewer Service Connections must be installed per the Town of Orleans Sewer Use Rules & Regulations.

   https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations

If you need assistance in responding to this request, please contact:

Mr. Martin "Reggie" Donoghue, P.E.
AECOM Technical Services, Inc.
Telephone: 508-237-7161
E-Mail: martin.donoghue@aecom.com

Sincerely,

Alan McClennan, Chair
on behalf of the Orleans Board of Water and Sewer Commissioners

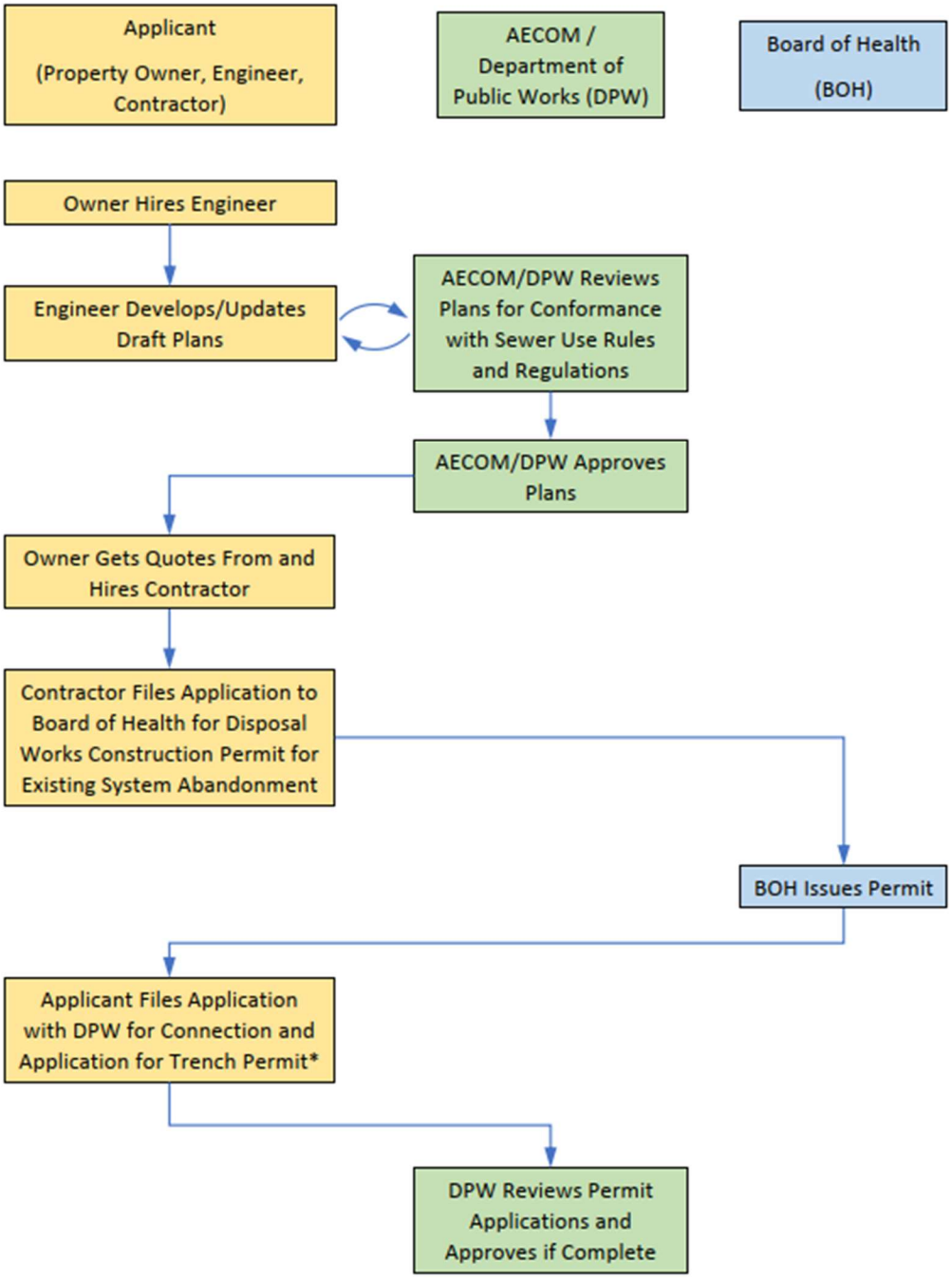
Appendix D - Wastewater Connection Checklist

Action	Yes/No	Date	Comments
Is your property located within a Sewer Service Area?			If you don't know, the Phase 1 and Phase 2 Sewer Maps can be downloaded from the Town's Website at: https://www.town.orleans.ma.us/171/Wastewater-Infrastructure
Have you obtained a copy of the **Sewer Use Rules and Regulations**?			If not, they can be downloaded from the Town's Website at https://www.town.orleans.ma.us/434/Sewer-Use-Rules-Regulations
Does your property need a Low-Pressure Sewerage Pump System?			If you don't know, the properties that require a Low-Pressure Sewerage Pump System are identified on the Phase 1 and Phase 2 Sewer Maps which can be downloaded from the Town's Website at: https://www.town.orleans.ma.us/171/Wastewater-Infrastructure
Did you or your Engineer obtain an as-built septic system drawing from the Board of Health?			If not, it can be obtained from the Orleans' Board of Health at 508-240-3700 ext. 2450.
Does you Engineer know if you have plumbing fixtures in your basement?			
Did you retain the service of a Massachusetts Registered Design Engineer from an Engineering (Design) Firm to develop your sewer service connection plan?			Refer to **Section E - Engineering (Design) Firms**.
Did you obtain installation bids from Utility Contractors approved to do business in the Town of Orleans, MA?			Refer to **Section F – Utility Contractors (Installation)**.
Have you arranged financing for the sewer service installation costs?			
Have you signed a contract to perform the work and complete the sewer connection installation?			
Did your Contractor apply for and obtain a "Trench Permit" from the Orleans' Department of Public Works and Natural Resources before any work begins?			

Action	Yes/No	Date	Comments
Have you worked with the Massachusetts Registered Design Engineer or Contractor to determine if you need to hire a plumber and/or electrician to complete the sewer service connection installation?			Refer to **Section E - Engineering (Design) Firms**. Refer to **Section F – Utility Contractors (Installation)**.
Did your Contractor apply for and obtain a "Septic System Abandonment Permit" from the Orleans Board of Health?			
Has the Contractor completed the restoration of any yard work disturbed as a result of the sewer service connection installation?			
Did you obtain a copy of the final installation certificate and record drawings for your records?			
Did you or your Engineer submit the record drawings of the sewer service connection installation to the Orleans' Department of Public Works and Natural Resources in accordance with the **Sewer Assessment By-law**?			The **Sewer Assessment By-law** can be downloaded from the Town's Website at https://www.town.orleans.ma.us/DocumentCenter/View/1058/Sewer-Assessment-Bylaw-PDF?bidId=

The flow chart below shows a simplified version of the connection process to be used as a guide. Refer to the website for additional detail. It can also be found on the website at: https://www.town.orleans.ma.us/1213/Sewer-Service-Connections

Town of Orleans - Sewer Application Process

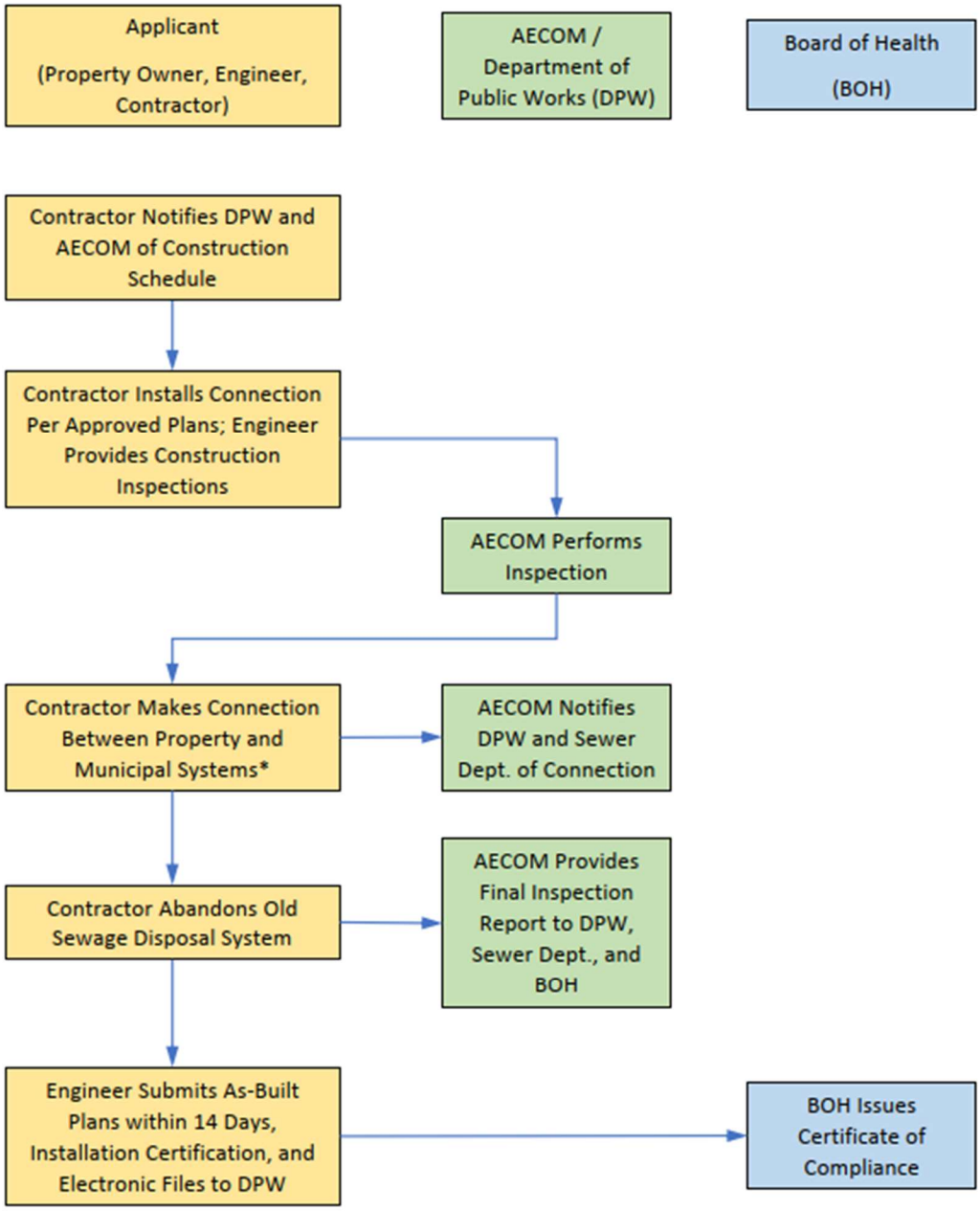


* Food Service Establishments Will Additionally Be Required to Apply for Fats, Oils, and Grease Permit

* Submit Approved Plumbing Permit if Applicable

9/22/2023

Town of Orleans - Sewer Connection Process



* Connection to the Municipal System is the Start of Sewer Use Billing

9/22/2023

Appendix E – Engineering (Design) Firms

LIST OF ENGINEERING (DESIGN) FIRMS THAT MAY PERFORM ENGINEERING SERVICES RELATED TO THE DESIGN OF SEWER SERVICE CONNECTIONS

THIS IS NOT AN ENDORSEMENT BUT MERELY A COMPILATION OF ENGINEERING (DESIGN) FIRMS LOCATED IN THE AREA.

WE SUGGEST THAT YOU CALL AT LEAST THREE FIRMS AND CHECK REFERENCES.

Updated November 29, 2023

Atlantic Design Engineers, Inc. 39 Pleasant Street Sagamore, MA 02561 PO Box 1051 Street Sandwich, MA 02563 508-888-9282 http://www.atlanticcompanies.com/index.html	Baxter Nye Engineering & Surveying 1597 Falmouth Road, Unit #1, Centerville, MA 02632 508-771-7502 https://www.baxter-nye.com/	BSC Group 349 Main Street/Route 28, Unit "D" West Yarmouth, MA 02673 508-778-8919 https://www.bscgroup.com/
Cape Civil, PLLC P.O. Box 1767 Brewster, MA 02631 508-237-4980 Email: dave@capecivilpllc.com	Cape Cod Engineering, Inc. 500 Setucket Road South Dennis, MA 02660 508-385-1445 https://www.capecod-engineering.com/	Cape & Islands Engineering, Inc. 800 Falmouth Road Mashpee, MA 02649 508-477-7272 https://capeeng.com/
Clark Engineering 156 Crowell Road, Suite B Chatham, MA 02633 508-945-5454 http://www.clarkeng.net/	Coastal Engineering, Co. 260 Cranberry Highway Orleans, MA 02653 508-255-6511 https://coastalengineeringcompany.com/	Dig It Construction, LLC. Keith Fernandes 22 Diamonds Path South Dennis, MA 02660 508-432-1635 https://www.digitconstructionllc.com/
Down Cape Engineering 939 Route 6A, Suite C Yarmouth Port, MA 02675 508-362-4541 https://downcape.com/	Eldredge Surveying & Engineer 1038 Main Street, Suite C Chatham, MA 02633 508-945-3965 https://www.ese-llc.com/	JC Engineering, Inc. 2854 Cranberry Highway East Wareham, MA 02538 508-273-0377 http://www.jcengineeringinc.com/

LIST OF ENGINEERING (DESIGN) FIRMS THAT MAY PERFORM ENGINEERING SERVICES RELATED TO THE DESIGN OF SEWER SERVICE CONNECTIONS

THIS IS NOT AN ENDORSEMENT BUT MERELY A COMPILATION OF ENGINEERING (DESIGN) FIRMS LOCATED IN THE AREA.

WE SUGGEST THAT YOU CALL AT LEAST THREE FIRMS AND CHECK REFERENCES.

Updated November 29, 2023

J.M. O'Reilly & Associates, Inc. 1573 Main Street, P.O. Box 1773 Brewster, MA 02631 508-896-6601 http://www.jmoreillyassoc.com/	M.A. Elbag Engineering, Inc. 188 Glenwood Road Rutland, MA 01543 (508) 726-1199 Email: maelbag@gmail.com Fax: (508) 886-6735	Merrill Engineers and Land Surveyors 448 North Falmouth Highway Unit A North Falmouth, MA 02556 508-563-2183 https://merrillinc.com/
Moran Engineering Associates, Inc. 941 Route 28, P.O. Box 183 South Harwich, MA 02661 508-432-2878 http://www.moranengcc.com/	Natural Systems Utilities 1573 Main Street Brewster, MA 02631 508-896-1706 https://nsuwater.com/	Ryder & Wilcox Engineering 3 Giddiah Hill, P.O. Box 439 South Orleans, MA 02662 508-255-8312 http://ryder-wilcox.com/

Appendix F - Utility Contractors (Installation)

LIST OF UTILITY CONTRACTORS THAT MAY INSTALL SEWER SERVICE CONNECTIONS

THIS IS NOT AN ENDORSEMENT BUT MERELY A COMPILATION OF UTILITY CONTRACTORS LOCATED IN THE AREA.

WE SUGGEST THAT YOU CALL AT LEAST THREE UTILITY CONTRACTORS AND CHECK REFERENCES.

Updated July 19, 2023

Bortolotti Construction 45 Industry Road Marstons Mills, MA 02648 508-771-9399 http://www.bortolotticonstruction.com/	Brundage Site Work 400 Massasoit Road Eastham, MA 02642 774-801-2692	C.C. Construction, Inc. 11 Cantor Court Plymouth, MA 02360 508-398-1811 https://ccconstruction.net/
Chase Landscape, Inc. 7 New Venture Drive S. Dennis, MA 02660 508-776-2710 https://chaselandscape.com/	Derek Vautrinot D/B/A Terra Firma Fab 490 Hay Road Eastham, MA 02642 774-801-8186 terrafirmafab@comcast.net	Dig It Construction 22 Diamonds Path South Dennis, MA 02660 508-432-1635
GFM Enterprises, Inc. PO Box 1439 South Dennis, MA 02660 508-694-5600 https://www.gfmexcavating.com/	John Martin Inc. 32 Rayber Road Orleans, MA 02653 508-240-0668	J.W. Dubis & Sons 79 Stony Hill Road Chatham, MA 02633 508-945-0283 http://www.jwdubis.com/
LaMountain Bros, Inc. 37 Federal Hill Road Oxford, MA 01540 https://lamountainbros.com/	Lawrence-Lynch Corp. 396 Gifford Street Falmouth, MA 02540 508-548-1800 https://www.lawrencelynch.com/	M.C.E. Dirtworks, Inc. 15 Denwich Road Harwich, MA 02645 https://www.dirtworkscapecod.com/
Norgeot Inc. 761 South Orleans Rd. Brewster, MA 02631 774-722-4503	Northeast Construction P.O. Box 2350 Brewster, MA 02631 866-896-7713 http://northeastconstructioncorp.com/	Reis Excavating 515 Tubman Road Brewster, MA 02631 508-240-4837

LIST OF UTILITY CONTRACTORS THAT MAY INSTALL SEWER SERVICE CONNECTIONS

THIS IS NOT AN ENDORSEMENT BUT MERELY A COMPILATION OF UTILITY CONTRACTORS LOCATED IN THE AREA.

WE SUGGEST THAT YOU CALL AT LEAST THREE UTILITY CONTRACTORS AND CHECK REFERENCES.

Updated July 19, 2023

Robert B. Our Co., Inc. P.O. Box 1539 Harwich, MA 02645 508-432-0530 https://www.robertbour.com/	Speakman Excavating, LLC 235 Great Western Road S. Dennis, MA 02660 https://www.speakmanexcavating.com/	

Note: The above list of Utility Contractors (Installation) is preliminary and subject to the review and approval by the Director of the Orleans' Department of Public Works and Natural Resources and licensed in accordance with the Town's **Sewer Use Rules and Regulations**.

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Appendix G - Dig Safe®

(FYI – The Utility Contractor is Required to Call Dig Safe)

What is Dig Safe®?

Planning home improvements? Planting a tree? Installing a fence or deck? Whether you do it yourself or hire a professional, a safe job starts with a call to Dig Safe® at 811.

Dig Safe® is a not-for-profit clearinghouse that notifies participating utility companies of your plans to dig. In turn, these utilities (or their contract locating companies) respond to mark out the location of their underground facilities. Dig Safe® is a free service, funded entirely by its member utility companies.

It's a risk to make faulty assumptions about when to notify Dig Safe®. That's why state law requires you to notify Dig Safe® for even small projects, like installing a mailbox or planting shrubs. The depth of utility lines varies and there may be multiple utility lines in a common area.

Know what's below.
Call before you dig.

It's important to know what's below. Call 811 to avoid utility service disruption to an entire neighborhood, harm to you and those around you, as well as fines and repair costs.

How It Works

Even small, shallow excavation jobs can be a risk if you don't know where underground lines are buried.

Remember to call 811 for every project!

Step 1

"Pre-mark" where you plan to dig before making the call to 811.

Pre-marking means to mark out the area on the ground where the work will take place, using white stakes, paint or flags. Note that pre-marking requirements vary slightly from state to state - Download Laws/Rules.

When utility company representatives arrive to mark their lines, pre-marking provides visual boundaries to help guide them in placing their marks where you need them, and not where you don't.

Guide to Marking Proposed Excavations

Step 2

Gather the information needed to process a locate request.

Download the Dig Safe® Data Collection Form to help you prepare for the questions Dig Safe® will ask.

Step 3

Call 811 in advance.

The Dig Safe® call center is open from Monday through Friday from 6:00 a.m. to 6:00 p.m.

Massachusetts state law requires you give at least 72-hours of notice prior to any excavations occurring - not including weekends and legal holidays. Dig Safe® observed Massachusetts legal holidays are as follows:

- New Year's Day
- President's Day
- Memorial Day
- Labor Day
- Veteran's Day
- Christmas Day
- Martin Luther King Day
- Patriot's Day
- Independence DY
- Columbus Day
- Thanksgiving Day

Dig Safe® only accepts emergency locate requests during off-hours. For non-emergency requests, please call during regular office hours.

You will be given a Dig Safe® ticket number as proof of notification.

Step 4

Notify non-member facility owners. Non-member companies are not notified by Dig Safe®. Refer to the Dig Safe® Laws at a Glance chart to find out what types of utility companies are required to be members of Dig Safe®. The Town of Orleans is a non-member company. Your Utility Contractor is required to also call the Orleans Water Department at 508-255-1200 during regular business hours.

Click here to get a list of existing Dig Safe® members, by state.

Step 5

Wait the required time! After notifying Dig Safe®, you must wait 72 hours in (excluding weekends and legal holidays) prior to any excavations occurring.

During this time, utility representatives respond to mark their utility lines within your pre-marked area. Painted marks identify various underground utilities. They use the following uniform color code system, so the type of utility is identified.

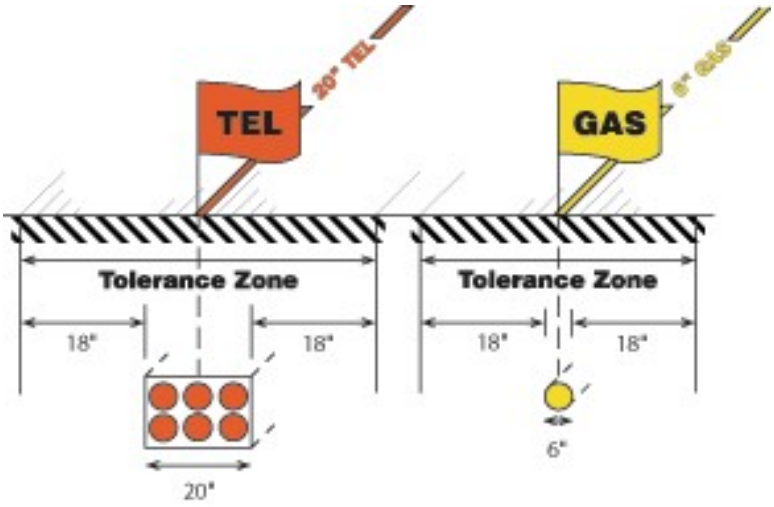
RED	ELECTRIC
YELLOW	GAS, OIL, STEAM
ORANGE	COMMUNICATIONS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER
GREEN	SEWER / DRAINAGE
PINK	SURVEY MARKS
WHITE	PROPOSED EXCAVATION

Step 6

Respect the marks

Remember that pipes, cables, and wires can be buried at any depth, so it can be risky to dig in proximity of a buried line. Therefore, the laws of Massachusetts observe a Safety Zone (or Tolerance Zone) requirement.

The use of mechanized equipment is prohibited when digging within 18-inches of a buried facility. In this Safety Zone (or Tolerance Zone), you must dig by hand, carefully, to avoid damage.



Step 7

Maintain the marks

Make sure the utility marks stay intact during your project. If the marks are compromised for any reason, call Dig Safe® back at 811.

In Massachusetts your ticket expires if the excavation has not started before 30 days from the date of issue.

Ticket Expiration

In Massachusetts, Dig Safe® tickets expire 30 days from the date of issue.

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Appendix H - Non-Gravity Sewer Connections Only

Environment One Corporation - Extreme Series Grinder Pump

Prefabricated Low-Pressure Sewage Pump Systems

A. The Board of Water and Sewer Commissioners has standardized on the type of pumping system to be purchase, installed and operated and maintained by private property owners.

B. Following a Request for Proposal process and associated Proposal evaluation, the Board of Water and Sewer Commissioners selected F. R. Mahoney & Associates using Environmental One Corp. as the manufacturer of the Low-Pressure Sewerage Pump Systems. F. R. Mahoney & Associates contact information is as follows:

C. F. R. Mahoney & Associates (Exclusive New England Distributor for Environmental One Corp.)
273 Weymouth Street
Rockland, MA 02370
T: 781-982-9300
F: 781-982-1056
http://www.frmahony.com

D. The Design Engineer should coordinate with F.R. Mahoney & Associates for the appropriate Low-Pressure Sewage Pump System for the property. Such coordination shall occur prior to the submittal of the permit application.

E. In general, the Prefabricated Low-Pressure Sewage Pump Systems is a complete factory-built and tested system of the wetwell/drywell type designed to take the flow from the property and boost into the Town's wastewater infrastructure (gravity sewer or low-pressure sewer). The System includes, but not be limited to: (a) wetwell containing grinder pump(s) (semi-positive displacement type grinder unit) mounted in a high-density polyethylene (HDPE) basin and anti-siphon valve and check valve assembly; (b) drywell containing an electrical quick-disconnect; pump removal system and shut-off valve; and (c) electrical alarm/disconnect panel.

F. As part of the Request for Proposal process, the proposal by F. R. Mahoney & Associates included a guaranteed, Lump Sum price for each component, identified in the table below, in May 2023 U.S. Dollars. The Lump Sum Prices will be adjusted for inflation by the percent increase in the ENR Construction Cost Index between May 2023 and the month in which each Purchase Order is issued.

Item	Description	May 2023 Price
A.1.	Cost for Each Low-Pressure Sewerage Pump System, including control systems and all other necessary appurtenances. The cost shall include delivery and all other construction related services for the Low-Pressure Sewerage Pump Systems.	
A.1.1.	Model DH071-93 (Type A) Exterior, Simplex, System Capacity at 700 GPD and Wetwell Capacity of 70 Gallons	$5,620.00
A.1.2.	Model DH151-93 (Type B) Exterior, Simplex, System Capacity at 1,500 GPD and Wetwell Capacity of 150 Gallons	$6,145.00
A.1.3.	Model DH152-93 Exterior, Duplex, System Capacity at 3,000 GPD and Wetwell Capacity of 150 Gallons	$11,890.00

Item	Description	May 2023 Price
A.1.4.	Model IH-091 (Type D) Interior, Simplex, System Capacity at 700 GPD and Wetwell Capacity of 90 Gallons	$4,812.00
A.1.5.	Model DH272-92 Exterior, Duplex, System Capacity at 5,000 GPD and Wetwell Capacity of 275 Gallons	$25,460.00
A.1.6.	Model WH484-92 Exterior, Quadriplex, System Capacity at 7,000 GPD and Wetwell Capacity of 486 Gallons	$29,150.00
A.2.	2 Year Warranty extended to 5 Years for Each Low-Pressure Sewerage Pump as part of base equipment package	$1.00
A.3.	Cost for Each Engineered Stainless-Steel Service Lateral Component	$270.88
A.4.	Cost for Each Pump Monitoring System	$528.10
A.5.	Cost for Each Anti-Buoyancy Device Bal-Last for DH071	$359.00
A.6.	Cost for Each Pump Core Replacement	$2,490.00
A.7.	High Flood Configuration for Type A, Type B, and DH152	$260.90
A.8.	Insulation Disc for Freeze Protection	$75.00
A.9.	Remote Sentry – Alarm Unit in House Mounting	$250.00

The Property Owner's Grinder Pump Guidebook from F.R. Mahoney & Associates can be found on the Town website: https://www.town.orleans.ma.us/DocumentCenter/View/3168/Orleans-MA-E-One-Operation--Maintenance-Guidebook-2021-09-02

About Environment One Corporation

Environment One Corporation (E/One) is an operating company of Precision Castparts Corp. (NYSE: PCP), a worldwide manufacturer of complex metal parts and industrial products. With corporate headquarters in New York and regional offices and distribution throughout the industrialized world, E/One is a manufacturer and provider of products and services for the disposal of residential sanitary waste and utility systems for the protection and performance optimization of electric utility assets.

Low Pressure Sewer System

A pressure sewer system is used in certain areas because of the unsuitability and/or cost of a conventional sewer system. The pressure sewer system consists of a pumping unit installed on your property which is connected to a network of pipes from other pumping units in your area or directly into a gravity sewer. These pipes transfer wastewater to the wastewater collection system.

The systems installed are E/One grinder pump stations and are very reliable and robust. There is not much you need to do and very little that can go wrong. In the event of a power outage, water usage should be limited as much as possible.


Raw
Wastewater
Gravity Line
Pump
Discharge Line
Lateral Kit
Raw Wastewater
to Treatment
Grinder Pump
Basin

E/One Extreme Series Grinder Pump

A. Background

At the heart of the E/One Sewer System is the toughest, hardest working pump in the industry. The new standard in excellence, durability, and longevity, the E/One Extreme Series Grinder Pump. Its evolution reflects everything E/One has learned in 40 years as the originator and leader in the category of low-pressure sewer systems.

The pump stations incorporate the grinder pump, motor controls and level sensing device integrated into a compact unit, easily removable for servicing when necessary.

The geometry of the pump not only produces a near-vertical pump curve but, allows passage of ground solids without clogging. Because of the low revolutions per minute (rpm) and highest quality components, E/One experiences the lowest service call rate in the industry. An average mean time of 10 years between service calls is typical.

The progressing cavity pump itself is based on the Moineau principle. A rotor turns within a stator, creating a sequence of sealed chambers. The precision-cast and polished stainless-steel rotor moves wastewater through these chambers at a nearly constant flow, over a wide range of conditions – from negative to abnormally high heads. Turning at just 1,725 rpm, the one-horsepower motor can pump fluid through more than two miles of small-diameter piping or elevation changes of over 185 feet.

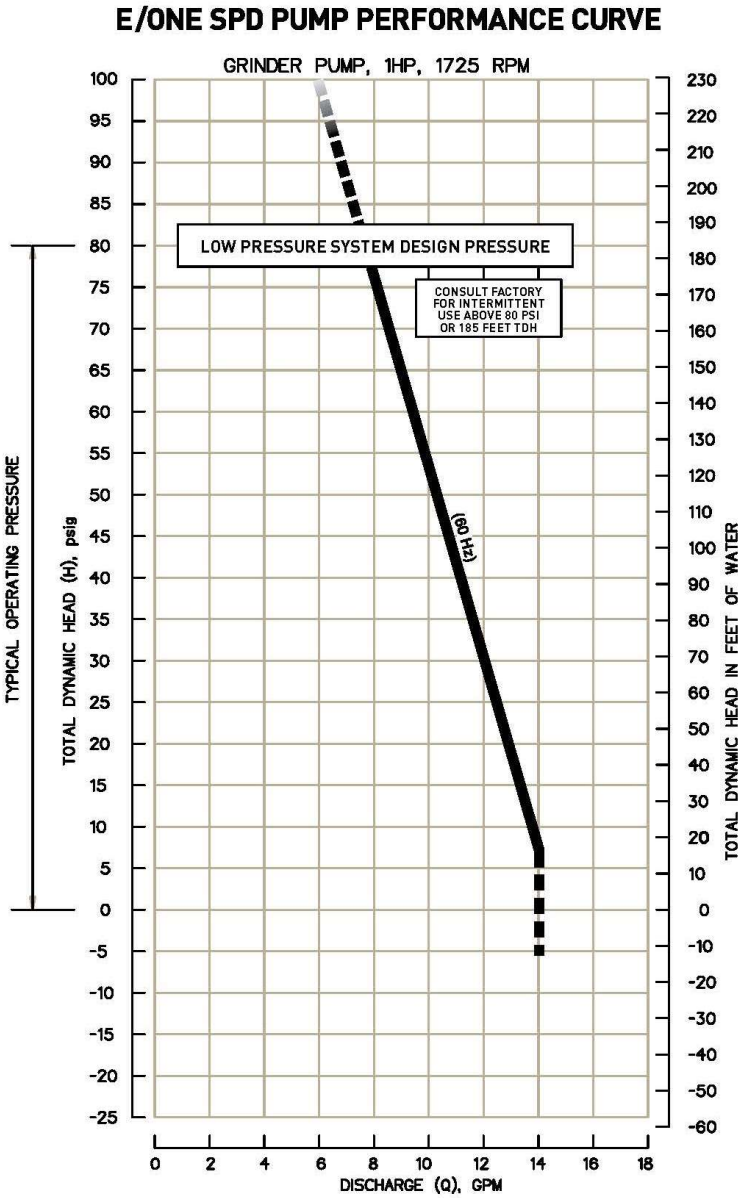
B. Key Advantages

- **High Heads/Negative Heads** - Reliable operation from negative head to 185 feet of total head for continuous duty reduces the number of lift stations and pipe sizes. This cuts costs – both initially and in long-term operation and maintenance.
- **Constant Flow** - The system pressures to be overcome by any given grinder pump in a low-pressure system vary dramatically over the course of a day. E/One's progressing cavity pump readily accommodates these pressure variations while maintaining a nearly constant flow without ever operating at "near shut off" – thus avoiding the wear and motor burn-out suffered by other pump types.
- **High Grinding Torque** - This unique pump system, driven by a one-horsepower motor turning at 1725 rpm, produces grinding torque greater than a two-horsepower pump turning at twice the speed.
- **Energy Efficient** - The pump is activated automatically and runs for short periods. Typical annual energy consumption is comparable to a 40-watt light bulb.
- **Low Maintenance Submersible Motor** - Low maintenance and long life are the hallmarks of the air-filled motor. Permanently lubricated ball bearings and Class F insulation eliminate the need for periodic oil changes and oil disposal costs required by oil-filled submersible motors.
- **Large Diameter Grinder Assembly** - Almost twice the diameter of most other types of grinder pumps, contributing to a dramatic reduction of inflow velocity for less wear and no blinding, clogging or jamming.
- **No Preventive Maintenance** - Non-fouling static level sensors require no preventive maintenance. Because of the unique, near constant discharge rate, no main line flushing is required in a properly designed system.

- **Corrosion Resistance** - E/One's stainless-steel ball-type discharge valve and piping won't corrode like copper or galvanized and hold up years longer. No corrosion, no maintenance.
- **Dependability** - E/One pumps typically run ten years between service calls with 40 years of in-ground experience.
- **Provide for Environmentally Sound Wastewater Management** - The E/One Extreme Series grinds waste material into small particles. This enables the use of inexpensive, small-diameter pressure pipes, buried at shallow depths, to transport wastewater to a suitable processing site. Result: Ground water contamination from failing septic tanks can be eliminated.
- **Serviceability** - The unique core design eliminates the need for in-field troubleshooting and pump servicing. This means lower maintenance costs and minimum homeowner inconvenience.

C. Performance Curve

- In a low-pressure system, constant, predictable pump output is the foundation for proper hydraulic design. It enables the engineer to minimize retention time, pump wear, and keep scouring action at effective levels.
- E/One's semi-positive displacement, progressing cavity pump has a nearly vertical H-Q curve. It provides a predictable flow over the full range of typical system pressures; strengths critical in a large-scale, low pressure sewer.
- E/One's high head capability allows a system with few, if any, lift stations. It easily accommodates additional future connections without compromising system performance.



D. The Inside Story on the E/One Grinder Pump Station

1 **Low-Profile Cover** - Provides easy access for service while blending with surroundings.

2 **High-density Polyethylene Tank** - Double-wall construction of high-density thermoplastic for rugged reliability. Factory pressure tested for infiltration and exfiltration free installation.

3 **Quick-Release Core Latch** - All stainless mechanism secures core in place and can be easily released from ground level.

4 **Stainless Steel Piping and Hardware** - E/One's stainless-steel discharge piping and ball valve won't corrode. No corrosion, no maintenance, no tools required.

5 **Unique Core Design** - Eliminates the need for in-field troubleshooting and service. Modular controls simplify service.

6 **Double O-ring Seals** - Make assemblies waterproof and novel joint geometry minimizes the effects of crevice corrosion.

7 **E/One Equalizer** - Compensates for fluctuations in atmospheric pressure to enable accurate level sensing while assuring the level sensing system is watertight.

General Information

In order to provide you with suitable wastewater disposal, your home is serviced by a low-pressure sewer system.

The key element in this system is an E/One Grinder Pump. The tank collects all effluent from the house. The solid materials are then ground to a small size suitable for pumping as a slurry with the effluent water.

The Grinder Pump generates sufficient pressure to pump this slurry from your home to the wastewater treatment receiving line and/or disposal plant.

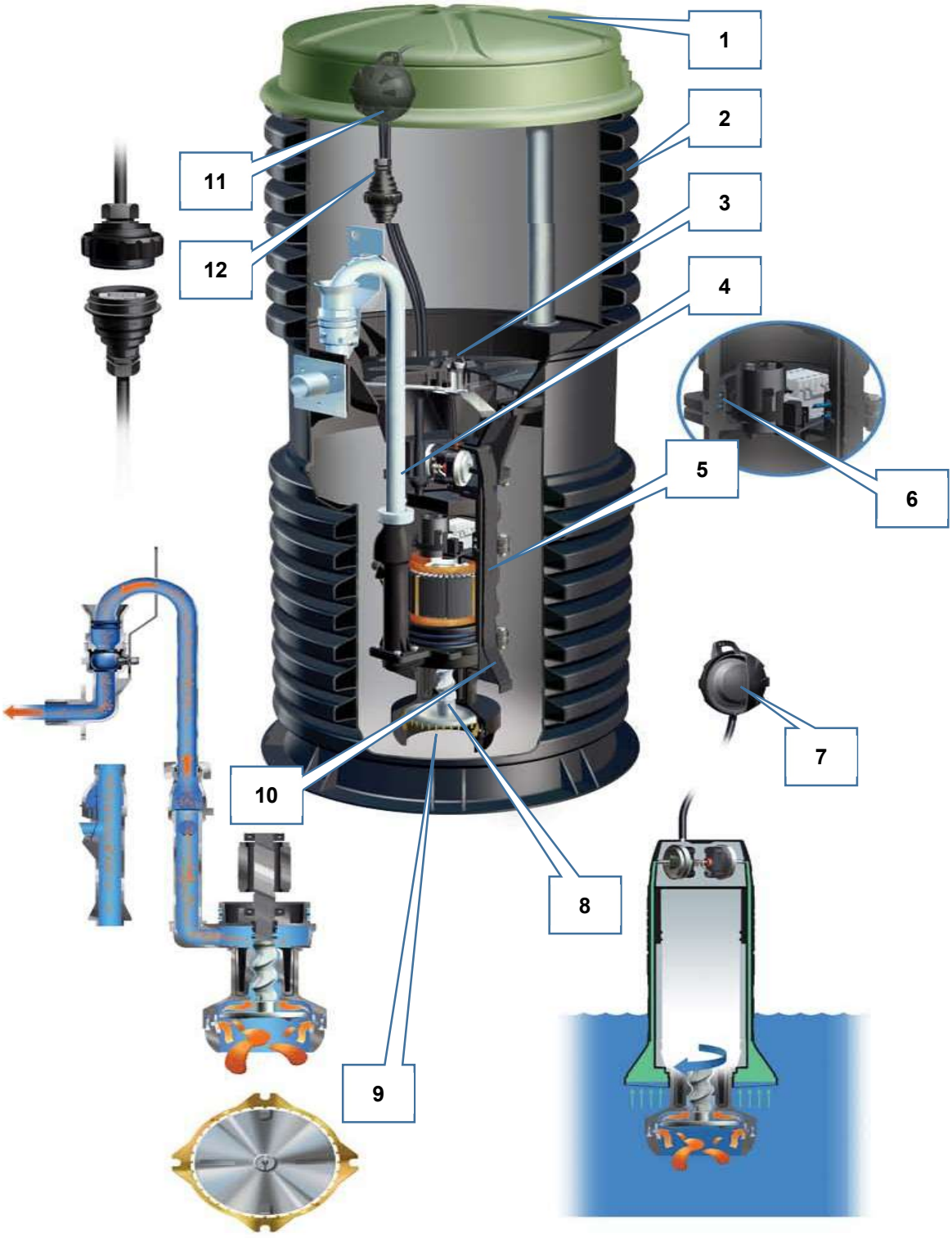
8 **Progressing Cavity Pump** - A deceptively simple design produces a nearly constant flow under a wide range of continuously varying conditions.

9 **Grinder Wheel and Shredder Ring** - Hardened corrosion-resistant cutter bars and teeth process sewage, grinding wastewater solids, as well as wood, plastic and cloth.

10 **Pressure Switch Level Control** - Self-cleaning level sensors require no preventive maintenance.

11 **Direct-bury Cable** - For simple and inexpensive installation.

12 **Electrical Quick Disconnect** - For safe and easy service. UL-listed, compatible with OSHA regulations for confined space entry.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